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Report

The Archer Waste Transfer Station – Annual Monitoring Report 2025



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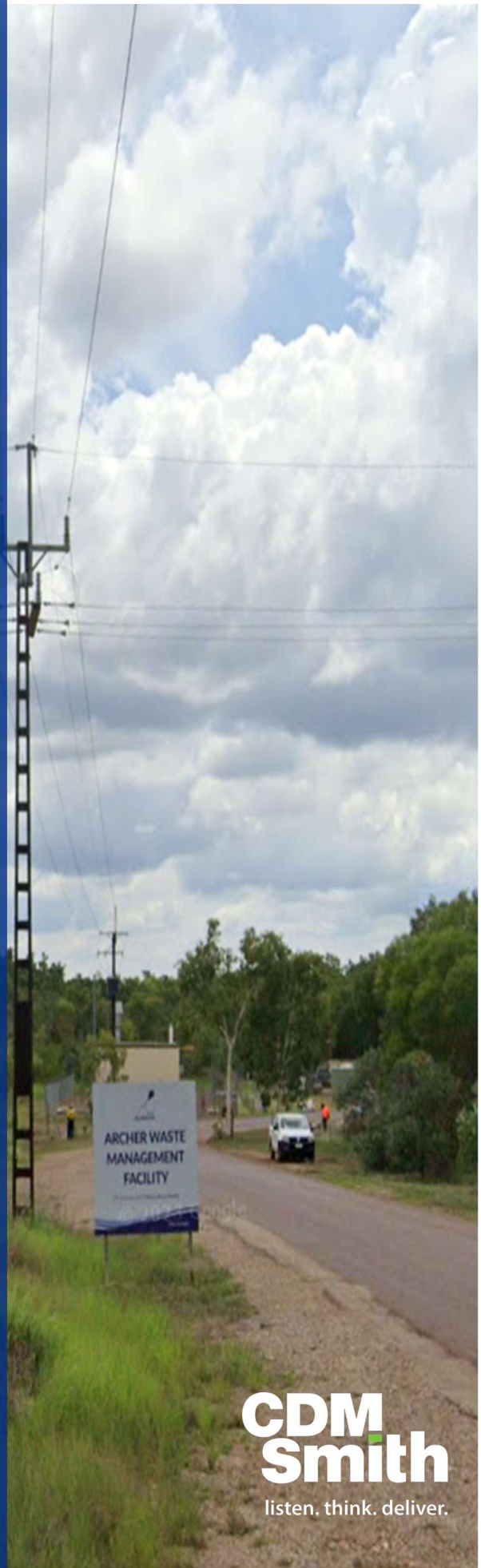


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Acronyms

Acronyms	Description
As	Arsenic
AWTS	Archer Waste Transfer Station
Cd	Cadmium
Co	Cobalt
CoP	City of Palmerston
Cr	Chromium
Cu	Copper
EPA	Environment Protection Authority
EPL	Environment Protection Licence
Ha	hectare
Hg	Mercury
Mn	Manganese
NH ₃	Ammonia
Ni	Nickle
NT	Northern Territory
Pb	Lead
Sb	Antimony
TN	Totoal Nitrogen
TRH	Total Recoverable Hydrocarbon
TSS	Total Suspended Solids
TP	Total Phosphorus
Zn	Zinc

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Section 1 Introduction

This annual water quality monitoring report has been developed by CDM Smith Australia (CDM Smith) on behalf of City of Palmerston (CoP) for the Archer Waste Transfer Station (AWTS) located on Lot 11497 Town of Palmerston plan(s) S2013/193, Elrundie Avenue, Archer NT 0830 (the site).

City of Palmerston operate the AWTS and are authorised to 'store' (for no more than 20 business days as per EPL233-02) waste at this facility under the NT *Waste Management and Pollution Control Act* in accordance with Environment Protection Licence (EPL233-02). Wastes stored at the facility prior to transport and disposal at the Shoal Bay Waste Management Facility comprise the following:

- Paper and cardboard
- Plastics
- Glass and aluminium
- General household waste
- Steel and metal
- Batteries
- Paint
- Waste oil
- White goods and gas bottles.

Green waste is accepted and mulched onsite and offered to the general public. Refer to site layout in Figure 1-1.

Surface water monitoring is undertaken at the AWTS in accordance with Attachment 1 of EPL233-02 to ensure that operations do not impact any waterways downstream. Monitoring Reports are required annually, as per Condition 43 of EPL233-02. These must be prepared in accordance with the Northern Territory Environment Protection Authority (NTEPA) 'Guideline for Reporting on Environmental Monitoring'. Each report must include all requirements as set out in EPL233-02 Condition 44.

This Annual Monitoring Report covers all surface water quality monitoring undertaken for the 2024/2025 wet season reporting period (herein referred to as the 'reporting period').

1.1 Purpose and Scope

This Monitoring Report is prepared in accordance with the following EPL233-02 conditions:

Condition 43

The licensee must complete and provide to the NT EPA a Monitoring Report, as prescribed by this licence, by 31 May each year;

Condition 44

The licensee must ensure that each Monitoring Report:

44.1 is prepared in accordance with the requirements of the NT EPA 'Guideline for Reporting on Environmental Monitoring';

44.2 includes a tabulation of all monitoring data required as a condition of this licence. Data must be provided electronically in Microsoft Excel format;

44.3 includes long term trend analysis of monitoring data to demonstrate any environmental impact associated with the activity over a minimum period of three years (where the data is available). Data used in the analysis must be provided electronically in Microsoft Excel format; and

44.4 includes an assessment of environmental impact from the activity.

1.2 Site Details

The site operates as the waste transfer station for the Palmerston area. The site area is approximately 16ha, however the main operational area used for storage of waste occupies <2ha shown in Figure 1-1. The majority of the operational area of the site is covered with bitumen, except for the green waste area and the truck access to the general waste skip bins, which remain unsealed. Some parts of the site are grassed, but no waste is stored or contained in these grassy areas (EcOz, 2016). The site details are provided in Table 1-1 below.

Table 1-1 Site details*

Item	Description
Site Location	Site is located south of the suburb of Bellamack, on the southern side of Elrundie Avenue, and is accessed via the existing Flack Road and Durack Road
Site Area	Site Area – approximately 16ha Operational Areas – <2ha shown in Figure 1-1
Municipality	Palmerston
Planning Zone	GI – General Industry
Planning Overlays	Land subject to flooding – Eastern boundary
Current Use	A waste transfer station
Surround land uses	South: Native bushland and Adelaide to Darwin railway line (800m) and estuarine mangrove flats located ~1,100m. North: Suburban subdivisions along Elrundie Avenue (<500m) East: Predominantly vacant land West: Predominantly vacant land South-east: Old decommissioned landfill
Surrounding Receptors	Nearby receptors comprise: Suburban residents (nearest >300m) Onsite worker/s and public user/s Waterways including two unnamed drainage lines and Elizabeth River approximately 2km south of the site Ecological receptors (terrestrial/aquatic flora & fauna) Recreational user/s in surroundings Groundwater aquifers and shallow seasonal water table
Topography and Drainage	The site typically slopes from north to south. The site has two drains that flow from north to south and discharge into the Elizabeth River. Drainage is influenced by a ridge that runs on a north-south trajectory through the site, thus shedding water toward the east and west respectively (Figure 1-2)
Geology	Geoscience Australia mapping shows that the site's underlying geology is mainly sedimentary rocks. Soils are primarily sandy, with variations of sandy clay and sandy silt, underlain by claystone and siltstone. This suggests that the soils are relatively porous, allowing water to move both vertically and laterally through the soil profiles.

Item	Description
Hydrogeology	Groundwater direction is south-west towards Darwin Harbour. Groundwater depth is generally between 20m and 40m. Previous assessment and hydrogeological studies undertaken by EcOz Environmental indicates that there is a deeper, high yielding aquifer which is unlikely to be impacted by the sites works. There is also a shallower water table that fluctuates seasonally and is tidally influenced in the eastern portion of the site.

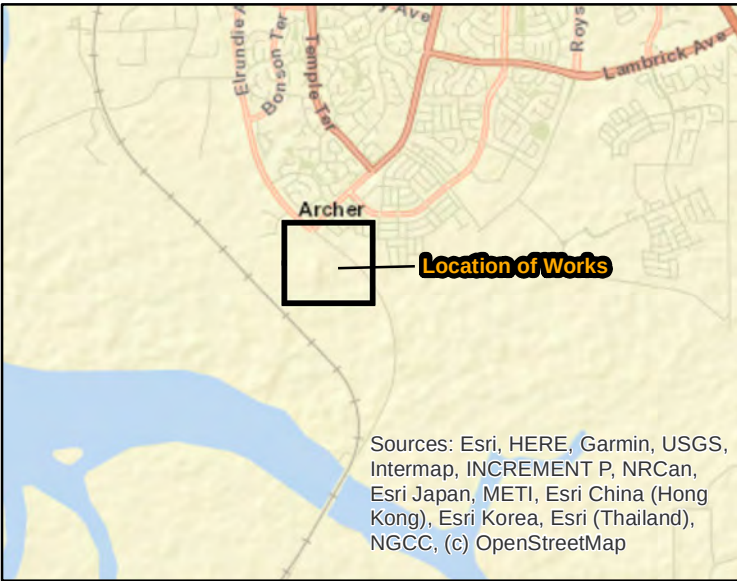
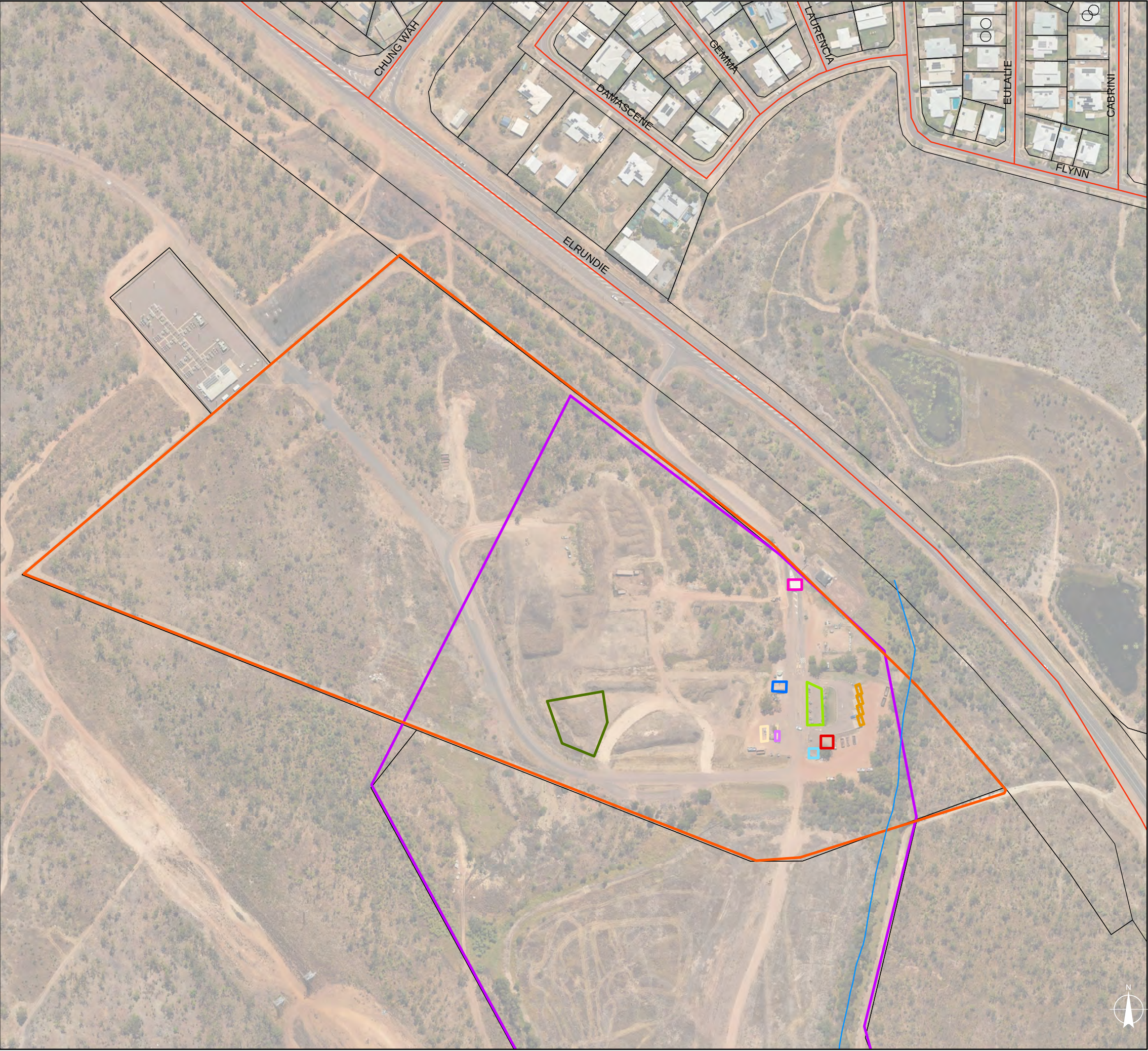
Site details are taken from EcOz, 2016

Key site features and operational area of the site are provided in Figure 1-1.

1.3 Activities Overview

A list of operational activities is provided below:

- Receiving of general waste
- Receiving of listed wastes as per EPL 233-02
- Receiving of green waste
- Mulching
- Receiving of recyclables including carboards, steel, white goods
- General operation activities including truck, excavator and forklift movement



**Archer
Waste Transfer Facility**

Figure 1-1 Key Features

Legend

- Roads
- Green Waste
- Paint
- White Goods
- Scrap Metal
- Waste Batteries
- Waste Oil
- Dry Recycling
- Gatehouse
- Waste Transfer Bin
- Archer Waste Facility
- Old Facility
- Stream

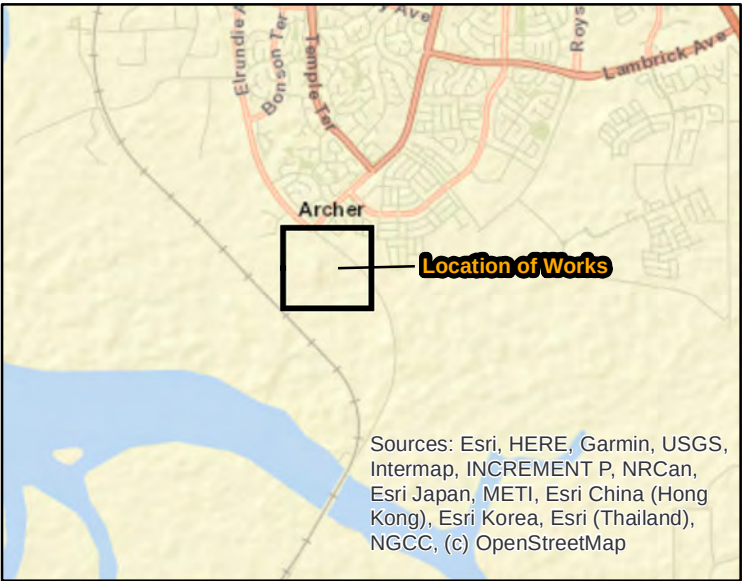
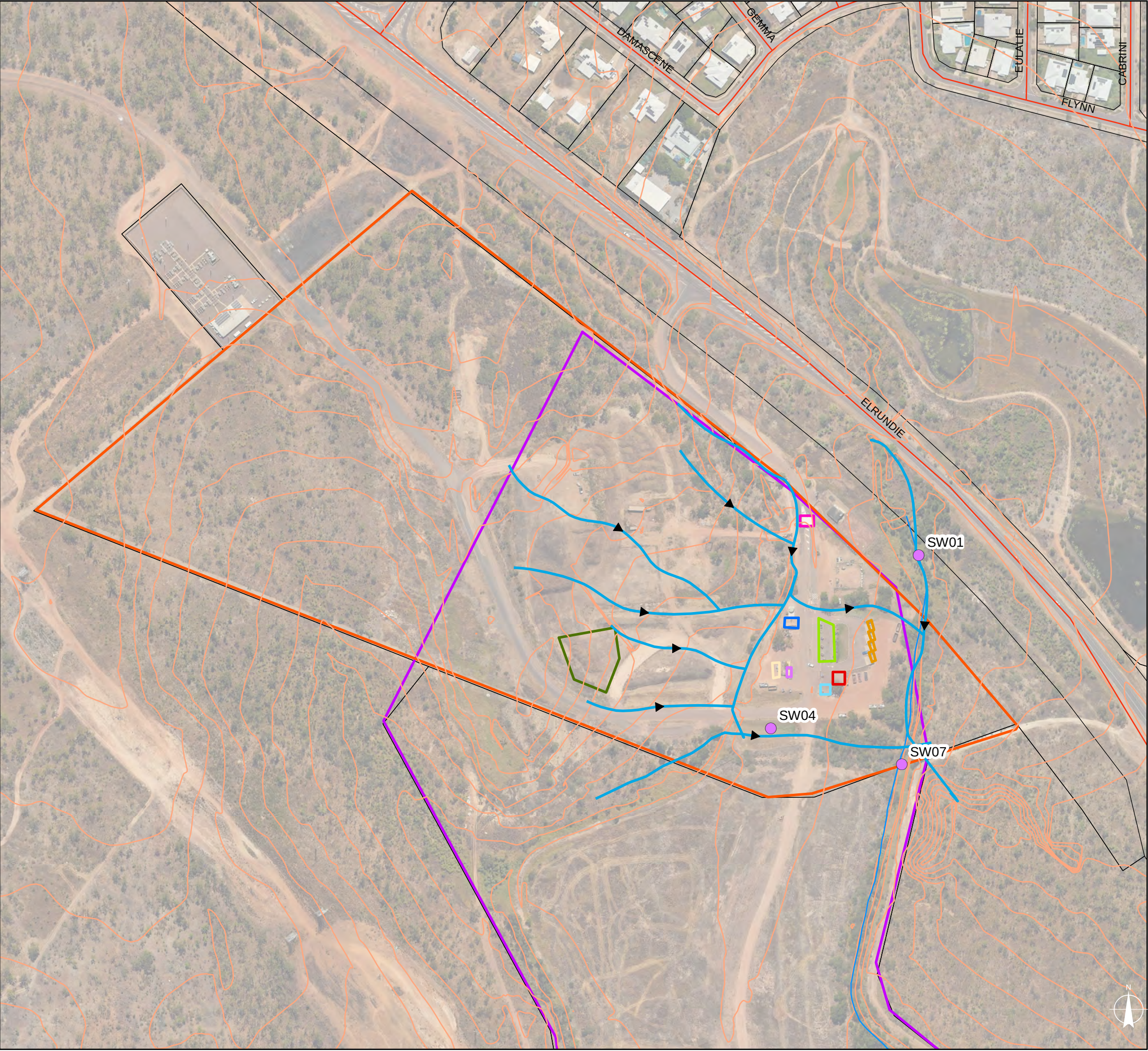
DATA SOURCE:
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CNES/Airbus DS, USDA, USGS, AeroGRID,
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Archer Waste Transfer Facility

Figure 1-2 Water Pathways

Legend

● Compliance Sites	▭ Green Waste
— Stream	▭ Paint
— Contours 1m	▭ White Goods
— Roads	▭ Scrap Metal
▭ Archer Waste Facility	▭ Waste Batteries
▭ Old Facility	▭ Waste Oil
	▭ Dry Recycling
	▭ Gatehouse
	▭ Waste Transfer Bin

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Section 2 Monitoring Program

Monitoring was undertaken in accordance with the monitoring program developed in the Water Quality Monitoring and Management Plan (sampling locations and analytical suite) (Ecoz, 2016), EPL233-02, CDM Smith Standard Operating Procedures (SOP) for Surface Water (CDM Smith, 2022) and the following standards and guidelines:

- Australian/New Zealand Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998), Standards Australia, New South Wales.
- Australian/New Zealand Standard on Water Quality Sampling - Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998), Standards Australia, New South Wales.
- Australian Standard/New Zealand Standard on Water Quality Sampling - Part 10: Guidance on sampling of waste waters (AN/NZS 5667.10:1998), Standards Australia, New South Wales.

2.1 Surface Water Monitoring

Surface water samples were collected from 3 locations (Table 2-1 and Figure 2-1). Monthly samples were collected when surface water was flowing during the wet season (December 2024 to April 2025).

Samples were collected using a telescopic sample pole with a sample cup attached. The sample pole was lowered below the water surface and samples collected. The sample cup was triple washed with water from the sample site before samples were collected.

In-situ parameters were recorded at each sample site including pH, Temp, EC, Redox, DO and Turbidity. These parameters were measured by placing a calibrated water quality meter (Aquaread) into a triple washed cup containing the water sample and results recorded on a field sheet. The water quality meter is calibrated prior to mobilising to site to ensure accurate readings of in-situ measurements. Calibration records for the water quality meter are provided in Appendix A and surface water field records are included Appendix B.

Samples collected for laboratory analysis were transferred directly from the sample cup to the specific laboratory supplied bottles. The analytical suite is detailed in Table 2-2.

Sample water for primary dissolved metals analysis was filtered through a 0.45µm syringe filter into the appropriate bottle for dissolved metals analysis. Disposable powderless nitrile gloves were worn during sample handling and changed between sample sites to prevent cross-contamination.

All samples were dispatched to the NATA accredited laboratory under a chain of custody in accordance with the surface water sampling SOP (Appendix C).

Laboratory results for the surface water samples were compared against EPL233-02 trigger values.

Table 2-1 Sample Locations

Sample Name	Rationale	Latitude	Longitude
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Locations results reportable under EPL233-02.	715054	8615118
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Locations results reportable under EPL233-02.	714895	8614982

Sample Name	Rationale	Latitude	Longitude
SW07 ¹	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.	715031	8614965

Table 2-2 Sample analytical program and trigger values

Parameter	Unit	Trigger value
Field Measurement		
pH	pH units	6 – 8.5 ³
Temperature	°C	-
Electrical Conductivity (EC)	µS/cm	-
Dissolved Oxygen (DO)	% saturation	80 – 100 ³
Turbidity	NTU	-
Metals		
Cadmium (Ca)	µg/L	5.5 ⁷
Chromium (Cr)	µg/L	4.4 ^{6,7}
Copper (Cu)	µg/L	1.3 ⁷
Lead (Pb)	µg/L	4.4 ⁷
Mercury (Hg)	µg/L	0.4 ⁷
Nickel (Ni)	µg/L	70 ⁷
Zinc (Zn)	µg/L	15 ⁷
Other		
Chemical Oxygen Demand (COD)	mg/L	-
Total Suspended Solids (TSS)	mg/L	10 ³
Total Dissolved Solids (TDS)	mg/L	-
Nutrients		
Total Nitrogen (TN)	µg/L	20 ³
Total Phosphorous (TP)	µg/L	300 ³
Ammonia (NH ₃ as N)	µg/L	30 ³
Hydrocarbons		
Total Recoverable Hydrocarbons (TRH) (C6-C40)	µg/L	-
Benzene	µg/L	700 ⁷
Toluene	µg/L	-

Parameter	Unit	Trigger value
Ethylbenzene	µg/L	-
Xylene	µg/L	-
Naphthalene	µg/L	70 ⁷

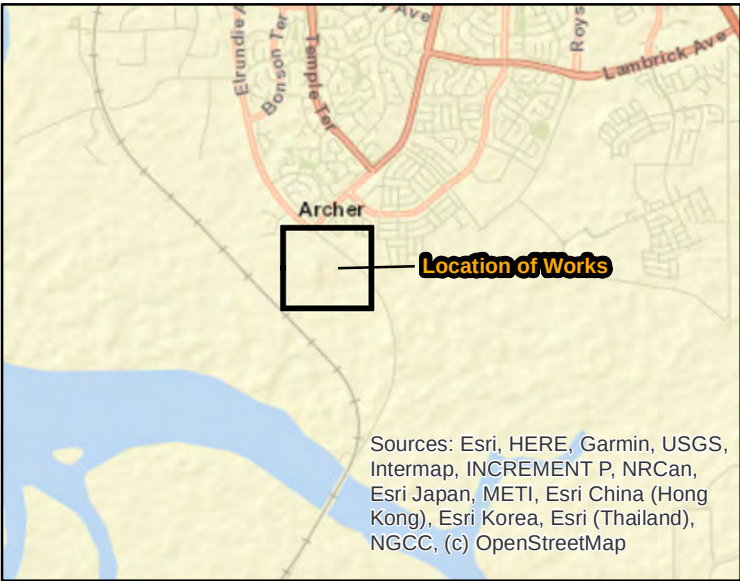
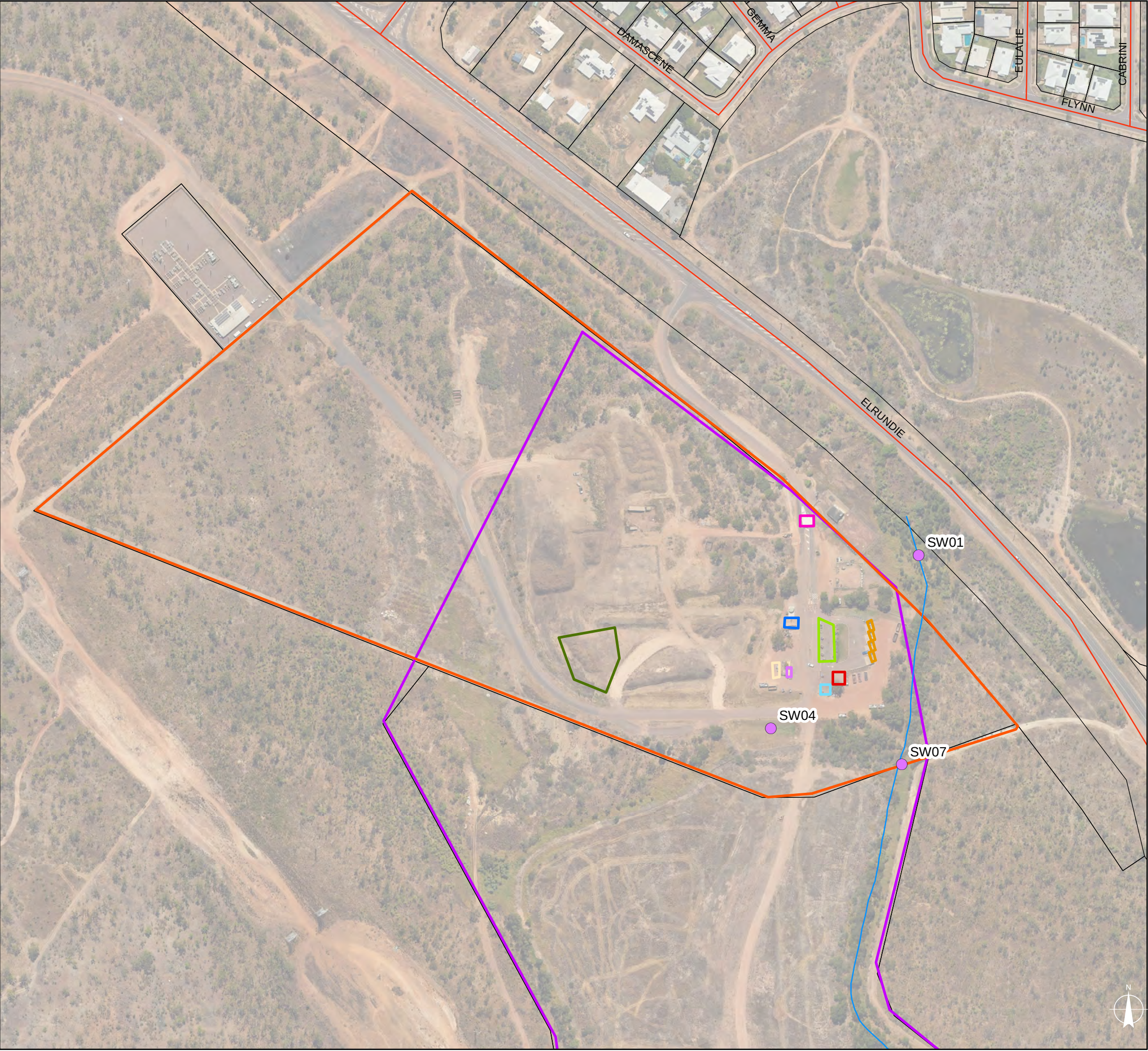
1. Trigger values only apply to monitoring location SW07
2. Only during months December to March
3. Based on Darwin Harbour Water Quality Objectives (Marine and Estuary Systems – Upper Estuary)
4. Estimate the flow at time of sampling
5. Analyse for Trivalent and Hexavalent Chromium if total chromium exceeds trigger value
6. Based on Hexavalent Chromium 95% species protection ANZECC Water Quality Guidelines 2018 (ANZG 2018)
7. Based on 95% species protection for marine water ANZECC Water Quality Guidelines 2018 (ANZG 2018)

2.2 Monitoring undertaken during the reporting period

Table 2-3 outlines the four monitoring events undertaken during the reporting period and compliance against EPL233-02 monitoring requirements. There were non-compliances in November 2024 at all three sample sites and all months at site SW07. Exceedances and non-compliance in Nov were due to a lack of flow during the sample event. Appendix D presents copies of all monitoring event reports. It is noted that the classification of compliance/non-compliance relates to regulatory compliance at site SW07 only.

Table 2-3 Monitoring undertaken during the reporting period

Site	Dates sampled	Compliance with sampling frequency	Compliance with analytes
SW01	21 November 2024	No data – not sampled	Non-compliant
	29 January 2025	Sampled	Compliant
	24 February 2025	Sampled	Compliant
	19 March 2025	Sampled	Compliant
SW04	21 November 2024	No data - dry	Non-compliant
	29 January 2025	Sampled	Compliant
	24 February 2025	Sampled	Compliant
	19 March 2025	Sampled	Compliant
SW07	21 November 2024	No data - dry	Non-compliant
	29 January 2025	Sampled	Non-compliant
	24 February 2025	Sampled	Non-compliant
	19 March 2025	Sampled	Non-compliant



Archer Waste Transfer Facility

Figure 2-2 Sample Locations

Legend

- Compliance Sites
- Stream
- Roads
- Green Waste
- Paint
- White Goods
- Scrap Metal
- Waste Batteries
- Waste Oil
- Dry Recycling
- Gatehouse
- Waste Transfer Bin
- Archer Waste Facility
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Section 3 Results and Discussion

Field and laboratory results for the 2024-2025 wet season are presented in Table 3-1 compared against the EPL233-02 trigger values noting that the trigger values apply only to the downstream compliance point SW07. Laboratory certificates and documents are provided in Appendix D. The long-term surface water quality results are provided in Appendix E.

During the reporting period, several trigger value exceedances were recorded at SW07. During an instance where SW07 could not be sampled in November 2024 due to insufficient water availability—monitoring was instead conducted at the upstream site, SW05. Exceedances were observed throughout the reporting period for copper, TSS, TN, TP, ammonia, and DO. These exceedances are discussed further below.

Copper concentrations exceeded the trigger value at SW07 on one occasion on the 29th of January 2025. This exceedance does not appear to reflect a persistent trend, as it was not supported by historical data, and is therefore not considered significant.

DO was consistently below the trigger value of 80-100% throughout all monitoring events. The 80% saturation trigger value comes from data collected in the open tidal waters of Darwin Harbour. Darwin Harbour displays typical water quality for waters around the Darwin region, in that whilst it provides a good measure for the general conditions in the ultimate receptor (Darwin Harbour), these values are not typically representative of rain-generated surface water. The lowest result of 17.6% was recorded at SW05 (in lieu of SW07 not able to be sampled) on the 21st of November 2024. This low reading is likely due to the minimal rainfall during this period meaning waterflow. The persistent underperformance in DO levels across the site may reflect natural site conditions, limited water movement, or organic load influencing oxygen availability. These trends have also been noted in previous monitoring years.

TSS also exceeded the trigger at compliance site SW07 every sampling event, peaking at 99 mg/L on 19 March 2025. The concurrent exceedances of TSS and nutrient parameters (TN, TP, and ammonia) at SW07, particularly the peaks observed on 19 March 2025, align with historical patterns linked to high-flow events. This suggests that the elevated concentrations are likely driven by sediment and nutrient mobilisation from upstream catchment areas. The timing and magnitude of these peaks indicate a pulse of runoff, potentially carrying accumulated materials from upstream sources, rather than being the result of localised inputs.

As discussed further in Appendix F, background sites outside of the confines of the facility also exhibited elevated TSS and nutrient concentrations. This indicates that catchment-level influences, such as upstream land use or natural sources, may be playing a substantial role in the elevated results.

Table 3-1 2024- 2025 Wet Season Results

Analyte	Trigger Values	21 November 2024 ²			29 January 2025			24 February 2025			19 March 2025		
	Site ¹	SW01	SW03	SW05	SW01	SW04	SW07	SW01	SW04	SW07	SW01	SW04	SW07
Cd dissolved	0.0055 mg/L	Not sampled due to HSE access concerns	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Cr dissolved	0.0044 mg/L		0.001	<0.001	<0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Cu dissolved	0.0013 mg/L		0.009	<0.001	<0.001	0.004	0.004	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Pb dissolved	0.0044 mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Hg dissolved	0.0004 mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Ni dissolved	0.07 mg/L		<0.001	<0.001	<0.001	0.002	0.002	<0.001	0.001	<0.001	<0.001	<0.001	<0.001
Zn dissolved	0.015 mg/L		0.028	0.008	0.006	0.010	0.008	<0.005	0.012	<0.005	0.012	<0.005	<0.005
TSS	10 mg/L		280	22	<5	11	89	8	22	51	9	9	99
TN	0.3 mg/L		4.0	1.7	0.4	7.5	7.0	0.6	3.0	3.8	0.7	3.4	8.4
TP	0.03 mg/L		0.54	0.15	0.06	1.06	1.78	0.13	1.15	0.81	0.09	0.63	4.25
NH ₃ as N	0.02 mg/L		0.18	0.10	0.02	0.55	0.89	0.16	0.44	0.85	0.32	1.25	1.01
Benzene	0.7 mg/L		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Naphthalene	0.07 mg/L		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Dissolved Oxygen	80-100%		64.1	17.6	68.2	61.2	61.2	11.1	7.2	44.7	37.6	20.4	26.6
pH	6.00-8.50		6.58	6.34	7.34	7.19	6.79	6.61	6.59	6.50	5.95	6.55	6.69

¹ Shaded blue cells denote where parameters were reported outside of trigger value or range

² SW03 and SW07 was dry during the sampling event in November 2024 and therefore results are presented for the adjacent sites SW03 and SW05

3.1 Trends 2018-2025

Trend analysis graphs for key parameters, displaying trends in data from 2018 to 2025 is detailed in Appendix E.

Cadmium, mercury, nickel, benzene, and naphthalene have consistently remained below the EPL213-02 trigger values since monitoring began in 2018. Chromium and lead generally have remained below the EPL213-02 trigger values with the exception of an outlier sample event. Copper concentrations tend to be higher at the beginning of the wet season and decline as the season progresses. This statement reflects observations from long-term monitoring data in the Darwin region, where elevated copper concentrations are often recorded at the onset of the wet season. These peaks are typically attributed to the first flush of surface runoff mobilising accumulated contaminants from catchment surfaces.

Dissolved oxygen levels consistently fall outside the EPL213-02 trigger value range. These levels are generally lower later in the wet season when water levels are reduced.

pH values mostly remain within the acceptable range, although a gradual decline is observed later in the wet season, indicating increasing acidity as water levels drop.

Total Suspended Solids (TSS) at monitoring site SW07 have consistently exceeded the prescribed trigger values, with concentrations fluctuating throughout the wet season. Despite this variability, there is a slight overall decline in TSS levels, except for two notable spikes in February 2022 and 2023, which recorded elevated concentrations of 558mg/L and 984mg/L, respectively.

All nutrient parameters—ammonia, total nitrogen, and total phosphorus—have consistently exceeded the EPL213-02 trigger values since monitoring commenced in 2018. These are discussed in further detail in Section 3.2.

The observed decline in exceedances towards the end of each wet season potentially indicates that the dissolvable fraction reduces from flushing, then builds up again prior to the next wet season. The levels observed at this site are partly contributed to upstream catchment inputs which are likely to persist outside of any management actions taken by the AWTF operator. Additionally, the modest downward trend in dissolved metal and nutrient concentrations since 2018 supports the view that on-site management measures are effectively improving the quality of runoff water.

3.2 Recommendations

Based on recent wet-season sampling and the long-term monitoring record, it is evident that the current trigger values for nutrients and turbidity do not reflect site-specific conditions. Ammonia, TSS, TP and TN not only exceed thresholds downstream of the facility but are also elevated at upstream reference locations, indicating that much of the variability originates from background water quality rather than on-site operations. Downstream exceedances closely mirror those upstream in both timing and magnitude, suggesting that the facility alone is not the primary driver of these high readings. This is further discussed in the comprehensive Annual Report presented in Appendix F.

It is recommended that the trigger values are recalibrated using a site-specific derivation approach through establishing background baselines from upstream data (for example, the 80th percentile of wet-season readings) and then apply a modest downstream adjustment to capture only facility-related impacts.

It is recommended that the CoP consider planned infrastructure development in the surrounding region when interpreting future water quality monitoring results. It is understood that significant roadworks and infrastructure upgrades are proposed in proximity to the site, including along Roystonea Avenue, Channel Island Road, and Elrundie Road. These construction activities have the potential to influence surface water quality entering the site. Such off-site works may introduce additional sediment loads or contaminants into the catchment area, potentially resulting in exceedances of trigger values at downstream monitoring locations. These exceedances, while recorded within the sampling area, may not reflect impacts directly attributable to on-site activities and instead may be linked to third-party land disturbance or stormwater redirection.

Accordingly, it is recommended that the CoP closely monitor regional development schedules and maintain ongoing communication with the regulator on this matter. Where feasible, temporary adjustments to the monitoring program—such as increased sampling frequency during construction phases, or the inclusion of additional upstream reference sites—may assist in distinguishing between site-related impacts and external influences. This proactive approach will

support a more accurate interpretation of monitoring data and ensure that compliance assessments remain fair, evidence-based, and contextually informed.

Based on the findings of this report, along with the historical monitoring record, it is further recommended that the permanent sampling locations associated with the EPL be reviewed and adjusted to improve the representativeness of site-specific monitoring. Specifically, it is recommended that site SW03 be adopted in place of SW04. SW03 provides more direct and reliable data on operational influences, including activities associated with the mulching area and material laydown zones. In contrast, SW04 is more susceptible to inputs from off-site activities, which can compromise its effectiveness in isolating the impacts of on-site operations.

Similarly, replacing SW01 with SW02 as a permanent sampling point would improve the capacity to distinguish between site-derived contamination and external catchment influences. SW02 offers a more appropriate location for detecting changes directly attributable to facility activities, whereas SW01 may reflect broader environmental inputs unrelated to operational processes.

It is also recommended that SW07 be retained as a permanent compliance monitoring location. This site remains a valuable indicator of cumulative impacts, capturing the overall water quality of runoff leaving the site. Its position downstream makes it particularly effective for assessing the net effect of site activities and management controls on surface water quality.

Section 4 Disclaimers and Limitations

This report has been prepared by CDM Smith Australia Pty Ltd (CDM Smith) for the sole benefit of Palmerston City Council for the sole purpose of preparing a Conceptual Site Model associated with current operational activities.

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- has relied upon and presumed the accuracy of this information;
- has not verified the accuracy or reliability of this information (other than as expressly stated in this report);
- has not made any independent investigations or enquiries in respect of those matters of which it has no actual knowledge at the time of giving this report to Palmerston City Council; and
- makes no warranty or guarantee, expressed or implied, as to the accuracy or reliability of this information.

In recognition of the limited use to be made by Palmerston City Council of this report, Palmerston City Council agrees that, to the maximum extent permitted by law, CDM Smith (including its officers and employees) shall not be liable for any losses, claims, costs, expenses, damages (whether in statute, in contract or tort for negligence or otherwise) suffered or incurred by Palmerston City Council or any third party as a result of or in connection with the information, findings, opinions, estimates, recommendations and conclusions provided in the course of this report.

If further information becomes available, or additional assumptions need to be made, CDM Smith reserves its right to amend this report.

Section 5 References

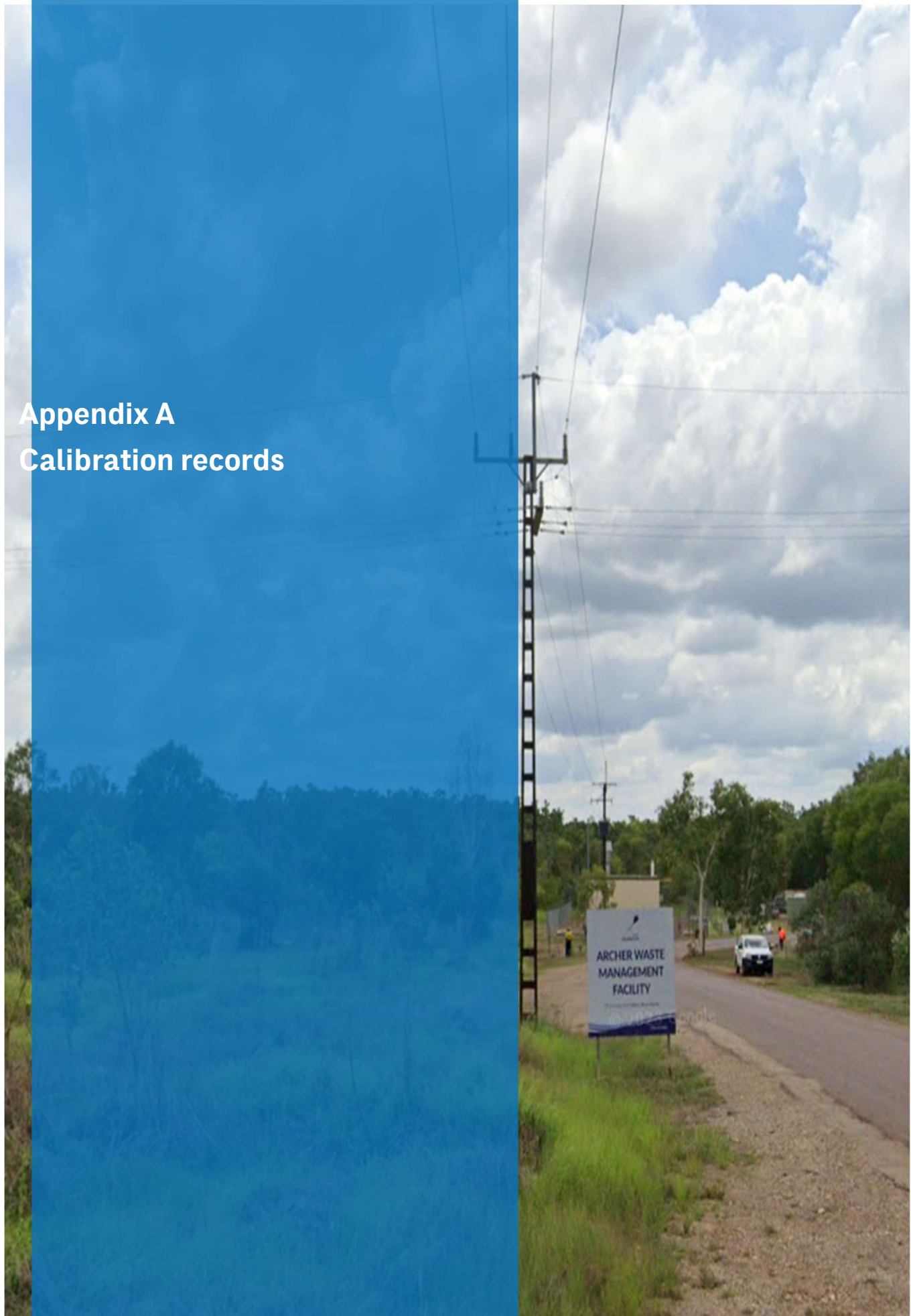
CDM Smith (2022). Standard Operating Procedures for Sampling Surface Waters, February 2022.

Ecoz (2016). Updated Conceptual Site Model and Risk Assessment for the Archer Waste Transfer Station, Palmerston. Prepared for City of Palmerston, October 2016.

Ecoz (2023). EPL233 Monitoring Report Archer Waste Transfer Station. Prepared for City of Palmerston, May 2023.

Appendix A

Calibration records



Job Name: Archer		Job No.: 1001837			
CALIBRATION NOTES					
DATE and TIME	EQUIPMENT MODEL and SERIAL NUMBER	CALIBRATION METHOD / STANDARD	CALIBRATION RESULT	OTHER COMMENTS	INITIAL
18/11	TPS	EC zero	0	PASS	T.C
		EC 1413 $\mu S/cm$	1306	PASS	T.C
		EC 12.88 ms/cm	12.22	PASS	T.C
		EC 58 ms/cm	53.97 read 58.00 actual	PASS	T.C
18/11	" "	pH 7.00	7.01	PASS	T.C
		pH 4.00	4.01	PASS	T.C

Equipment Field Calibration Sheet

Job Name: Archer SW

Job No.: 1001837

CALIBRATION NOTES

[illegible]



Equipment Field Calibration Sheet

Job Name: ~~XXXXXXXX~~ Archer		Job No.: 1001837			
CALIBRATION NOTES					
DATE and TIME	EQUIPMENT MODEL and SERIAL NUMBER	CALIBRATION METHOD / STANDARD	CALIBRATION RESULT	OTHER COMMENTS	INITIAL
23/2/25 6:00 PM	Aquaread	RapidCal	100%	PASS	TC
		D0100%	100%	PASS	TC
	Turbidimeter	<0.10	0.05	PASS	TC
		15	15	PASS	TC
		100	100	PASS	TC
		750	750	PASS	TC



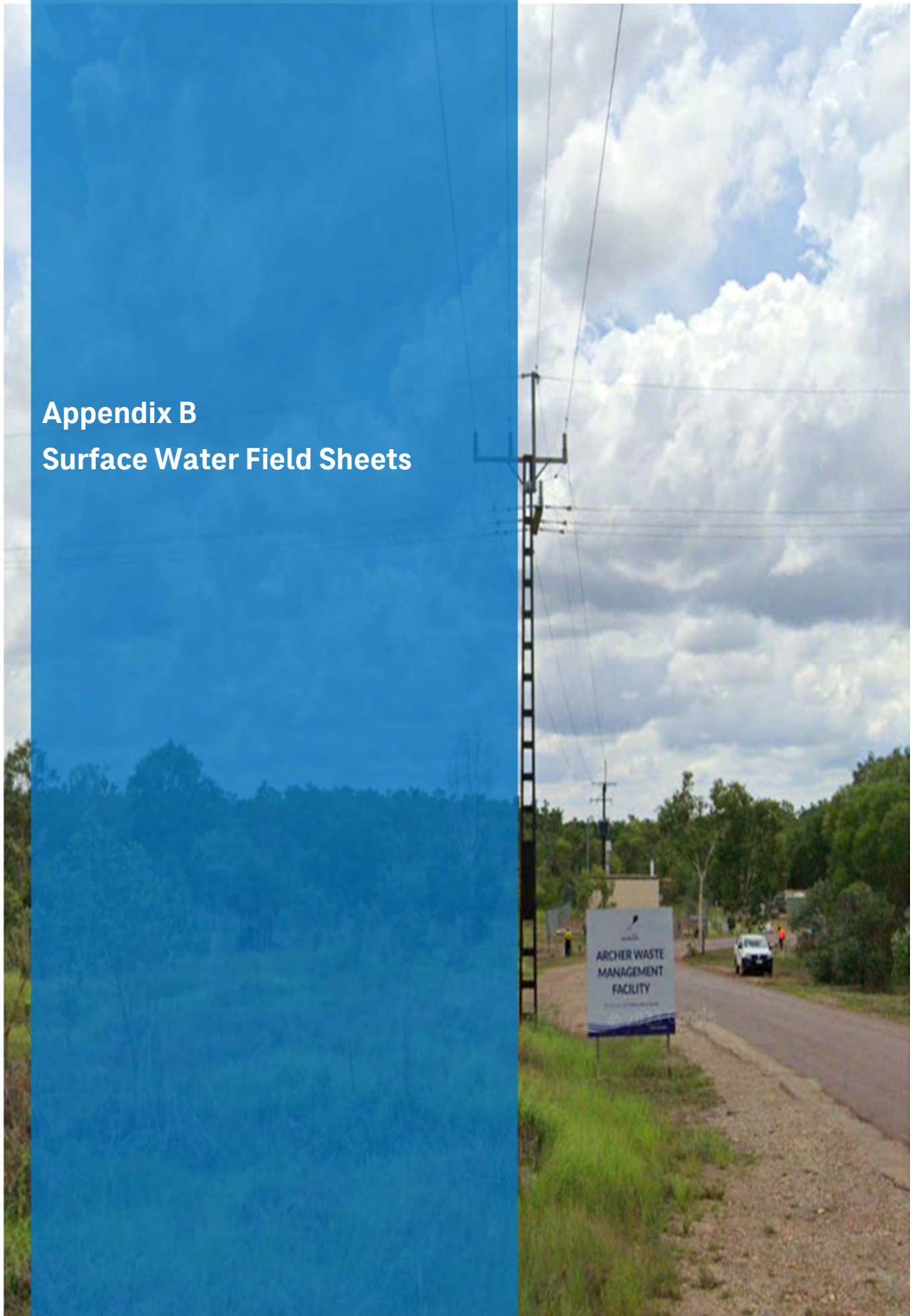
Job No.: 1001837

CALIBRATION NOTES

[illegible]

Appendix B

Surface Water Field Sheets



Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 4:15 21.11.24	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: Tayhliq		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	None
ODOUR	No odour	AQUATIC PLANTS	grass
SURFACE SCUM/ALGAE	None	EROSION	N/A
RIPARIAN CONDITION	grass healthy on one side, dead on other	GROSS POLLUTANTS	Sheen present at dump running towards site (not present near sample site)
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	shallow pool 1-2cm	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy / overcast , recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29	
D.O	%	66.9	
E.C	µS/cm	274	
TDS	mg/L	173	
Salinity	ppt	0.09	
pH		6.35	
ORP	mV	+60	
Turbidity	NTU	31	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaredd		Turbidlimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 4:35 21.11.24	
SITE NUMBER / NAME: SW03			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	dark brown turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	No odour	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	No	EROSION	No
RIPARIAN CONDITION	lined w/ green grass	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	~~open~~ open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10cm	WATER FLOW (m/sec)	No flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy / overcast, recent rainfall			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.9	
D.O	%	64.1	
E.C	µS/cm	373	
TDS	mg/L	242	
Salinity	ppt	0.12	
pH		6.58	
ORP	mV	33.4	
Turbidity	NTU	500	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 5:15 21.11.24	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	lizard, insects (mozzies)
ODOUR	No odour	AQUATIC PLANTS	Paperbark Pandanus
SURFACE SCUM/ALGAE	None	EROSION	N/A
RIPARIAN CONDITION	good/healthy	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	Natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5 cm	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Cloudy / overcast, recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.4	
D.O	%	17.6	
E.C	µS/cm	857	
TDS	mg/L	232	
Salinity	ppt	0.11	
pH		6.34	
ORP	mV	16.3	
Turbidity	NTU	18	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 5:45 21.11.24	
SITE NUMBER / NAME: ~~444~~ BG02			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	Frogs nearby
ODOUR	no odour	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	none	EROSION	N/A
RIPARIAN CONDITION	good/healthy grass	GROSS POLLUTANTS	Sheen in nearby puddle (not sampled)
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	No flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy, recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.5	
D.O	%	23.8	
E.C	µS/cm	340	
TDS	mg/L	221	
Salinity	ppt	0.11	
pH		6.38	
ORP	mV	-74	
Turbidity	NTU	28	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 6:15 21.11.24	
SITE NUMBER / NAME: BGO1			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	none	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	None	EROSION	steep bank
RIPARIAN CONDITION	Bank eroded, rocky, grasses	GROSS POLLUTANTS	litter on bank
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15cm	WATER FLOW (m/sec)	none
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy, recent rains			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.3	
D.O	%	77.8	
E.C	µS/cm	51	
TDS	mg/L	33	
Salinity	ppt	0.02	
pH		6.26	
ORP	mV	74.4	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquared		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 7:30 29.1.25	
SITE NUMBER / NAME: BGO1			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	~~N/A~~ tadpole eggs
ODOUR	N/A	AQUATIC PLANTS	grasses, plants
SURFACE SCUM/ALGAE	N/A	EROSION	water in eroded drain
RIPARIAN CONDITION	eroded, plants on bank	GROSS POLLUTANTS	litter upstream
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	.10 (10cm)	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, overnight rain, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.00	
D.O	%	96.4	
E.C	µS/cm	98	
TDS	mg/L	63	
Salinity	ppt	0.03	
pH		6.08	
ORP	mV	+174.6	
Turbidity	NTU	85	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidity meter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 8:00 29.1.25	
SITE NUMBER / NAME: BGO2			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy, plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 cm	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, overnight rain, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.85	
D.O	%	50.9	
E.C	µS/cm	99	
TDS	mg/L	64	
Salinity	ppt	0.03	
pH		6.27	
ORP	mV	+108.2	
Turbidity	NTU	26	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 8:20	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: K		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear but brown	PRESENCE OF AQUATIC FAUNA	~~bugs~~ bugs underwater
ODOUR	N/A	AQUATIC PLANTS	grasses, plants
SURFACE SCUM/ALGAE	debris (leaf litter)	EROSION	N/A
RIPARIAN CONDITION	good, healthy plants	GROSS POLLUTANTS	Litter, glass / plastic bottles
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15cm	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, rain overnight, no wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.5	
D.O	%	69	
E.C	µS/cm	140	
TDS	mg/L	89	
Salinity	ppt	0.04	
pH		5.69	
ORP	mV	+150.9	
Turbidity	NTU	14	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 8:45	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	sheen	EROSION	N/A
RIPARIAN CONDITION	Plants	GROSS POLLUTANTS	sheen, litter
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	slow, slight flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, partial sun, humid, rain overnight, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	60.3	
E.C	µS/cm	281	
TDS	mg/L	149	
Salinity	ppt	0.07	
pH		5.48	
ORP	mV	152.8	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 9:00	
SITE NUMBER / NAME: SW03			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	dark brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15 cm	WATER FLOW (m/sec)	slow flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, partial sun, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.68	
D.O	%	58.2	
E.C	µS/cm	966	
TDS	mg/L	627	
Salinity	ppt	0.41	
pH		7.02	
ORP	mV	+38	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001857		DATE and TIME: 29.1.25 9:15	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	sheen on edges	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	sheen on edges
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	0.2? flowing
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, sun out, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.6	
D.O	%	61.2	
E.C	µS/cm	969	
TDS	mg/L	628	
Salinity	ppt	0.40	
pH		7.19	
ORP	mV	11.7	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use			

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 9:45	
SITE NUMBER / NAME: SWOS			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	bubbles in water
ODOUR	N/A	AQUATIC PLANTS	Pandanus, Paper bark, grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	20cm	WATER FLOW (m/sec)	minimal flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.7	
D.O	%	68.1	
E.C	µS/cm	105	
TDS	mg/L	66	
Salinity	ppt	0.03	
pH		7.40	
ORP	mV	+36.9	
Turbidity	NTU	13	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME:		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural / open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10cm	WATER FLOW (m/sec)	slow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Partly cloudy, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.8	
D.O	%	61.2	
E.C	µS/cm	799	
TDS	mg/L	519	
Salinity	ppt	0.33	
pH		6.79	
ORP	mV	39.4	
Turbidity	NTU	130	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

sampled at junction connecting SW04, SW05 and SW07 - unable to access SW07 due to water

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.7.25 10:30	
SITE NUMBER / NAME: SW01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	underwater bugs
ODOUR	N/A	AQUATIC PLANTS	grass, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	deep (0.50 - 1m)	WATER FLOW (m/sec)	Slight flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sun out, clouds around, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	31	
D.O	%	68.2	
E.C	µS/cm	67	
TDS	mg/L	44	
Salinity	ppt	0.02	
pH		7.34	
ORP	mV	+85.7	
Turbidity	NTU	17	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquared		turbidimeter

Any other comments or special procedures (see over):

sampled slightly upstream

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 7:30	
SITE NUMBER / NAME: BG01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear/brown	PRESENCE OF AQUATIC FAUNA	~~no~~ tadpoles
ODOUR	N/A	AQUATIC PLANTS	Grasses
SURFACE SCUM/ALGAE	N/A	EROSION	Yes, steep banks
RIPARIAN CONDITION	eroded, plants healthy	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.6	
D.O	%	66.7	
E.C	µS/cm	113	
TDS	mg/L	71	
Salinity	ppt	0.04	
pH		6.45	
ORP	mV	+65.2	
Turbidity	NTU	9.5	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 7:45	
SITE NUMBER / NAME: BG02			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear/brown	PRESENCE OF AQUATIC FAUNA	N/A (frog sounds)
ODOUR	N/A	AQUATIC PLANTS	grasses, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.4	
D.O	%	35.2	
E.C	µS/cm	164	
TDS	mg/L	107	
Salinity	ppt	0.05	
pH		5.94	
ORP	mV	-43.7	
Turbidity	NTU	21	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 8:15	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Clear/brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Shewn near edge	EROSION	N/A
RIPARIAN CONDITION	healthy plants	GROSS POLLUTANTS	N/A (rubbish upstream)
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.6	
D.O	%	61.5	
E.C	µS/cm	229	
TDS	mg/L	146	
Salinity	ppt	6.07	
pH		5.71	
ORP	mV	+26.9	
Turbidity	NTU	5.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 8:40	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	Spider on water
ODOUR	Slight - Possibly stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.8	
D.O	%	17	
E.C	µS/cm	678	
TDS	mg/L	444	
Salinity	ppt	8.29	
pH		6.17	
ORP	mV	-62.8	
Turbidity	NTU	15	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 9:00	
SITE NUMBER / NAME: ~~101~~ SW03			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Dark brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	~~slight~~ slight - Poss stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	~~sheen~~ Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	24.3	
E.C	µS/cm	1047	
TDS	mg/L	682	
Salinity	ppt	0.50	
pH		6.61	
ORP	mV	-25.7	
Turbidity	NTU	8.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 9:30	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	~~slight~~ slight - possibly stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined, concrete drain/pipe under road e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.3	
D.O	%	7.2	
E.C	µS/cm	1349	
TDS	mg/L	872	
Salinity	ppt	0.63	
pH		6.59	
ORP	mV	-126.7	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquavead		Turbidimeter

Any other comments or special procedures (see over):

Sampled downstream near drain

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 10:15	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A mosses
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Sheen, algae	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined/natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.4	
D.O	%	44.7	
E.C	µS/cm	1125	
TDS	mg/L	725	
Salinity	ppt	0.53	
pH		6.50	
ORP	mV	-37.3	
Turbidity	NTU	38	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Sampled at junction of SW05 + SW04

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 10:00	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear / brown	PRESENCE OF AQUATIC FAUNA	splashes in water - fish? mozzies
ODOUR	N/A	AQUATIC PLANTS	Paperbark, grasses pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.98	
D.O	%	23	
E.C	µS/cm	542	
TDS	mg/L	347	
Salinity	ppt	0.23	
pH		6.40	
ORP	mV	-27.0	
Turbidity	NTU	11	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 14.2.25 11:00	
SITE NUMBER / NAME: B603			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, shrubs tree
SURFACE SCUM/ALGAE	Algae, leaf litter	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Puddle of water above greenwaste e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.03	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	39.3	
D.O	%	91.4	
E.C	µS/cm	541	
TDS	mg/L	351	
Salinity	ppt	0.23	
pH		6.79	
ORP	mV	-79.4	
Turbidity	NTU	45	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

- 12.519335, 130.97672

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.23 11:30	
SITE NUMBER / NAME: SW01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	trees, grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	> 1m	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.1	
D.O	%	11.1	
E.C	µS/cm	127	
TDS	mg/L	83	
Salinity	ppt	0.04	
pH		6.61	
ORP	mV	-39.7	
Turbidity	NTU	12	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 10:40 19.3.25	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown / turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	Stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	grassy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.2	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Overcast, no breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.50	
D.O	%	26.6	
E.C	µS/cm	1238	
TDS	mg/L	808	
Salinity	ppt	0.59	
pH		6.69	
ORP	mV	-67.1	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquacread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 10:55	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: TK		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Clear / light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, trees, Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy veg	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, no wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.4	
D.O	%	9.4	
E.C	µS/cm	931	
TDS	mg/L	605	
Salinity	ppt	0.39	
pH		6.15	
ORP	mV	+12.4	
Turbidity	NTU	13	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 1000	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	Stagnant	AQUATIC PLANTS	grasses ↳ dying
SURFACE SCUM/ALGAE	Algae	EROSION	N/A
RIPARIAN CONDITION	grasses - dying	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, clouds, breeze, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.6	
D.O	%	20.4	
E.C	µS/cm	1380	
TDS	mg/L	897	
Salinity	ppt	0.65	
pH		6.55	
ORP	mV	-97.8	
Turbidity	NTU	8.4	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: <i>Archer</i>		DATE and TIME: <i>19.3.25 9:40</i>	
SITE NUMBER / NAME: <i>SWO3</i>			
SAMPLERS NAME: <i>TC</i>		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	<i>light brown</i>	PRESENCE OF AQUATIC FAUNA	<i>fish</i>
ODOUR	<i>N/A</i>	AQUATIC PLANTS	<i>grass</i>
SURFACE SCUM/ALGAE	<i>white surface scum</i>	EROSION	<i>N/A</i>
RIPARIAN CONDITION	<i>grassy</i>	GROSS POLLUTANTS	<i>N/A</i>
TYPE OF DRAINAGE CONSTRUCTION	<i>open unlined</i> e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	<i>0.3</i>	WATER FLOW (m/sec)	<i>0</i>
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: <i>Slight breeze . sunny, clouds around</i>			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	<i>28.7</i>	
D.O	%	<i>6.7</i>	
E.C	µS/cm	<i>1154</i>	
TDS	mg/L	<i>755</i>	
Salinity	ppt	<i>0.55</i>	
pH		<i>6.69</i>	
ORP	mV	<i>-86.4</i>	
Turbidity	NTU	<i>13</i>	
WATER QUALITY EQUIPMENT			
Equipment in use	<i>Aquaread</i>		<i>Turbidimeter</i>

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: <i>Archer</i>		DATE and TIME: <i>19.3.25 9:15</i>	
SITE NUMBER / NAME: <i>SW02</i>			
SAMPLERS NAME: <i>TC</i>		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	<i>light brown, clear</i>	PRESENCE OF AQUATIC FAUNA	<i>grasshopper underwater</i>
ODOUR	<i>N/A</i>	AQUATIC PLANTS	<i>grasses</i>
SURFACE SCUM/ALGAE	<i>Sheen/white scum</i>	EROSION	<i>N/A</i>
RIPARIAN CONDITION	<i>grassy</i>	GROSS POLLUTANTS	<i>N/A</i>
TYPE OF DRAINAGE CONSTRUCTION	<i>open unlined</i> e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	<i>0.1 m</i>	WATER FLOW (m/sec)	<i>0</i>
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions:			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	<i>28.73</i>	
D.O	%	<i>24.6</i>	
E.C	µS/cm	<i>1200</i>	
TDS	mg/L	<i>784</i>	
Salinity	ppt	<i>0.57</i>	
pH		<i>6.46</i>	
ORP	mV	<i>-168.7</i>	
Turbidity	NTU	<i>11</i>	
WATER QUALITY EQUIPMENT			
Equipment in use	<i>Aquaread</i>		<i>Turbidimeter</i>

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 8:30	
SITE NUMBER / NAME: BGO3			
SAMPLERS NAME: JC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, small shrubs, trees
SURFACE SCUM/ALGAE	Algae, sheen	EROSION	N/A
RIPARIAN CONDITION	grasses, muddy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Puddle e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.03	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	~~28.3~~ 28.3	
D.O	%	32.7	
E.C	µS/cm	580	
TDS	mg/L	378	
Salinity	ppt	0.24	
pH		6.33	
ORP	mV	-45.3	
Turbidity	NTU	27	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquavead		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: <i>Archer</i>		DATE and TIME: <i>19-3-25 8:00</i>	
SITE NUMBER / NAME: <i>SW01</i>			
SAMPLERS NAME: <i>TC</i>		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	<i>Brown</i>	PRESENCE OF AQUATIC FAUNA	~~None~~ <i>Dubbles possibly fish</i>
ODOUR	<i>N/A</i>	AQUATIC PLANTS	<i>grasses, pandanus</i>
SURFACE SCUM/ALGAE	<i>N/A</i>	EROSION	<i>N/A</i>
RIPARIAN CONDITION	<i>grassy, good</i>	GROSS POLLUTANTS	<i>N/A</i>
TYPE OF DRAINAGE CONSTRUCTION	<i>natural</i> e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	<i>> 1.0</i>	WATER FLOW (m/sec)	
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: <i>Overcast, humid</i>			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	<i>28.1</i>	
D.O	%	<i>37.6</i>	
E.C	µS/cm	<i>119</i>	
TDS	mg/L	<i>74</i>	
Salinity	ppt	<i>0.04</i>	
pH		<i>5.95</i>	
ORP	mV	<i>+11.1</i>	
Turbidity	NTU	<i>8.2</i>	
WATER QUALITY EQUIPMENT			
Equipment in use	<i>Aquaread</i>		<i>Turbidimeter</i>

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 7.30	
SITE NUMBER / NAME: BG02			
SAMPLERS NAME: JC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, trees, Pandanus
SURFACE SCUM/ALGAE	Some ~~thin~~ sheen on surface	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	Shallow 0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Overcast, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.1	
D.O	%	21.3	
E.C	µS/cm	166	
TDS	mg/L	107	
Salinity	ppt	0.05	
pH		5.93	
ORP	mV	-36.3	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

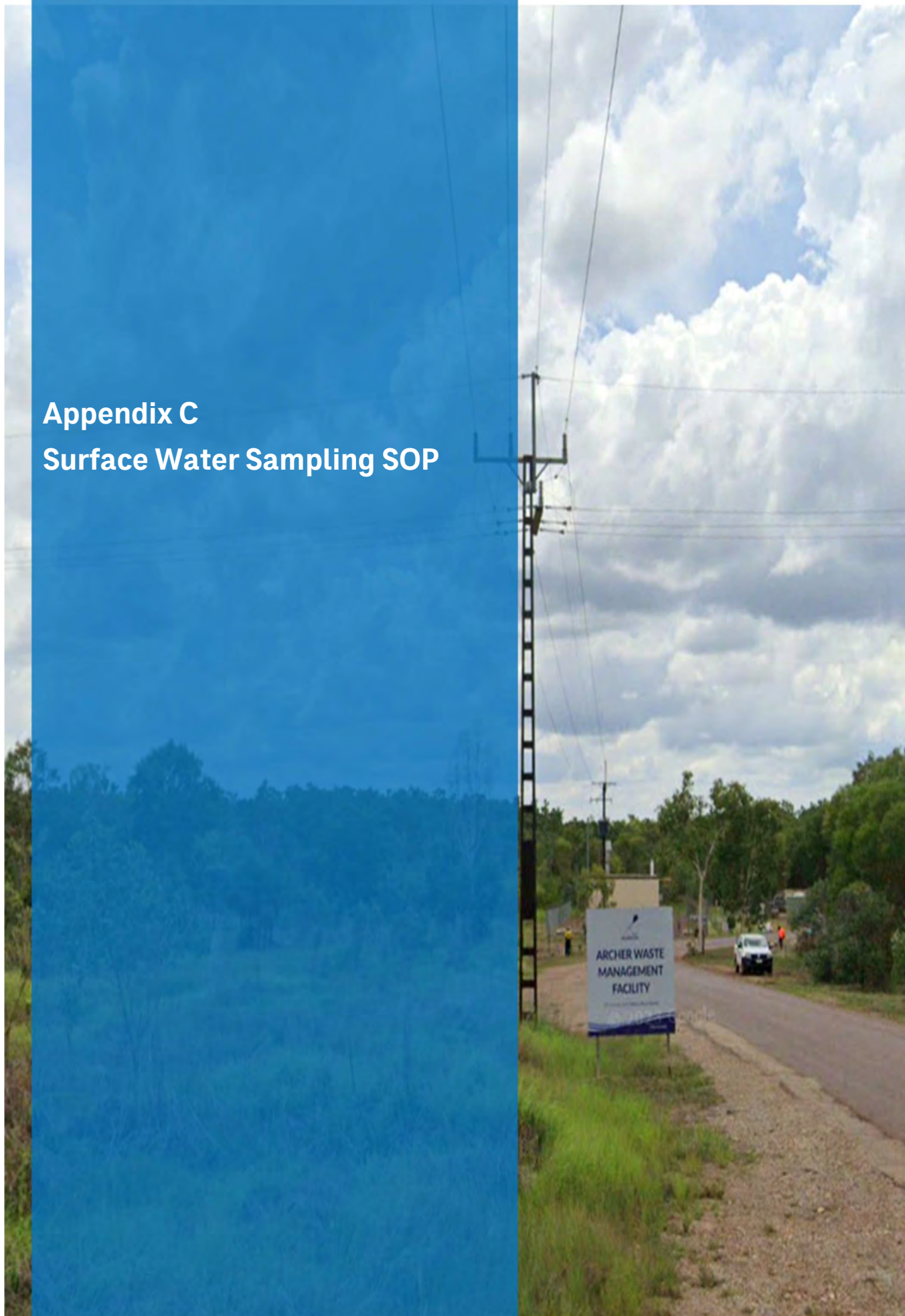
Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.28 9:00	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	Spider
ODOUR	N/A	AQUATIC PLANTS	grasses, shrubs
SURFACE SCUM/ALGAE	Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	litter nearby
TYPE OF DRAINAGE CONSTRUCTION	natural / open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, sun out, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	28.2	
E.C	µS/cm	198	
TDS	mg/L	130	
Salinity	ppt	0.06	
pH		5.53	
ORP	mV	+82.1	
Turbidity	NTU	9.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Appendix C

Surface Water Sampling SOP



Introduction

City of Palmerston (CoP) operate the Archer Waste Transfer Station (WTS) situated on Lot 11497, Town of Palmerston, Elrundie Avenue, Archer. The site area is approximately 16 hectares, however the main areas of use for storage of waste and green waste occupies less than 2 hectares. The site is bounded by Channel Island Road to the north and east, vacant bushland to the west and the former Archer landfill to the south. The southeastern portion of the site lies within the former Archer landfill. The boundary of the former landfill extends further to the south. Surface water monitoring is undertaken at the Archer WTS to ensure that operations do not impact any waterways downstream.

Field Preparation

Equipment

- Pre-calibrated Water Quality Meter (WQM) and spare batteries (or ensure it is fully charged before use)
- Sample pole
- Sample bottles (see below)
- Sample cup
- Filters and syringes (always take extra)
- Sampling gloves – disposable, nitrile, powder-free.
- Clipboard, pens/pencils and permanent markers (and spares)
- Ziplock bags for each set of bottles (if the lab does not provide them)
- Field sheets/field record
- Camera/phone to take photos
- Personal Field Folder containing; relevant SWMS, COC's, emergency contact information, staff contacts, site maps, spare field record sheets, standard operating procedure.
- Esky (with ice or ice bricks to keep the samples chilled).

Personal Protection Equipment (PPE)

- GPS
- Handheld UHF radio (if required)
- Mobile phone
- First aid kit
- Long sleeved shirt
- Safety glasses (tinted and clear)
- Midge bite repellent (Aerogard)
- Enclosed shoes/Gumboots
- High-vis (shirt or vest)
- Hat

- Sunscreen
- Drinking water and electrolyte additives where required
- Wet season gear (only when working during the wet season).

Sampling Procedure

Mobilisation

- Ensure equipment is charged and equipment is calibrated. Take spare batteries if the WQM requires them.
- Ensure equipment including vehicle is functioning, clean and has been booked.
- Create the Chain of Custody.
- Ensure that your mobile phone is charged (or carry a charger/battery pack).
- Double check all equipment is packed before leaving the office to undertake sampling.
- Always notify your team leader/manager upon arrival at site.

Things to consider - reducing sample contamination

Ensure that samples are not contaminated during sampling. Sources of sample contamination when collecting the sample include sunscreen, insect repellent, cigarette smoke and preservatives from other bottles. Reduce the risk of contamination by the following:

- Apply sunscreen and insect repellent prior to leaving for sampling and avoid applying directly on hands and wrists. Ensure that hands and wrists are washed with soap and water to remove any excess product.
- Do not smoke or eat when sampling.
- Use clean disposable gloves at each sampling site immediately before opening sample bottles. Ensure you do not wipe gloved hands on your skin or clothing.
- Keep sample bottles closed until sampling. If grime is present on the outside of the bottle, rinse with sample water prior to opening.
- Always sample with hands away from the bottle opening (wear clean disposable gloves when collecting the sample and change gloves between sites or if contamination is suspected).

On Arrival

At each sample location, take a moment to assess the area for dangers, including potential slips/trip hazards, dangerous fauna (e.g., snakes) and signs of crocodile habitat (e.g., slides, nests).

If the sample location cannot be accessed, write the reason on the field record, and make the Project Manager aware of why it was not sampled.

Consider a site dry only when the pool at its deepest point is too shallow to fill the sample bottles.

Take care not to introduce sediments when sampling water from shallow pools. Record the depth and pool dimensions on the field data sheet.

If possible, sample alternative locations within the same reach (i.e. the visible section of the stream when standing at the sampling site) if the usual sampling site is dry. The location of an alternative site should be relative to the impact

and its position. This will provide a continuity of data. Ensure that the alternative site location is documented on the field data sheet.

Field Records/Sheet

At each sampling location, field records should include the following minimum information:

- Exact location information (sample point number/name and/or GPS coordinates), sampling time, date and the name of the sampler(s)
- Sample type and number of containers
- Weather conditions
- Sample collection equipment and method
- In-situ water quality parameter (pH, EC, DO, TDS, temperature etc) readings
- Physical characteristics of sample (e.g. odour, sheen, colour)
- Sample equipment decontamination procedures, where non-disposable sampling equipment is utilised
- Photograph of sample location
- Record comments on field observations including, water depth, flow, visibility, creek width, presence of fish / tadpoles etc and other fauna / flora in the area, and any unusual observations such as visible grease/scum, floating fish. Also make a note on the field book which samples have been collected at the site.

FILL IN ALL SECTIONS OF FIELD RECORD SHEET.

- Label all bottles with permanent marker. Fill in the sticker with Client/Company name, sample ID, date of sample and samplers' initials. On the large Ziplock bag, record date and sample ID. Mark which bottles have been filtered in the field.
- Prior to taking the sample, don nitrile gloves to avoid sample contamination and skin burns from preservative in some of the bottles.
- If using the sample pole, place the cup in the carrier of the sample pole.
 - Face the cup upstream, capture water and discard of it downstream away from the sample collection location three times (this is part of the decontamination process and cleans the sample cup). Make sure you are collecting from at least 10cm below the water's surface.
 - Collect the water sample and fill up all the sample bottles that do not require field filtered water.
 - Collect water in the sample cup and put it on a flat surface. Use syringe to draw up water, attach the filter and push water through into the sample bottle marked 'field filtered'. This may take several draw ups of water and remember do not overflow the sample bottle. If you require the use of more than one filter while sampling (it will get hard to squeeze the sample into the bottle), remove the filter from the syringe and re-attach new filters, avoiding possible contamination (hold by the packaging only to avoid contamination)
 - Use one syringe for each sampling site
- Alternatively, samples can be collected directly from the water course if safe to do so.
 - If wading into the water to collect a sample, aim to minimise the amount of substrate disturbance. Sample water outside of the sediment plume or wait until the plume has been washed downstream. Note that during rapid flow if it is not safe to enter the water, and samples should be collected using a sampling pole, with the operator standing on the bank.

- If standing in the water, stand downstream of the sample bottle with the opening facing upstream. If using a sampling pole (or other appropriate device), place the sampling container in the water with the opening facing upstream and avoid placing hands near the mouth of the bottle. Water samples should be collected from as near to the centre of the channel as possible.
- The sample container should be placed approximately 10 cm below the water surface. If the water is shallow, hold the bottle opening above the substrate to prevent the collection of settled solids (this will depend on the substrate type: silt, sand etc). Fill the bottle to the top and replace the lid, so as not to trap air bubbles. Replace the lid immediately after the bottle has been filled.
- Use syringe to draw up water, attach the filter and push water through into the sample bottle marked 'field filtered'. This may take several draw ups of water and remember not to overflow the sample bottle.
- Put all full bottles in the sample bag with the site ID on it and place in the esky of ice/ice bricks.
- Undertake field duplicates, triplicates and rinsate blank samples, if required (see Quality Control/Quality Assurance below).
- Put rubbish into a bag (e.g., used gloves, syringe, filters) and dispose of responsibly.

Field Readings

- Turn on the WQM Unit.
- After sampling re-fill the sample cup with water from the sample point.
- Ensure all protective covers on the probes are removed (if applicable, this depends on the WQM – pH and DO probes often have protective caps)
- Rinse the water quality meter sensors over with the sample water.
- Re-fill the sample cup with sample water and place on a flat surface.
- Put the sensors into the sample cup. Care must be taken to ensure this equipment is not damaged whilst taking readings.
- Record the general site observations on the surface water field sheet while the sensors are stabilising their readings. Record comments on field observations including, water depth, flow, visibility, creek width, presence of fish / tadpoles etc and other fauna / flora in the area, and any unusual observations such as visible grease/scum, floating fish.
- Record the in-situ readings on the surface water field sheet.
- Remove the sensors from the water, careful not to damage them on removal.
- Replace the protective covers of the probes (if applicable) and turn off WQM Unit.
- Ensure the WQM Unit is stored appropriately so as not to damage the equipment.

Packing Up

- As we are rinsing all equipment in the sample locations prior to collecting the actual samples all equipment just need a good rinse off at the last location and dried.
- Ensure WQM unit is turned off and packed up appropriately. Make sure to open it up in a safe location in the office to dry out before packing it away.
- Always notify your team leader/ manager on departure from site.
- Calibrate equipment as per the manufacturer's specifications in the relevant manuals and complete the calibration register.

- Take a photo of all field sheets and send it to the project manager.

Sample Dispatch

- The Chain of Custody (CoC) is to be completed prior to samples being dispatched to the laboratory. Ensure all samples are listed in the sample ID column and marked analysis is correct.
- Take a photo of the paperwork and send it to the project manager.
- Samples are to be taken to the laboratory in eskies with ice bricks (ice bricks can be bottles of frozen water).

Quality Control / Assurance

Field Duplicates

Take one field duplicate for every ten location points sampled using the following method:

- Collect primary sample.
- Collect field duplicate with a second set of the same bottles used for the primary sample.
- Label the bottles with a code not related to the site number (e.g. SWQA01_ddmmyy).
- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWQA01_ddmmyy was collected.
- Make sure the QA/QC field log is filled out.

Field Triplicates

Take one field triplicate for every 20 location points sampled.

- Collect the primary sample.
- Collect the duplicate sample.
- Collect field triplicate with a third set of the same bottles used for the primary sample.
- Label the bottles with a code not related to the site number and subsequent to the field duplicate (e.g. SWQA02_ddmmyy). Generally, field duplicates are named with odd numbers and field triplicates are named with even numbers.
- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWQA02_ddmmyy was collected.
- Make sure the QA/QC field log is filled out.

Field Blanks

For each sampling day, a field blank needs to be collected. The field blank sample is to test the level of potential contamination of a sample from the surrounding environment during the collection procedure.

- Arrive at the sample location.
- Set up Field blank on a flat surface and open the bottles. Be mindful not to spill the bottles.
- Fill a plastic red/green metals bottle with deionised water and close.
- Label the bottles with a code not related to the field blank (e.g. SWFB01_ddmmyy).

- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWFB01 was collected.
- Make sure the QA/QC field log is filled out.

Relevant Documentation

- AS/NZS 5667.4:1998 'Water Quality – Sampling Part 4: Guidance on Sampling from Lakes, natural and man-made'.
- AS/NZS 5667.6:1998 'Water Quality – Sampling, Part 6: Guidance on sampling of rivers and streams'.

Archer Surface Water Locations

Locations

Terrestrial Sampling Locations

Sample Location Reference	Coordinates (GDA94)	
	Latitude	Longitude
SW1	715054	8615118
SW2	714938	8615084
SW3	714916	8615027
SW4	714895	8614982
SW5	715041	8614983
SW6	714948	8615166
SW7	715031	8614965

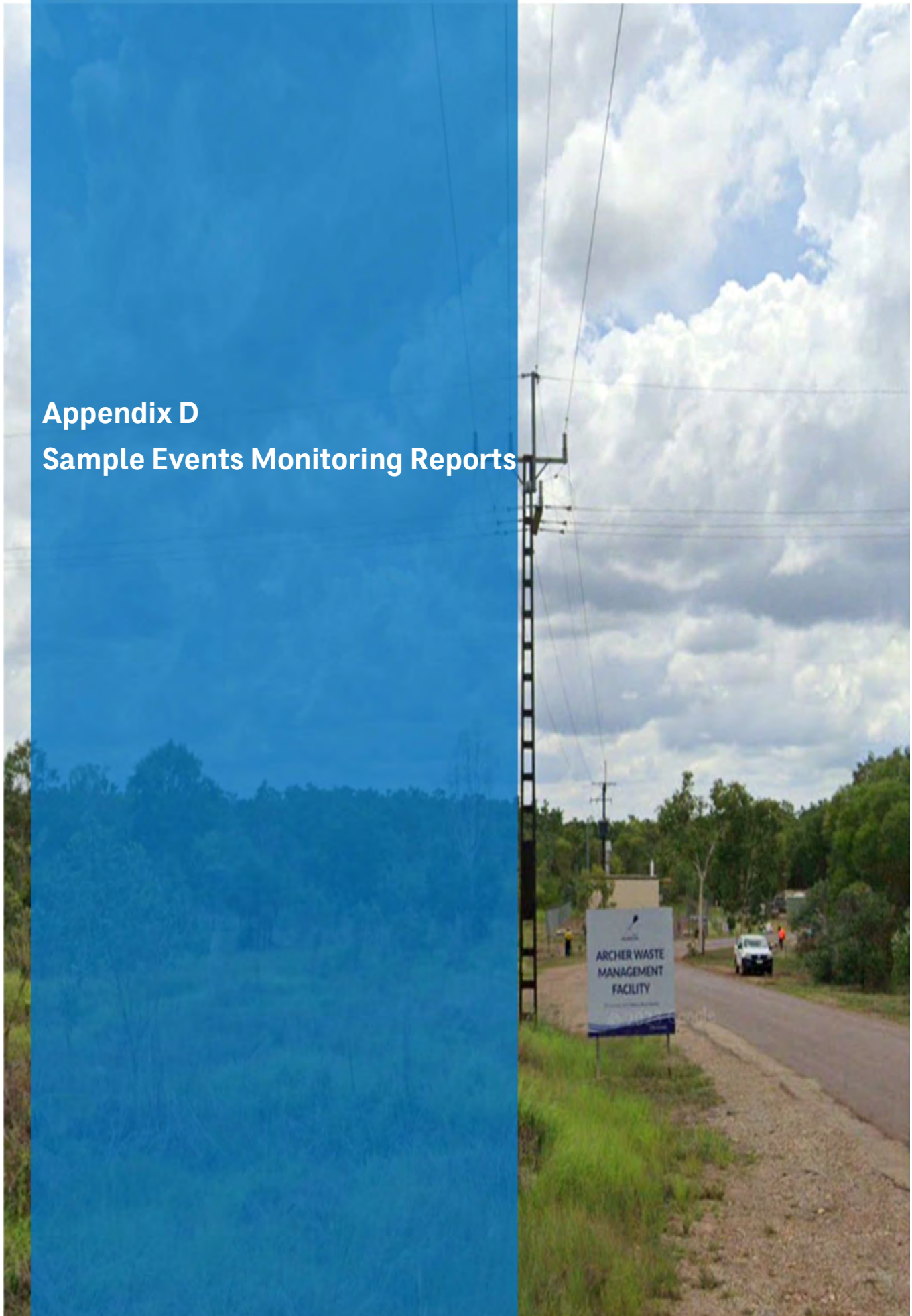
Bottles

Bottle	Description
1x 100ml	Amber glass bottle Unpreserved Orange label OC/OP Pesticides, TRH(C10-C40)
2x 40ml	Amber glass vial Sulfuric Acid (Preservative) Purple label Zero head space TRH(C6-C9)/BTEXN
2x 60ml	Clear plastic bottle Sulfuric Acid (Preservative) Purple label Ammonia, COD, TN, TP, T. Phenolics
1x 500ml	Clear plastic bottle Unpreserved Green label SS, TDS
2x 60 ml	Clear plastic bottle Lab-acidified Red/green label As, Cd, Cr, Cu, Pb, Ni, Zn 1x filtered (dissolved metals), 1x unfiltered (total metals)



Appendix D

Sample Events Monitoring Reports



13 December 2024
Project Number: 1001837

Jelise Camilleri
City of Palmerston
Acting Manager of Sustainability
PO Box 1
Palmerston NT 0831

Dear Jelise

RE: Wet Season Surface Water Monitoring Round 1: November 2024

On the 21st November 2024, in accordance with the site Water Quality Monitoring and Management Plan (WQMMP), CDM Smith conducted surface water monitoring at Archer Waste Transfer Station (AWTS) as the first round for the 2024-2025 wet season. Surface water sampling was undertaken by CDM Smith Environmental Scientist Tayhlia Casey.

Although a number of sites were dry there were enough wet sites sampled to establish a first flush dataset.

This letter report details the data results compared to the EPL223-02 applied assessment criteria of the monthly surface water monitoring with interpretation and recommendations.

Sincerely

Tayhlia Casey

Tayhlia Casey
Environmental Scientist
e. caseytc@cdmsmith.com



Jeni Young
Associate Environmental Scientist
p. +61 438 006 851
e. youngje@cdmsmith.com

1 Introduction

The surface water monitoring program outlined in the WQMMP has been designed to monitor risks to the natural environment from sites activities. Surface water shed from the site during the wet season flows from the north east to the upper tributaries of Elizabeth River. The surface water sampling locations have been positioned to monitor surface water quality and any potential contamination arising from the sites activities.

1.1 Sampling Locations and Rationale

The surface water sampling locations and rationale are presented in Table 1 and Figure 1. Two additional (BG01 and BG02) upstream sites have been added to this months sampling event as part of City of Palmerston due diligence.

Table 1 Sample Locations and Rationale

Sample Name	Rationale
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Location included in EPL233-02 for reporting.
SW02	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW03	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Location included in EPL233-02 for reporting.
SW05	To be used as an alternative to SW07 if it is dry. Would capture water shed from site activities except for mulch area.
SW06	Upstream of site. To be used to mark any contamination flowing from neighbouring suburbs.
SW07	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.
BG01	To be used to mark any contamination flowing from neighbouring suburbs.
BG02	Upstream of site. Access to SW01 poses a HSE concern, this location is used as an alternative.

1.2 Assessment Criteria

Surface water quality is assessed against the following criteria:

- Trigger Values EPL223-02
- Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)
- 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018).

1.3 Analytical Program

The analytical program outlined in the WQMMP are summarised in Table 2. Two additional upstream sites have been added to this months sampling event as part of City of Palmerston due diligence.

Table 2 Sample analytical program

Sample Location	In situ physico-chemical parameters	Nutrients	Other	Total & Dissolved Metals	Hydrocarbons
	pH, Temp, EC, Redox, DO, Turbidity	Total Nitrogen, Total Phosphorous, Ammonia	Chemical Oxygen Demand, Suspended Solids, Total Dissolved Solids OC/OP Pesticides	As, Cd, Cr, Cu, Pb, Ni, Zn	TRH (C6-C40), BTEXN, Total Phenol
SW01	X	X	X	X	X
SW02	X	X	X	X	X
SW03	X	X	X	X	X
SW04	X	X	X	X	X
SW05	X	X	X	X	X
SW06	X	X	X	X	X
SW07	X	X	X	X	X
BG01	X	X	X	X	X
BG02	X	X	X	X	X



Figure 1 Sampling Locations

2 In-situ Monitoring and Observations

During the sampling day, little to no flow was observed at most locations. Photos for each site are presented in Figure 2.

Physico-chemical parameters were recorded at each monitoring site and are presented in Table 3.

Dissolved oxygen (DO) was below the assessment criteria range (80-100% saturation) at all sites, which could be attributed to the higher levels of nutrients at all sites.

Table 3 Surface water field parameters

Sample Site	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
Trigger Values	-	80-100	-	-	-	6.00-8.50	-	-
SW01	Not sampled due to HSE Access Concerns							
SW02	29	66.9	274	17.3	0.09	6.35	+60	31
SW03	29.9	64.1	373	242	0.12	6.58	33.4	500
SW04	DRY							
SW05	28.4	17.6	357	232	0.11	6.34	16.3	18
SW06	DRY							
SW07	DRY							
BG01	30.3	77.8	51	33	0.02	6.26	14.4	55
BG02	28.5	23.8	340	221	0.11	6.38	-74	28

Note: Shaded blue cells denote where parameters were reported outside of trigger value or range.



SW02



SW03



SW05



SW06



SW07



BG01



BG02

Figure 2 Site photos

3 Laboratory Results

Summarised laboratory results with exceedances of the assessment criteria are presented in Table 4.

- All parameters were within the assigned trigger values for EPL233-02 except:
 - Nitrogen and Phosphorus concentrations were recorded above the trigger value at all locations.
 - Ammonia concentrations were recorded above the trigger value at all locations except BG01.
 - Total Suspended Solids concentrations were recorded above the trigger value at all locations except BG01 and SW02.
 - Dissolved Copper concentrations were recorded above the trigger value at SW02, SW03 and BG01.
 - Dissolved Zinc concentrations were recorded above the trigger value at SW02 and SW03.

Table 4 Laboratory Results Summary

Sample Site	Copper (dissolved)	Zinc (dissolved)	Ammonia as N	Total Nitrogen as N	Total Phosphorus as P	Total Suspended Solids
Trigger Values EPL233-02	1.3 µg/L ⁷	15 µg/L ⁷	20 µg/L ³	300 µg/L ³	30 µg/L ³	10 mg/L ³
SW02	4	28	120	1600	130	6
SW03	9	28	180	4000	540	280
SW05	1	8	100	1700	150	22
BG01	2	8	10	1000	30	6
BG02	1	9	70	1600	140	51

Note 1: blue shaded cells denotes where parameters were recorded outside trigger values

3 – Based on Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)

7 – Based on 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018)

4 Conclusion

The key findings of this surface water monitoring event are:

- This event was noted as the 'first flush' with enough rain prior to the sampling event to have water flow in all drainage lines.
- At the time of sampling sites SW06 and SW07 were dry.
- SW01 sampling location posed a safety risk in sampling due to not having a 'fauna spotter' available at time of sample. The site had brown water present, so sampling could have been possible.
- The high levels of nutrients at all sites are consistent with historical 'first flush' sampling events, as this is across all samples it is difficult to pin down one singular point source. First flush sampling of surface waters often shows high nutrient levels due to the accumulation of pollutants on surfaces during dry periods. When it rains, these pollutants, including nutrients like nitrogen and phosphorus, are washed off and enter the water bodies in a concentrated burst.
- It is noted that no hydrocarbons were recorded in any of the samples, indicating that there is no source of potential hydrocarbon contamination on the site.

A.1 Laboratory Reports

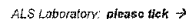
Ph: 07 7472 5600 E: gladstone@ais-global.comPh. 02 6372 6736 E. nudgea@mail.gabgobsl.com

Fig. 03 2239 7855 E. samples gedagaloginohi con

Ph: 02 42213123 E: vo-nguy@ab-global.com.

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Val HCl Preserved; VB = VOA Val Sodium Bisulphate Preserved; VS = VOA Val Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Bottle; F = Formaldehyde
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; HTT = Sterile Sodium Thiosulfate Preserved Bottles.



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2438129**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : youngje@cdmsmith.com
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 26-Nov-2024 11:00
Client Requested Due : 02-Dec-2024
Date

Issue Date : 26-Nov-2024
Scheduled Reporting Date : **02-Dec-2024**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : ----
Receipt Detail :

Security Seal : Not Available
Temperature : 8.7'c 10.1'c 8.4'c
No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Bottles received as BG02
- Bottles received as SW02
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2438129-001	21-Nov-2024 00:00	SW02	✓	✓	✓	✓	✓	✓	✓
ES2438129-002	21-Nov-2024 00:00	SW03	✓	✓	✓	✓	✓	✓	✓
ES2438129-003	21-Nov-2024 00:00	SW05	✓	✓	✓	✓	✓	✓	✓
ES2438129-004	21-Nov-2024 00:00	BG01	✓	✓	✓	✓	✓	✓	✓
ES2438129-005	21-Nov-2024 00:00	BG02	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2438129-001	21-Nov-2024 00:00	SW02	✓	✓
ES2438129-002	21-Nov-2024 00:00	SW03	✓	✓
ES2438129-003	21-Nov-2024 00:00	SW05	✓	✓
ES2438129-004	21-Nov-2024 00:00	BG01	✓	✓
ES2438129-005	21-Nov-2024 00:00	BG02	✓	✓

Proactive Holding Time Report

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



CERTIFICATE OF ANALYSIS

Work Order : **ES2438129**
Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 26-Nov-2024 11:00
Date Analysis Commenced : 27-Nov-2024
Issue Date : 02-Dec-2024 09:58



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- Bottles received as BG02
- Bottles received as SW02
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 sample 2,4 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	-----	10	mg/L		129	348	157	52	122
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	-----	5	mg/L		6	280	22	6	51
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.002	0.003	<0.001	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	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		0.004	0.009	<0.001	0.002	<0.001
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		0.028	0.028	0.008	0.008	0.009
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.004	0.003	<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	0.008	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		0.006	0.021	0.001	0.004	0.001
Nickel	7440-02-0	0.001	mg/L		0.001	0.006	0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		0.002	0.015	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		0.032	0.129	0.008	0.008	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.12	0.18	0.10	<0.01	0.07
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	-----	0.01	mg/L		0.15	1.15	0.01	0.16	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.5	2.9	1.7	0.8	1.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.6	4.0	1.7	1.0	1.6
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.54	0.15	0.03	0.14
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		47	56	58	40	35
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW02	SW03	SW05	BG01	BG02
Sampling date / time				21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		86.6	90.8	82.8	71.4	65.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		91.2	90.5	85.0	66.7	64.3
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		82.3	84.7	85.9	85.8	85.9
Toluene-D8	2037-26-5	2	%		96.0	96.0	95.8	98.1	96.6
4-Bromofluorobenzene	460-00-4	2	%		114	114	113	117	117



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



QUALITY CONTROL REPORT

Work Order	: ES2438129	Page	: 1 of 9
Client	: CDM SMITH AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: Jeni Young	Contact	: Customer Services ES
Address	: 1/48-50 SMITH STREET DARWIN CITY NT 0800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Archer 1001837	Date Samples Received	: 26-Nov-2024
Order number	: ----	Date Analysis Commenced	: 27-Nov-2024
C-O-C number	: ----	Issue Date	: 02-Dec-2024
Sampler	: TAYHLIA CASEY		
Site	: Archer Waste Facility		
Quote number	: ES24E3CON0005		
No. of samples received	: 5		
No. of samples analysed	: 5		



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

This Quality Control Report contains the following information:

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

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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the client request.

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

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

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP035SF: Total Phenol by Segmented Flow Analyser (QC Lot: 6219275)									
CA2407482-001	Anonymous	EP035SF: Phenols (Total)	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EB2440710-002	Anonymous	EP035SF: Phenols (Total)	----	0.05	mg/L	<0.05	<0.05	0.0	No Limit
EA015: Total Dissolved Solids dried at 180 ± 5 °C (QC Lot: 6217585)									
EN2415378-018	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	1600	1680	4.9	0% - 20%
ES2438129-003	SW05	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	157	162	2.8	0% - 50%
ES2438404-001	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	2370	2410	1.7	0% - 20%
EW2405437-003	Anonymous	EA015H: Total Dissolved Solids @180°C	----	10	mg/L	55	60	9.6	No Limit
EA025: Total Suspended Solids dried at 104 ± 2°C (QC Lot: 6217584)									
EN2415378-018	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	22	14	43.4	No Limit
ES2438129-003	SW05	EA025H: Suspended Solids (SS)	----	5	mg/L	22	20	8.2	No Limit
ES2438404-001	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	273	306	11.2	0% - 20%
EW2405437-003	Anonymous	EA025H: Suspended Solids (SS)	----	5	mg/L	<5	<5	0.0	No Limit
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6219424)									
ES2436327-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	107 µg/L	0.109	1.9	0% - 20%
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<1 µg/L	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	189 µg/L	0.192	1.5	0% - 20%
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	109 µg/L	0.105	3.5	0% - 20%
ES2438366-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	0.004	0.004	0.0	No Limit

Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EG020F: Dissolved Metals by ICP-MS (QC Lot: 6219424) - continued									
ES2438366-002	Anonymous	EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 6215994)									
ES2438129-001	SW02	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.006	0.006	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.032	0.035	9.2	No Limit
ES2438401-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.004	0.005	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.005	0.007	31.9	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.010	0.011	0.0	0% - 50%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.007	0.009	19.1	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.027	0.030	9.6	No Limit
EG035F: Dissolved Mercury by FIMS (QC Lot: 6219426)									
ES2438129-002	SW03	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2438179-005	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 6215998)									
ES2438129-001	SW02	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES2438439-002	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK055G: Ammonia as N by Discrete Analyser (QC Lot: 6219121)									
ES2436327-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	0.79	0.80	1.3	0% - 20%
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QC Lot: 6219122)									
ES2436327-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	0.52	0.46	12.4	0% - 20%
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QC Lot: 6219120)									
ES2436327-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	1.3	1.3	0.0	0% - 50%
EK067G: Total Phosphorus as P by Discrete Analyser (QC Lot: 6219119)									
ES2434169-028	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.10	0.10	0.0	0% - 50%
ES2436327-001	Anonymous	EK067G: Total Phosphorus as P	----	0.01	mg/L	0.06	0.06	0.0	No Limit
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QC Lot: 6219388)									



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Acceptable RPD (%)
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QC Lot: 6219388) - continued									
EN2415433-014	Anonymous	EP026SP: Chemical Oxygen Demand	----	10	mg/L	10	12	18.2	0% - 20%
EP2417406-007	Anonymous	EP026SP: Chemical Oxygen Demand	----	10	mg/L	245	238	2.9	0% - 20%
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 6215464)									
ES2438035-080	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES2438129-004	BG01	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 6215464)									
ES2438035-080	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES2438129-004	BG01	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 6215464)									
ES2438035-080	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
ES2438129-004	BG01	EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit
		EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit

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

Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
	Spike Concentration	Spike Recovery (%)	Acceptable Limits (%)	
		LCS	Low	High
Result				
<0.05	0.2 mg/L	106	70.9	123
<10	2000 mg/L	98.5	87.0	109
<10	293 mg/L	107	75.2	126
<10	2410 mg/L	98.1	83.0	124
<5	150 mg/L	97.3	83.0	129
<5	1000 mg/L	85.4	82.0	110
<5	879 mg/L	98.9	83.0	118
<0.001	0.1 mg/L	99.0	85.0	114
<0.0001	0.1 mg/L	98.5	84.0	110
<0.001	0.1 mg/L	101	85.0	111
<0.001	0.1 mg/L	96.7	81.0	111
<0.001	0.1 mg/L	101	83.0	111
<0.001	0.1 mg/L	96.2	82.0	112
<0.005	0.1 mg/L	100	81.0	117
<0.001	0.1 mg/L	104	82.0	114
<0.0001	0.1 mg/L	99.8	84.0	112
<0.001	0.1 mg/L	104	86.0	116
<0.001	0.1 mg/L	102	83.0	118
<0.001	0.1 mg/L	100	85.0	115
<0.001	0.1 mg/L	103	84.0	116
<0.005	0.1 mg/L	104	79.0	117
<0.0001	0.01 mg/L	89.8	83.0	105
<0.0001	0.01 mg/L	98.9	77.0	111



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6219121) - continued								
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1 mg/L	96.6	90.0	114
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6219122)								
EK059G: Nitrite + Nitrate as N	----	0.01	mg/L	<0.01	0.5 mg/L	99.4	91.0	113
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6219120)								
EK061G: Total Kjeldahl Nitrogen as N	----	0.1	mg/L	<0.1	10 mg/L	93.5	69.0	123
				<0.1	1 mg/L	102	70.0	123
				<0.1	5 mg/L	102	70.0	123
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6219119)								
EK067G: Total Phosphorus as P	----	0.01	mg/L	<0.01	4.42 mg/L	89.7	71.3	126
				<0.01	0.442 mg/L	90.7	71.3	126
				<0.01	1 mg/L	97.2	70.0	130
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QCLot: 6219388)								
EP026SP: Chemical Oxygen Demand	----	10	mg/L	<10	50 mg/L	96.0	82.0	112
				<10	500 mg/L	103	83.0	113
EP068A: Organochlorine Pesticides (OC) (QCLot: 6215440)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	91.4	64.9	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	91.0	58.3	111
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	97.9	69.0	117
EP068: gamma-BHC - (Lindane)	58-89-9	0.5	µg/L	<0.5	5 µg/L	96.2	70.0	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	101	68.9	110
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	88.6	65.2	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	93.3	65.8	109
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	99.4	67.1	107
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	98.0	64.1	110
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	98.1	66.7	112
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	102	63.2	111
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	102	65.2	113
EP068: 4,4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	104	66.0	112
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	85.7	65.2	113
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	106	67.3	114
EP068: 4,4`-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	103	72.0	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	81.8	66.9	109
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	81.4	65.2	112
EP068: 4,4`-DDT	50-29-3	2	µg/L	<2.0	5 µg/L	86.1	65.2	112



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result			Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 6215440) - continued								
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	86.9	63.8	110
EP068: Methoxychlor	72-43-5	2	µg/L	<2.0	5 µg/L	82.2	61.1	114
EP068B: Organophosphorus Pesticides (OP) (QCLot: 6215440)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	82.4	65.6	114
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	81.0	63.7	113
EP068: Monocrotophos	6923-22-4	2	µg/L	<2.0	5 µg/L	25.1	19.7	48.0
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	85.6	69.5	110
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	99.5	71.1	110
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	98.0	77.0	119
EP068: Parathion-methyl	298-00-0	2	µg/L	<2.0	5 µg/L	87.4	70.0	124
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	97.1	68.4	116
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	94.3	68.6	112
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	95.0	75.0	119
EP068: Parathion	56-38-2	2	µg/L	<2.0	5 µg/L	89.4	67.0	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	97.2	69.0	121
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	104	71.8	110
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	96.1	67.5	112
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	92.4	64.1	116
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	95.6	67.8	114
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	104	74.0	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	89.0	66.2	114
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	96.0	51.6	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6215441)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	400 µg/L	67.3	53.7	97.0
EP071: C15 - C28 Fraction	----	100	µg/L	<100	600 µg/L	87.1	63.3	107
EP071: C29 - C36 Fraction	----	50	µg/L	<50	400 µg/L	60.0	58.3	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6215464)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	78.3	75.0	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6215441)								
EP071: >C10 - C16 Fraction	----	100	µg/L	<100	500 µg/L	62.8	53.9	95.5
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	700 µg/L	58.6	57.8	110
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	300 µg/L	68.6	50.5	115
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6215464)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	77.9	75.0	127



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Acceptable Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 6215464)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	73.3	68.3	119
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	80.6	73.5	120
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	78.0	73.8	122
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	90.7	73.0	122
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	92.0	76.4	123
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	106	75.5	124

Matrix Spike (MS) Report

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

Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP035SF: Total Phenol by Segmented Flow Analyser (QCLot: 6219275)							
CA2407482-001	Anonymous	EP035SF: Phenols (Total)	----	0.2 mg/L	105	65.1	128
EG020F: Dissolved Metals by ICP-MS (QCLot: 6219424)							
ES2436327-002	Anonymous	EG020A-F: Arsenic	7440-38-2	1 mg/L	104	70.0	130
		EG020A-F: Cadmium	7440-43-9	0.25 mg/L	98.5	70.0	130
		EG020A-F: Chromium	7440-47-3	1 mg/L	98.6	70.0	130
		EG020A-F: Copper	7440-50-8	1 mg/L	100	70.0	130
		EG020A-F: Lead	7439-92-1	1 mg/L	94.6	70.0	130
		EG020A-F: Nickel	7440-02-0	1 mg/L	97.9	70.0	130
		EG020A-F: Zinc	7440-66-6	1 mg/L	103	70.0	130
EG020T: Total Metals by ICP-MS (QCLot: 6215994)							
ES2438129-002	SW03	EG020A-T: Arsenic	7440-38-2	1 mg/L	104	70.0	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	105	70.0	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	108	70.0	130
		EG020A-T: Copper	7440-50-8	1 mg/L	107	70.0	130
		EG020A-T: Lead	7439-92-1	1 mg/L	112	70.0	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	107	70.0	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	106	70.0	130
EG035F: Dissolved Mercury by FIMS (QCLot: 6219426)							
ES2438129-001	SW02	EG035F: Mercury	7439-97-6	0.01 mg/L	92.7	70.0	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 6215998)							
ES2438129-003	SW05	EG035T: Mercury	7439-97-6	0.01 mg/L	92.4	70.0	130

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 Work Order : ES2438129
 Client : CDM SMITH AUSTRALIA PTY LTD
 Project : Archer 1001837



Sub-Matrix: **WATER**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Acceptable Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK055G: Ammonia as N by Discrete Analyser (QCLot: 6219121)							
ES2436327-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1 mg/L	82.0	70.0	130
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser (QCLot: 6219122)							
ES2436327-001	Anonymous	EK059G: Nitrite + Nitrate as N	----	0.5 mg/L	106	70.0	130
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser (QCLot: 6219120)							
ES2436327-002	Anonymous	EK061G: Total Kjeldahl Nitrogen as N	----	5 mg/L	99.2	70.0	130
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 6219119)							
ES2434169-029	Anonymous	EK067G: Total Phosphorus as P	----	1 mg/L	94.0	70.0	130
EP026SP: Chemical Oxygen Demand (Spectrophotometric) (QCLot: 6219388)							
EN2415433-014	Anonymous	EP026SP: Chemical Oxygen Demand	----	47.6 mg/L	94.5	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 6215464)							
ES2438035-080	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	72.2	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 6215464)							
ES2438035-080	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	73.8	70.0	130
EP080: BTEXN (QCLot: 6215464)							
ES2438035-080	Anonymous	EP080: Benzene	71-43-2	25 µg/L	85.6	70.0	130
		EP080: Toluene	108-88-3	25 µg/L	87.1	70.0	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	87.0	70.0	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	94.0	70.0	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	98.4	70.0	130
		EP080: Naphthalene	91-20-3	25 µg/L	95.7	70.0	130



QA/QC Compliance Assessment to assist with Quality Review

Work Order	: ES2438129	Page	: 1 of 8
Client	: CDM SMITH AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: Jeni Young	Telephone	: +61-2-8784 8555
Project	: Archer 1001837	Date Samples Received	: 26-Nov-2024
Site	: Archer Waste Facility	Issue Date	: 02-Dec-2024
Sampler	: TAYHLIA CASEY	No. of samples received	: 5
Order number	: ----	No. of samples analysed	: 5

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

- **NO** Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers exist - please see following pages for full details.

Matrix: WATER

Analysis Holding Time Compliance

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

Matrix: WATER

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Clear Plastic Bottle - Natural (EA015H) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	27-Nov-2024	28-Nov-2024	✓
EA025: Total Suspended Solids dried at 104 ± 2°C								
Clear Plastic Bottle - Natural (EA025H) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	27-Nov-2024	28-Nov-2024	✓
EG020F: Dissolved Metals by ICP-MS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG020A-F) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	28-Nov-2024	20-May-2025	✓
EG020T: Total Metals by ICP-MS								
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG020A-T) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	20-May-2025	✓	27-Nov-2024	20-May-2025	✓



Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG035F: Dissolved Mercury by FIMS								
Clear Plastic Bottle - Filtered; Lab-acidified (EG035F) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	29-Nov-2024	19-Dec-2024	✓
EG035T: Total Recoverable Mercury by FIMS								
Clear Plastic Bottle - Unfiltered; Lab-acidified (EG035T) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	28-Nov-2024	19-Dec-2024	✓
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	27-Nov-2024	19-Dec-2024	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK059G) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	27-Nov-2024	19-Dec-2024	✓
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK061G) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	19-Dec-2024	✓	27-Nov-2024	19-Dec-2024	✓
EK067G: Total Phosphorus as P by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK067G) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	19-Dec-2024	✓	27-Nov-2024	19-Dec-2024	✓
EP026SP: Chemical Oxygen Demand (Spectrophotometric)								
Clear Plastic Bottle - Sulfuric Acid (EP026SP) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	28-Nov-2024	19-Dec-2024	✓
EP035SF: Total Phenol by Segmented Flow Analyser								
Clear Plastic Bottle - Sulfuric Acid (EP035SF) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	----	----	----	28-Nov-2024	19-Dec-2024	✓

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	28-Nov-2024	✓	28-Nov-2024	06-Jan-2025 ✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	28-Nov-2024	✓	28-Nov-2024	06-Jan-2025 ✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	28-Nov-2024	✓	29-Nov-2024	06-Jan-2025 ✓
Amber VOC Vial - Sulfuric Acid (EP080) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	28-Nov-2024	05-Dec-2024	✓	28-Nov-2024	05-Dec-2024 ✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Amber Glass Bottle - Unpreserved (EP071) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	27-Nov-2024	28-Nov-2024	✓	29-Nov-2024	06-Jan-2025 ✓
Amber VOC Vial - Sulfuric Acid (EP080) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	28-Nov-2024	05-Dec-2024	✓	28-Nov-2024	05-Dec-2024 ✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) SW02, SW05, BG02	SW03, BG01,	21-Nov-2024	28-Nov-2024	05-Dec-2024	✓	28-Nov-2024	05-Dec-2024 ✓



Quality Control Parameter Frequency Compliance

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

Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	11	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	4	39	10.26	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	7	14.29	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	2	16	12.50	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phenol by Segmented Flow Analyser	EP035SF	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	10.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	2	20	10.00	10.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	5	39	12.82	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	5	39	12.82	12.50	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	7	42.86	15.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phenol by Segmented Flow Analyser	EP035SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	3	20	15.00	15.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Matrix: **WATER**

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

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	11	9.09	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Suspended Solids (High Level)	EA025H	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Dissolved Solids (High Level)	EA015H	2	39	5.13	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phenol by Segmented Flow Analyser	EP035SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	12	8.33	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Mercury by FIMS	EG035F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	0	11	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	7	14.29	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-MS - Suite A	EG020A-T	1	16	6.25	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phenol by Segmented Flow Analyser	EP035SF	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
Total Phosphorus as P By Discrete Analyser	EK067G	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	0	12	0.00	5.00	✗	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	20	5.00	5.00	✓	NEPM 2013 B3 & ALS QC Standard



Brief Method Summaries

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

Analytical Methods	Method	Matrix	Method Descriptions
Total Dissolved Solids (High Level)	EA015H	WATER	In house: Referenced to APHA 2540C. A gravimetric procedure that determines the amount of 'filterable' residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM Schedule B(3)
Suspended Solids (High Level)	EA025H	WATER	In house: Referenced to APHA 2540D. A gravimetric procedure employed to determine the amount of 'non-filterable' residue in a aqueous sample. The prescribed GFC (1.2um) filter is rinsed with deionised water, oven dried and weighed prior to analysis. A well-mixed sample is filtered through a glass fibre filter (1.2um). The residue on the filter paper is dried at 104+/-2C. This method is compliant with NEPM Schedule B(3)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. Samples are 0.45µm filtered prior to analysis. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	In house: Referenced to APHA 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020. The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.
Dissolved Mercury by FIMS	EG035F	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) Samples are 0.45µm filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Total Mercury by FIMS	EG035T	WATER	In house: Referenced to APHA 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM Schedule B(3).
Ammonia as N by Discrete analyser	EK055G	WATER	In house: Referenced to APHA 4500-NH ₃ G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Nitrite and Nitrate as N (NO _x) by Discrete Analyser	EK059G	WATER	In house: Referenced to APHA 4500-NO ₃ - F. Combined oxidised Nitrogen (NO ₂ +NO ₃) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM Schedule B(3)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	In house: Referenced to APHA 4500-Norg D (In house). An aliquot of sample is digested using a high temperature Kjeldahl digestion to convert nitrogenous compounds to ammonia. Ammonia is determined colorimetrically by discrete analyser. This method is compliant with NEPM Schedule B(3)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	In house: Referenced to APHA 4500-Norg / 4500-NO ₃ -. This method is compliant with NEPM Schedule B(3)



Analytical Methods	Method	Matrix	Method Descriptions
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	In house: Referenced to APHA 4500-P H, Jirka et al, Zhang et al. This procedure involves sulphuric acid digestion of a sample aliquot to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using discrete analyser. This method is compliant with NEPM Schedule B(3)
Chemical Oxygen Demand (COD) (Spectrophotometric)	EP026SP	WATER	In house: Referenced to APHA 5220 D. Samples are digested with a known excess of an acidic potassium dichromate solution using silver sulfate as a catalyst. The chromium is reduced from the Cr (VI) oxidation state to the Cr (III) state by the oxygen present in the organic material. Both of these chromium species are coloured and absorb in the visible region of (400nm & 600nm) the spectrum. The oxidisable organic matter can be calculated in terms of oxygen equivalents.
Total Phenol by Segmented Flow Analyser	EP035SF	WATER	In house: Referenced to ISO 14402. The sample is in-line-distilled at pH 1- 4. The distillate, containing steam-volatile phenolic compounds is then oxidised by hexacyanoferrate(III). The resulting quinones react with 4-aminoantipyrine forming red condensation products, which are measured spectrometrically in a flow spectrometer at 505 nm.. This method is compliant with NEPM Schedule B(3)
Pesticides by GCMS	EP068	WATER	In house: Referenced to USEPA SW 846 - 8270 Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH - Semivolatile Fraction	EP071	WATER	In house: Referenced to USEPA SW 846 - 8015 The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with the QC requirements of NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	WATER	In house: Referenced to USEPA SW 846 - 8260 Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with the QC requirements of NEPM Schedule B(3)
Preparation Methods	Method	Matrix	Method Descriptions
TKN/TP Digestion	EK061/EK067	WATER	In house: Referenced to APHA 4500 Norg - D; APHA 4500 P - H. This method is compliant with NEPM Schedule B(3)
Digestion for Total Recoverable Metals	EN25	WATER	In house: Referenced to USEPA SW846-3005. Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	In house: Referenced to USEPA SW 846 - 3510 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM Schedule B(3) . ALS default excludes sediment which may be resident in the container.
Volatiles Water Preparation	ORG16-W	WATER	A 5 mL aliquot or 5 mL of a diluted sample is added to a 40 mL VOC vial for purging.

14 February 2025
Project Number: 1001837

Jelise Camilleri
City of Palmerston
Acting Manager of Sustainability
PO Box 1
Palmerston NT 0831

Dear Jelise

RE: Wet Season Surface Water Monitoring Round 2: January 2025

On the 29th January 2025, in accordance with the site Water Quality Monitoring and Management Plan (WQMMP), CDM Smith conducted surface water monitoring at Archer Waste Transfer Station (AWTS) for the second round of sampling for the 2024-2025 wet season. Surface water sampling was undertaken by CDM Smith Environmental Scientist Tayhlia Casey.

This letter report details the data results compared to the ANZG 2018 default assessment criteria of the monthly surface water monitoring with interpretation and recommendations.

Sincerely



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1 Introduction

The surface water monitoring program outlined in the WQMMP has been designed to monitor risks to the natural environment from sites activities. Surface water shed from the site during the wet season flows from the north east to the upper tributaries of Elizabeth River. The surface water sampling locations have been positioned to monitor surface water quality and any potential contamination arising from the site's activities.

1.1 Sampling Locations and Rationale

The surface water sampling locations and rationale are presented in Table 1 and Figure 1. Two additional upstream sites (BG01 and BG02) have been added to this month's sampling event as part of City of Palmerston due diligence. A site north-west of the mulch/garden area was investigated, however no location was suitable for sampling in January.

Table 1 Sample Locations and Rationale

Sample Name	Rationale
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Locations results reportable under EPL233-02.
SW02	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW03	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Locations results reportable under EPL233-02.
SW05	To be used as an alternative to SW07 if it is dry. Would capture water shed from site activities except for mulch area.
SW06	Upstream of site. To be used to mark any contamination flowing from neighbouring suburbs.
SW07	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.
BG01	To be used to mark any contamination flowing from neighbouring suburbs.
BG02	Upstream of site. Access to SW01 poses a HSE concern, this location is used as an alternative.



Figure 1 Sampling Locations

1.2 Assessment Criteria

Surface water quality is assessed against the following criteria:

- EPL223-02 Trigger Values
- Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)
- 95% species protection for marine waters, ANZECC Water Quality Guidelines 2018 (ANZG 2018).

1.3 Analytical Program

The analytical program outlined in the WQMMP is summarised in **Error! Reference source not found.** Two additional upstream sites have been added to this month's sampling event as part of City of Palmerston due diligence.

Table 2 Sample analytical program

Sample Location	In situ physico-chemical parameters	Nutrients	Other	Total & Dissolved Metals	Hydrocarbons
	pH, Temp, EC, Redox, DO, Turbidity	Total Nitrogen, Total Phosphorous, Ammonia	Chemical Oxygen Demand, Suspended Solids, Total Dissolved Solids OC/OP Pesticides	As, Cd, Cr, Cu, Pb, Ni, Zn	TRH (C6-C40), BTEXN, Total Phenol
SW01	X	X	X	X	X
SW02	X	X	X	X	X
SW03	X	X	X	X	X
SW04	X	X	X	X	X
SW05	X	X	X	X	X
SW06	X	X	X	X	X
SW07	X	X	X	X	X
BG01	X	X	X	X	X
BG02	X	X	X	X	X

2 In-situ Monitoring and Observations

During the sampling day, little to no flow was observed at most locations. The day prior to sampling 22.2mm of rain fell in the Palmerston area with approximately 450mm falling since the last round of sampling in November 2024.

Photos for each site are presented in Figure 2.

Physico-chemical parameters were recorded at each monitoring site and are presented in Table 3.

Dissolved oxygen (DO) was below the assessment criteria range (80-100% saturation) at all sites except BG01. pH was below the assessment criteria range (6.00-8.5) at sites SW06 and SW02.

Table 3 Surface water field parameters

Sample Site	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
Trigger Values	-	80-100	-	-	-	6.00-8.50	-	-
SW01	31	68.2	67	44	0.02	7.34	85.7	17
SW02	28.3	60.3	231	149	0.07	5.48	152.8	24
SW03	28.68	58.2	966	627	0.41	7.02	38	24
SW04	28.6	61.2	969	628	0.4	7.19	11.7	55
SW05	28.7	68.1	105	66	0.03	7.40	36.9	13
SW06	28.5	69	140	89	0.04	5.69	150.9	14
SW07	28.8	61.2	799	519	0.33	6.79	39.4	130
BG01	28	96.4	98	63	0.03	6.08	174.6	85
BG02	27.85	50.9	99	64	0.03	6.27	103.2	26

Note: Shaded blue cells denote where parameters were reported outside of trigger value or range.



SW01



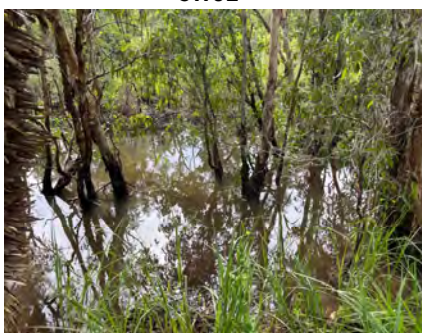
SW02



SW03



SW04



SW05



SW06



SW07



BG01



BG02

Figure 2 Site photos

3 Laboratory Results

Summarised laboratory results with exceedances of the assessment criteria are presented in Table 4.

- All parameters were within the assigned trigger values for EPL233-02 except:
 - Nitrogen and Phosphorus concentrations were recorded above the trigger value at all locations except SW06.
 - Ammonia concentrations were recorded above the trigger value at all locations except BG01 and SW01.
 - Total Suspended Solids concentrations were recorded above the trigger value at half of the locations being BG01, BG02, SW07 and SW04.
 - Dissolved Copper concentrations were recorded above the trigger value at SW03, SW04, SW07 and BG01.

Table 4 Laboratory Results Summary

Sample Site	Copper (dissolved)	Ammonia as N	Total Nitrogen as N	Total Phosphorus as P	Total Suspended Solids
Trigger Values EPL233-02	0.0013 mg/L ⁷	0.02 mg/L ³	0.3 mg/L ³	0.03 mg/L ³	10 mg/L ³
SW01	<0.001	0.02	0.4	0.06	<5
SW02	<0.001	0.2	3.7	0.04	<5
SW03	0.004	0.74	8.2	0.93	7
SW04	0.004	0.55	7.5	1.06	11
SW05	<0.001	0.13	0.6	0.2	<5
SW06	<0.001	0.08	1.0	0.01	<5
SW07	0.004	0.89	7.0	1.78	89
BG01	0.002	0.02	1.0	0.34	18
BG02	<0.001	0.12	0.6	0.37	12

Note 1: blue shaded cells denotes where parameters were recorded outside trigger values

3 – Based on Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)

7 – Based on 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018)

4 Conclusion

The key findings of this surface water monitoring event are:

- This event was the second sample for the 2024/2025 wet season program.
- The high levels of nutrients at all sites are consistent with historical sampling events. The elevated nutrients along the drainage line of SW03, SW04 and SW07 indicate that the levels are associated with runoff through the green waste area of the landfill. This will be investigated future in the next sample round.
- It is noted that no hydrocarbons were recorded in any of the samples.

A.1 Surface Water Results Summary

			Inorganics											
			Total Suspended Solids (Lab)	Nitrogen (Total)	Ammonia as N	Total Phosphorus as P (Organic Phosphate as P)	Nitrite + Nitrate as N	Kjeldahl Nitrogen Total	Chemical Oxygen Demand	Total Dissolved Solids (Lab)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)
			mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			5	0.1	0.01	0.01	0.01	0.1	10	10	0.001	0.001	0.0001	0.0001
ANZG (2018) Marine water 95% toxicant DGVs					0.91								0.0055	0.0055
DHWQO			10	0.27	0.02		0.02						0.0055	0.0055
EPL227 Values			10	0.3	0.02	0.03							0.0055	0.0055
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	0.02	0.06	0.14	0.3	<10	51	<0.001	<0.001	<0.0001	<0.0001
SW02	29 Jan 2025	ES2502339	<5	3.7	0.20	0.04	2.48	1.2	18	154	<0.001	<0.001	<0.0001	<0.0001
SW03	29 Jan 2025	ES2502339	7	8.2	0.74	0.93	1.70	6.5	130	538	0.006	0.006	<0.0001	<0.0001
SW04	29 Jan 2025	ES2502339	11	7.5	0.55	1.06	1.41	6.1	134	547	0.006	0.006	<0.0001	<0.0001
SW05	29 Jan 2025	ES2502339	<5	0.6	0.13	0.20	0.02	0.6	<10	58	<0.001	<0.001	<0.0001	<0.0001
SW06	29 Jan 2025	ES2502339	<5	1.0	0.08	0.01	0.31	0.7	15	118	<0.001	<0.001	<0.0001	<0.0001
SW07	29 Jan 2025	ES2502339	89	7.0	0.89	1.78	0.90	6.1	166	559	0.006	0.005	<0.0001	<0.0001
BG01	29 Jan 2025	ES2502339	18	1.0	0.02	0.34	0.30	0.7	17	76	0.001	<0.001	<0.0001	<0.0001
BG02	29 Jan 2025	ES2502339	12	0.6	0.12	0.37	<0.01	0.6	10	40	<0.001	<0.001	<0.0001	<0.0001

			Metals											
			Total Suspended Solids (Lab)	Nitrogen (Total)	Chromium (III+VI)	Chromium (III+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel	Nickel (filtered)
EQL			5	0.1	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001	0.001
ANZG (2018) Marine water 95% toxicant DGVs							0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07	0.07
DHWQO			10	0.27	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07	0.07
EPL227 Values			10	0.3	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07	0.07
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001
SW03	29 Jan 2025	ES2502339	7	8.2	0.001	0.001	0.005	0.004	0.001	<0.001	<0.0001	<0.0001	0.002	0.002
SW04	29 Jan 2025	ES2502339	11	7.5	0.001	0.001	0.006	0.004	0.001	<0.001	<0.0001	<0.0001	0.002	0.002
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.001	<0.001	0.002	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001	<0.001
SW07	29 Jan 2025	ES2502339	89	7.0	0.002	0.001	0.007	0.004	0.002	<0.001	<0.0001	<0.0001	0.003	0.002
BG01	29 Jan 2025	ES2502339	18	1.0	0.001	<0.001	0.004	0.002	0.002	<0.001	<0.0001	<0.0001	0.002	<0.001
BG02	29 Jan 2025	ES2502339	12	0.6	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001

							TPH							
			Total Suspended Solids (Lab)	Nitrogen (Total)	Zinc	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			5	0.1	0.005	0.005	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1
ANZG (2018) Marine water 95% toxicant DGVs					0.015	0.015								
DHWQO			10	0.27	0.015	0.015								
EPL227 Values			10	0.3	0.015	0.015								
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	0.006	0.006	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW02	29 Jan 2025	ES2502339	<5	3.7	0.008	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW03	29 Jan 2025	ES2502339	7	8.2	0.015	0.014	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW04	29 Jan 2025	ES2502339	11	7.5	0.017	0.010	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW06	29 Jan 2025	ES2502339	<5	1.0	0.015	0.013	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
SW07	29 Jan 2025	ES2502339	89	7.0	0.016	0.008	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
BG01	29 Jan 2025	ES2502339	18	1.0	0.015	0.009	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1
BG02	29 Jan 2025	ES2502339	12	0.6	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1

			TRH						BTEX					
			Total Suspended Solids (Lab)	Nitrogen (Total)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL			5	0.1	0.1	0.1	0.1	0.1	0.005	0.001	0.002	0.002	0.002	0.001
ANZG (2018) Marine water 95% toxicant DGVs										0.7				
DHWQO			10	0.27						0.7				
EPL227 Values			10	0.3					0.07	0.7				
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW03	29 Jan 2025	ES2502339	7	8.2	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW04	29 Jan 2025	ES2502339	11	7.5	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
SW07	29 Jan 2025	ES2502339	89	7.0	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
BG01	29 Jan 2025	ES2502339	18	1.0	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
BG02	29 Jan 2025	ES2502339	12	0.6	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001

							Halogenated Benzenes	Phenols	Pesticides						
			Total Suspended Solids (Lab)	Nitrogen (Total)	Xylene (m & p)	Xylene (o)	Hexachlorobenzene	Phenolics Total	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	4,4-DDE	a-BHC	
			mg/L	mg/L	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	
EQL			5	0.1	0.002	0.002	0.5	50	0.5	0.5	2	0.5	0.5	0.5	
ANZG (2018) Marine water 95% toxicant DGVs															
DHWQO			10	0.27											
EPL227 Values			10	0.3											
Location Code	Date	Lab Report Number													
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW03	29 Jan 2025	ES2502339	7	8.2	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW04	29 Jan 2025	ES2502339	11	7.5	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
SW07	29 Jan 2025	ES2502339	89	7.0	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
BG01	29 Jan 2025	ES2502339	18	1.0	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	
BG02	29 Jan 2025	ES2502339	12	0.6	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	

			Organochlorine Pes											
			Total Suspended Solids (Lab)	Nitrogen (Total)	Aldrin	Aldrin + Dieldrin	β-BHC	Chlordane	Chlordane (cis)	Chlordane (trans)	α-BHC	DDD	DDT	DDT+DDE+DDD
			mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL			5	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5
ANZG (2018) Marine water 95% toxicant DGVs														
DHWQO			10	0.27										
EPL227 Values			10	0.3										
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW03	29 Jan 2025	ES2502339	7	8.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW04	29 Jan 2025	ES2502339	11	7.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
SW07	29 Jan 2025	ES2502339	89	7.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
BG01	29 Jan 2025	ES2502339	18	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
BG02	29 Jan 2025	ES2502339	12	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5

	ticides											
	Total Suspended Solids (Lab)	Nitrogen (Total)	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide
	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	5	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
ANZG (2018) Marine water 95% toxicant DGVs							0.008					
DHWQO	10	0.27										
EPL227 Values	10	0.3										

Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW03	29 Jan 2025	ES2502339	7	8.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW04	29 Jan 2025	ES2502339	11	7.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
SW07	29 Jan 2025	ES2502339	89	7.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BG01	29 Jan 2025	ES2502339	18	1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BG02	29 Jan 2025	ES2502339	12	0.6	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

			Organophosphorous Pesticides											
	Total Suspended Solids (Lab)	Nitrogen (Total)	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate		
	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L		
EQL	5	0.1	2	0.5	0.5	0.5	0.5	0.5	0.0005	0.5	0.5	0.5		
ANZG (2018) Marine water 95% toxicant DGVs								0.009						
DHWQO	10	0.27												
EPL227 Values	10	0.3												
Location Code	Date	Lab Report Number												
SW01	29 Jan 2025	ES2502339	<5	0.4	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW02	29 Jan 2025	ES2502339	<5	3.7	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW03	29 Jan 2025	ES2502339	7	8.2	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW04	29 Jan 2025	ES2502339	11	7.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW05	29 Jan 2025	ES2502339	<5	0.6	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW06	29 Jan 2025	ES2502339	<5	1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
SW07	29 Jan 2025	ES2502339	89	7.0	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
BG01	29 Jan 2025	ES2502339	18	1.0	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
BG02	29 Jan 2025	ES2502339	12	0.6	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5

	Total Suspended Solids (Lab)	Nitrogen (Total)	Ethion	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos
	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	5	0.1	0.5	0.5	0.5	2	2	0.5
ANZG (2018) Marine water 95% toxicant DGVs								
DHWQO	10	0.27						
EPL227 Values	10	0.3						

Location Code	Date	Lab Report Number								
SW01	29 Jan 2025	ES2502339	<5	0.4	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW02	29 Jan 2025	ES2502339	<5	3.7	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW03	29 Jan 2025	ES2502339	7	8.2	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW04	29 Jan 2025	ES2502339	11	7.5	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW05	29 Jan 2025	ES2502339	<5	0.6	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW06	29 Jan 2025	ES2502339	<5	1.0	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
SW07	29 Jan 2025	ES2502339	89	7.0	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
BG01	29 Jan 2025	ES2502339	18	1.0	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5
BG02	29 Jan 2025	ES2502339	12	0.6	<0.5	<0.5	<0.5	<2.0	<2.0	<0.5

A.2 Laboratory Reports



CERTIFICATE OF ANALYSIS

Work Order : ES2502339
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 31-Jan-2025 09:30
Date Analysis Commenced : 03-Feb-2025
Issue Date : 07-Feb-2025 14:12



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- TDS by method EA-015 various samples may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- TDS by method EA-015 sample various samples may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit	ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	51	154	538	547	58
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	<5	<5	7	11	<5
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.006	0.006	<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	<0.001	<0.001	0.004	0.004	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	0.006	<0.005	0.014	0.010	<0.005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.006	0.006	<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	<0.001	<0.001	0.005	0.006	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	0.006	0.008	0.015	0.017	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.20	0.74	0.55	0.13
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	0.14	2.48	1.70	1.41	0.02



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	1.2	6.5	6.1	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	3.7	8.2	7.5	0.6
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.04	0.93	1.06	0.20
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	18	130	134	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit	ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		79.2	80.4	62.5	72.5	67.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		84.3	86.2	67.8	81.7	72.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		76.4	89.5	76.9	76.9	79.0
Toluene-D8	2037-26-5	2	%		89.8	97.1	91.5	93.3	91.0
4-Bromofluorobenzene	460-00-4	2	%		96.6	104	96.6	95.9	97.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		118	559	76	40	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	89	18	12	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.005	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	0.004	0.002	<0.001	----
Nickel	7440-02-0	0.001	mg/L		<0.001	0.002	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.013	0.008	0.009	<0.005	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.006	0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.002	0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		0.002	0.007	0.004	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.001	0.003	0.002	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	0.002	0.002	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.015	0.016	0.015	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.08	0.89	0.02	0.12	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.31	0.90	0.30	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.7	6.1	0.7	0.6	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.0	7.0	1.0	0.6	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.01	1.78	0.34	0.37	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		15	166	17	10	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG01	BG02	----
Sampling date / time				29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit	ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		69.2	74.2	80.1	87.0	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		77.5	80.1	86.0	84.5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		75.6	81.0	74.1	93.7	----
Toluene-D8	2037-26-5	2	%		87.5	96.0	92.4	100	----
4-Bromofluorobenzene	460-00-4	2	%		93.1	98.9	99.3	108	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2502339**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : youngje@cdmsmith.com
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 31-Jan-2025 09:30
Client Requested Due : 07-Feb-2025
Date

Issue Date : 31-Jan-2025
Scheduled Reporting Date : **07-Feb-2025**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : 1
Receipt Detail :

Security Seal : Not Available
Temperature : 29.9'C 29.9'C 30.2'C
No. of samples received / analysed : 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2502339-001	29-Jan-2025 10:30	SW01	✓	✓	✓	✓	✓	✓	✓
ES2502339-002	29-Jan-2025 08:45	SW02	✓	✓	✓	✓	✓	✓	✓
ES2502339-003	29-Jan-2025 09:00	SW03	✓	✓	✓	✓	✓	✓	✓
ES2502339-004	29-Jan-2025 09:15	SW04	✓	✓	✓	✓	✓	✓	✓
ES2502339-005	29-Jan-2025 09:45	SW05	✓	✓	✓	✓	✓	✓	✓
ES2502339-006	29-Jan-2025 08:20	SW06	✓	✓	✓	✓	✓	✓	✓
ES2502339-007	29-Jan-2025 10:00	SW07	✓	✓	✓	✓	✓	✓	✓
ES2502339-008	29-Jan-2025 07:30	BG01	✓	✓	✓	✓	✓	✓	✓
ES2502339-009	29-Jan-2025 08:00	BG02	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2502339-001	29-Jan-2025 10:30	SW01	✓	✓
ES2502339-002	29-Jan-2025 08:45	SW02	✓	✓
ES2502339-003	29-Jan-2025 09:00	SW03	✓	✓
ES2502339-004	29-Jan-2025 09:15	SW04	✓	✓
ES2502339-005	29-Jan-2025 09:45	SW05	✓	✓
ES2502339-006	29-Jan-2025 08:20	SW06	✓	✓
ES2502339-007	29-Jan-2025 10:00	SW07	✓	✓
ES2502339-008	29-Jan-2025 07:30	BG01	✓	✓
ES2502339-009	29-Jan-2025 08:00	BG02	✓	✓

Proactive Holding Time Report

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



CHAIN OF CUSTODY

ALS Laboratory please tick ->

QINDSLAND 21 Burnie Road Poolara SA 5705
Ph: 08 4351 0820 E: qindslab@alsglobal.com

CERTIFICATE 21 Syth Street Stafford QLD 4053
Ph: 07 3240 1222 E: samples.torban@alsglobal.com

QSLADISTRICT 40 Colakemah Drive Clonville QLD 3660
Ph: 07 7471 5500 E: qsladist@alsglobal.com

QULACHARY 76 Highway 1 Road Oakey QLD 4740
Ph: 07 4944 2177 E: nestor@alsglobal.com

QWELBOURNE 3 Alvin Road Seppelt VIC 3171
Ph: 03 8743 5576 E: samples.melbourne@alsglobal.com

QWILDCOSE 123 Sydney Road Morpeth NSW 1560
Ph: 02 9372 9755 E: nestor@alsglobal.com

QNEWCASTLE 5835 Warfield Road Newcastle NSW 2290
Ph: 02 4914 2550 E: samples.newcastle@alsglobal.com

QNEWCASTLE 4113 Geary Place North Newcastle NSW 2291
Ph: 02 4433 5053 E: nestor@alsglobal.com

QPERTH 10 Poo Way Malpas WA 6026
Ph: 08 5526 7035 E: samples.perth@alsglobal.com

QTCOWSWELL 14 15 Descoe Court Bala QLD 4816
Ph: 07 4796 0503 E: samples.torban@alsglobal.com

QWILDCOSE 123 Sydney Road Morpeth NSW 1560
Ph: 02 9372 9755 E: nestor@alsglobal.com

QWILDCOSE 123 Sydney Road Morpeth NSW 1560
Ph: 02 9372 9755 E: nestor@alsglobal.com

CLIENT: City of Palmerston		TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		FOR LABORATORY USE Custody Seal Intact?	
OFFICE: DARWIN	PROJECT NO. 1001837		ALS QUOTE NO.: ES24E3CON0005		Free ice / frozen ice bricks on:
PROJECT: Archer	PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		Random Sample Temperature
ORDER NUMBER:	CONTACT PH: 0438008851		COC SEQUENCE NUMBER (Circle)		Other comment:
PROJECT MANAGER: Jeni Young	SAMPLER MOBILE:		COC: 1 2 3 4 5 6 7		
SAMPLER: <i>Yaghlia Casey</i>	EDD FORMAT (or default):		OF: 1 2 3 4 5 6 7		
COC Emailed to ALS? (YES / NO)	RELINQUISHED BY: <i>Yaghlia Casey</i>		RECEIVED BY: <i>[Signature]</i>		
Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM	DATE/TIME: <i>29-1-25 11:40</i>		DATE/TIME: <i>29/1/25 11:40</i>		
Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM					

Environmental Division
Sydney
Work Order Reference
ES2502339



Telephone : + 61-2-8784 8555

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Telephone : - 61-2-8784 8555

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suit Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA015H: Total Dissolved Solids - Standard Level	EA025H: Suspended Solids - Standard Level	EA035G: Ammonia as N By Discrete Analyser	EP025P: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP035SF: Total Phenol by Segmented Flow Analyser	NT-11: Total Nitrogen / Total Phosphorus	W-02T: 8 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W-05: TRH(CS-C40) / B1EXN / 8 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W-12: DGIOP Pesticides		
1	SW01	29-1-25 10:30	WATER		8	x	x	x	x	x	x	x	x	x		
2	SW02	29-1-25 8:45	WATER		8	x	x	x	x	x	x	x	x	x		
3	SW03	29-1-25 9:00	WATER		8	x	x	x	x	x	x	x	x	x		
4	SW04	29-1-25 9:15	WATER		8	x	x	x	x	x	x	x	x	x		
5	SW05	29-1-25 9:45	WATER		8	x	x	x	x	x	x	x	x	x		
6	SW06	29-1-25 8:20	WATER		8	x	x	x	x	x	x	x	x	x		
7	SW07	29-1-25 10:00	WATER		8	x	x	x	x	x	x	x	x	x		
8	BG01	29-1-25 7:30	WATER		8	x	x	x	x	x	x	x	x	x		
9	BG02	29-1-25 8:00	WATER		8	x	x	x	x	x	x	x	x	x		
TOTAL																

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

11 March 2025
Project Number: 1001837

Jelise Camilleri
City of Palmerston
Acting Manager of Sustainability
PO Box 1
Palmerston NT 0831

Dear Jelise

RE: Wet Season Surface Water Monitoring Round 3: February 2025

On the 24th February 2025, in accordance with the site Water Quality Monitoring and Management Plan (WQMMP), CDM Smith conducted surface water monitoring at Archer Waste Transfer Station (AWTS) as the third round for the 2024-2025 wet season. Surface water sampling was undertaken by CDM Smith Environmental Scientist Tayhlia Casey.

This letter report details the data results compared to the ANZG 2018 default assessment criteria of the monthly surface water monitoring with interpretation and recommendations.

Sincerely



Tayhlia Casey
Environmental Scientist
e. caseytc@cdmsmith.com

Jeni Young
Associate Environmental Scientist
p. +61 438 006 851
e. youngje@cdmsmith.com

1 Introduction

The surface water monitoring program outlined in the WQMMP has been designed to monitor risks to the natural environment from sites activities. Surface water shed from the site during the wet season flows from the north east to the upper tributaries of Elizabeth River. The surface water sampling locations have been positioned to monitor surface water quality and any potential contamination arising from the sites activities.

1.1 Sampling Locations and Rationale

The surface water sampling locations and rationale are presented in Table 1 and Figure 1. site north-west of the mulch/garden area was investigated and sampled as part of this round.

Table 1 Sample Locations and Rationale

Sample Name	Rationale
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Locations results reportable under EPL233-02.
SW02	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW03	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Locations results reportable under EPL233-02.
SW05	To be used as an alternative to SW07 if it is dry. Would capture water shed from site activities except for mulch area.
SW06	Upstream of site. To be used to mark any contamination flowing from neighbouring suburbs.
SW07	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.
BG01	To be used to mark any contamination flowing from neighbouring suburbs.
BG02	Upstream of site. Access to SW01 poses a HSE concern, this location is used as an alternative.
BG03	Upgradient of site. Sheet flow capture north of the mulch area.

1.2 Assessment Criteria

Surface water quality is assessed against the following criteria:

- Trigger Values EPL223-02
- Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)
- 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018).

1.3 Analytical Program

The analytical program outlined in the WQMMP are summarised in Table 2. One additional upstream sites was added in the February round as part of City of Palmerston due diligence.

Table 2 Sample analytical program

Sample Location	In situ physico-chemical parameters	Nutrients	Other	Total & Dissolved Metals	Hydrocarbons
	pH, Temp, EC, Redox, DO, Turbidity	Total Nitrogen, Total Phosphorous, Ammonia	Chemical Oxygen Demand, Suspended Solids, Total Dissolved Solids OC/OP Pesticides	As, Cd, Cr, Cu, Pb, Ni, Zn	TRH (C6-C40), BTEXN, Total Phenol
SW01	X	X	X	X	X
SW02	X	X	X	X	X
SW03	X	X	X	X	X
SW04	X	X	X	X	X
SW05	X	X	X	X	X
SW06	X	X	X	X	X
SW07	X	X	X	X	X
BG01	X	X	X	X	X
BG02	X	X	X	X	X
BG03	X	X	X	X	X

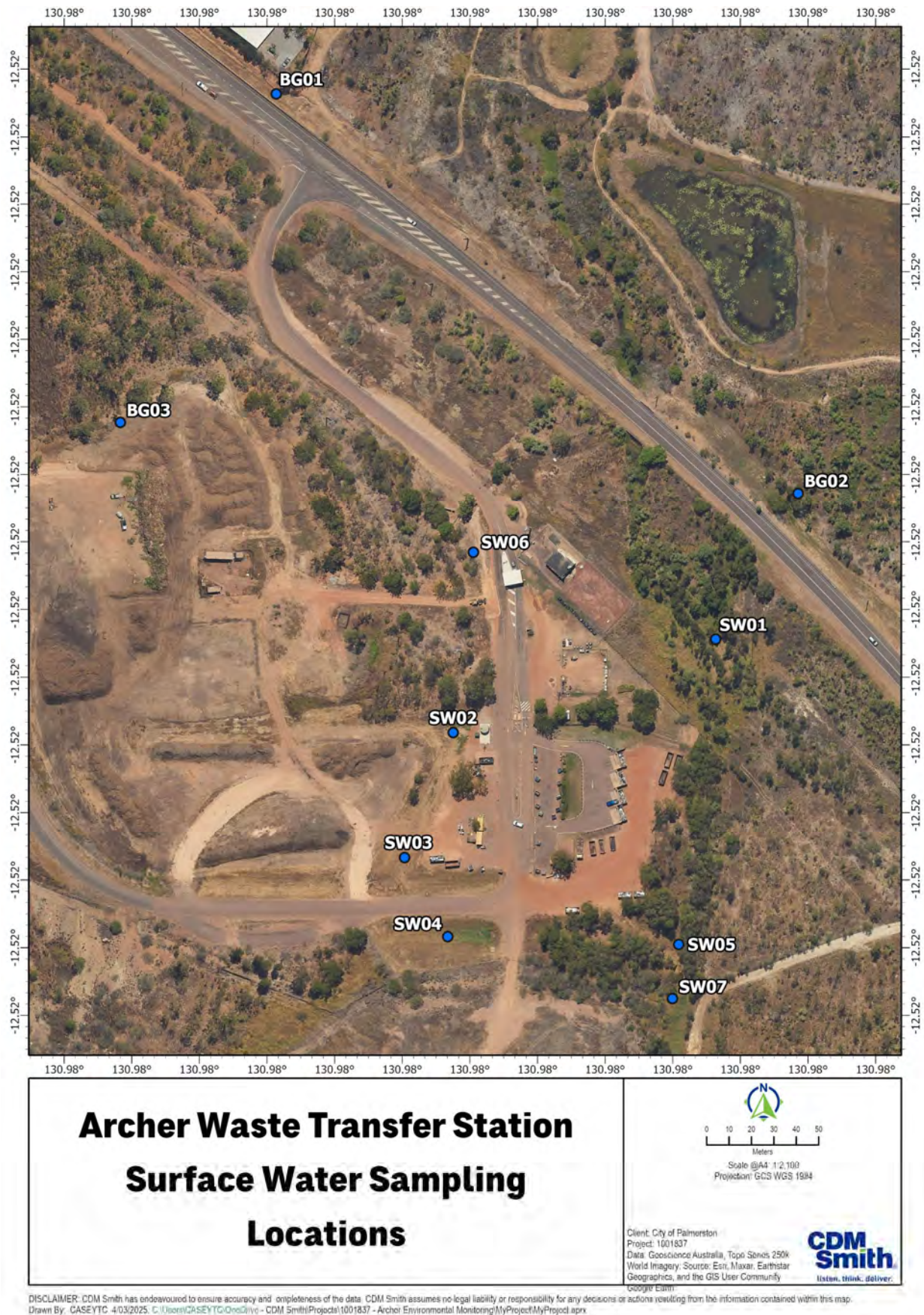


Figure 1 Sampling Locations

2 In-situ Monitoring and Observations

During the sampling day, little to no flow was observed at most locations. Photos for each site are presented in Figure 2.

Physico-chemical parameters were recorded at each monitoring site and are presented in Table 3.

Dissolved oxygen (DO) was below the assessment criteria range (80-100% saturation) at all sites except BG03. pH was below the assessment criteria range (6.00-8.5) at sites SW06 and BG02.

There was minimal flow within the waterways on the day of sample. The day prior to sampling 21.0mm of rain fell in the Palmerston area with approximately 350mm falling since the last round of sampling in January 2025.

Table 3 Surface water field parameters

Sample Site	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
Trigger Values	-	80-100	-	-	-	6.00-8.50	-	-
SW01	30.1	11.1	127	83	0.04	6.61	-39.7	12
SW02	28.8	17	678	444	0.29	6.17	-62.8	15
SW03	28.3	24.3	1047	682	0.50	6.61	-25.7	8.8
SW04	29.3	7.2	1349	872	0.63	6.59	-126.7	24
SW05	29.98	23	542	347	0.23	6.40	-27.0	11
SW06	27.6	61.5	229	146	0.07	5.71	26.9	5.8
SW07	29.4	44.7	1125	725	0.53	6.50	-37.3	38
BG01	28.6	66.7	113	71	0.04	6.45	65.2	9.5
BG02	27.4	35.2	164	107	0.05	5.94	-43.7	21
BG03	39.3	91.4	541	351	0.23	6.79	-79.4	45

Note: Shaded blue cells denote where parameters were reported outside of trigger value or range.



BG03



SW02



SW03



SW04



SW05



SW06



SW07



BG01



BG02

Figure 2 Site photos

3 Laboratory Results

Summarised laboratory results with exceedances of the assessment criteria are presented in Table 4.

All parameters were within the assigned trigger values at reportable location SW07 for EPL233-02 except Ammonia and Nitrogen concentrations.

For all other sites the Ammonia and Nitrogen concentrations were recorded above the trigger value.

Total Suspended Solids concentrations were recorded above the trigger value at half of the locations being SW02, SW04, SW06, BG02 and BG03.

Dissolved Copper concentrations were recorded above the trigger value at BG03.

Table 4 Laboratory Results Summary

Sample Site	Copper (dissolved)	Zinc (dissolved)	Ammonia as N	Total Nitrogen as N	Total Suspended Solids
Trigger Values EPL233-02	0.0013 mg/L⁷	0.015 mg/L⁷	0.02 mg/L³	0.3 mg/L³	10 mg/L³
SW01	<0.001	0.009	0.26	0.4	<5
SW02	<0.001	<0.005	0.41	1.1	11
SW03	<0.001	<0.005	0.16	0.6	8
SW04	<0.001	0.016	0.27	1.6	76
SW05	<0.001	<0.005	0.22	2.9	<5
SW06	<0.001	0.012	0.44	3.0	22
SW07	<0.001	<0.005	0.56	0.5	<5
BG01	<0.001	0.015	0.30	0.6	<5
BG02	<0.001	<0.005	0.85	3.8	51
BG03	0.002	<0.005	0.03	2.0	124

Note 1: blue shaded cells denotes where parameters were recorded outside trigger values

3 – Based on Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)

7 – Based on 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018)

4 Conclusion

The key findings of this surface water monitoring event are:

- This event was noted as the third sample for the wet season program.
- Nutrients levels are elevated upstream of the site with site BG02 reporting the highest levels of Ammonia and Nitrogen of all sites. This established an elevated background to for all downstream sample locations. The high levels of nutrients at all sites are consistent with historical sampling events with no point source being evident. No hydrocarbons were recorded in any of the samples.

A.1 Surface Water Results Summary



	Inorganics								Metals												
	Total Suspended Solids (Lab)	Nitrogen (Total)	Ammonia as N	Total Phosphorus as P (Organic Phosphate as P)	Nitrite + Nitrate as N	Kjeldahl Nitrogen Total	Chemical Oxygen Demand	Total Dissolved Solids (Lab)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (II+VI)	Chromium (II+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel
	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	5	0.1	0.01	0.01	0.01	0.1	10	10	0.001	0.001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001
ANZG (2018) Freshwater 95% toxicant DGVs			0.9								0.0002	0.0002			0.0014	0.0014	0.0034	0.0034	0.0006	0.0006	0.011
EPL227 Values	10	0.3	0.02	0.03							0.0055	0.0055	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07
DHWQO	10	0.27	0.02		0.02						0.0055	0.0055	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07

Date	Lab Report Number	Field ID																					
24 Feb 2025	ES2505149	BG01	<5	0.4	0.26	0.04	0.02	0.4	<10	34	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		BG02	11	1.1	0.41	0.03	<0.01	1.1	26	99	0.003	0.002	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		SW01	8	0.6	0.16	0.13	<0.01	0.6	13	60	0.002	0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		SW02	76	1.6	0.27	0.08	0.06	1.5	43	328	0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001
		SW03	<5	2.9	0.22	0.58	<0.01	2.9	97	539	0.007	0.006	<0.0001	<0.0001	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001
		SW04	22	3.0	0.44	1.15	0.01	3.0	110	696	0.012	0.006	<0.0001	<0.0001	0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.0001	<0.0001	0.001
		SW05	<5	0.5	0.56	0.02	<0.01	0.5	<10	98	0.001	0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		SW06	<5	0.6	0.30	0.02	0.01	0.6	13	148	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001
	SW07	51	3.8	0.85	0.81	<0.01	3.8	105	637	0.007	<0.001	<0.0001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001	
	ES2505168	BG03	124	2.0	0.03	0.18	<0.01	2.0	58	280	0.005	0.004	<0.0001	<0.0001	<0.001	<0.001	0.004	0.002	0.001	<0.001	<0.0001	<0.0001	0.001

Statistics																					
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	6	10	10	10	4	10	8	10	8	6	0	0	2	0	3	1	2	0	0	0	6
Minimum Concentration	<5	0.4	0.03	0.02	0.01	0.4	<10	34	0.001	0.001	<0.0001	<0.0001	0.001	<0.001	0.001	<0.001	0.001	<0.001	<0.0001	<0.0001	0.001
Minimum Detect	8	0.4	0.03	0.02	0.01	0.4	13	34	0.001	0.001	ND	ND	0.001	ND	0.001	0.002	0.001	ND	ND	ND	0.001
Maximum Concentration	124	3.8	0.85	1.15	0.06	3.8	110	696	0.012	0.006	<0.0001	<0.0001	0.001	<0.001	0.004	0.002	0.001	<0.001	<0.0001	<0.0001	0.001
Maximum Detect	124	3.8	0.85	1.15	0.06	3.8	110	696	0.012	0.006	ND	ND	0.001	ND	0.004	0.002	0.001	ND	ND	ND	0.001
Average Concentration *	30	1.6	0.35	0.3	0.013	1.6	48	292	0.0039	0.0022	0.00005	0.00005	0.0006	0.0005	0.00095	0.00065	0.0006	0.0005	0.00005	0.00005	0.0008
Geometric Average *	11	1.2	0.27	0.12	0.0085	1.2	28	191	0.0023	0.0013	0.00005	0.00005	0.00057	0.0005	0.00071	0.00057	0.00057	0.0005	0.00005	0.00005	0.00076
Median Concentration *	9.5	1.35	0.285	0.105	0.005	1.3	34.5	214	0.0025	0.001	0.00005	0.00005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00005	0.00005	0.001
Standard Deviation *	41	1.2	0.23	0.4	0.017	1.2	42	250	0.0038	0.0023	0	0	0.00021	0	0.0011	0.00047	0.00021	0	0	0	0.00026
Geometric Standard Deviation *	4.7	2.3	2.5	4.6	2.3	2.3	3.3	2.9	3.2	2.9	1	1	1.3	1	2	1.6	1.3	1	1	1	1.4
95% UCL (Student's-t) *	54.12	2.361	0.484	0.537	0.023	2.351	72.13	436.6	0.00611	0.00352	0.00005	0.00005	0.00072221	0.0005	0.00158	0.00092497	0.00072221	0.0005	0.00005	0.00005	0.00094967
% of Detects	60	100	100	100	40	100	80	100	80	60	0	0	20	0	30	10	20	0	0	0	60
% of Non-Detects	40	0	0	0	60	0	20	0	20	40	100	100	80	100	70	90	80	100	100	100	40

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO



				TPH					TRH							BTEX					
	Nickel (filtered)	Zinc	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.001	0.005	0.005	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.005	0.001	0.002	0.002	0.002	0.001
ANZG (2018) Freshwater 95% toxicant DGVs	0.011	0.008	0.008														0.95				
EPL227 Values	0.07	0.015	0.015													0.07	0.7				
DHWQO	0.07	0.015	0.015														0.7				

Date	Lab Report Number	Field ID																				
24 Feb 2025	ES2505149	BG01	<0.001	0.007	0.009	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		BG02	0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW01	<0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	0.013	<0.002	0.013
		SW02	<0.001	0.014	0.016	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW03	0.002	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW04	0.001	0.008	0.012	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW05	<0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW06	0.002	0.011	0.015	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
		SW07	<0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001
	ES2505168	BG03	0.001	0.017	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.001

Statistics																						
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	5	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Minimum Concentration	0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
Minimum Detect	0.001	0.007	0.009	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND	ND	0.013
Maximum Concentration	0.002	0.017	0.016	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	0.013	<0.002	<0.002	0.013
Maximum Detect	0.002	0.017	0.016	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.013	ND	ND	0.013
Average Concentration *	0.00095	0.007	0.0067	0.01	0.025	0.05	0.025	0.025	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.0025	0.0005	0.0022	0.001	0.001	0.0018
Geometric Average *	0.00081	0.0052	0.0048	0.01	0.025	0.05	0.025	0.025	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.0025	0.0005	0.0013	0.001	0.001	0.00069
Median Concentration *	0.00075	0.00475	0.0025	0.01	0.025	0.05	0.025	0.025	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.0025	0.0005	0.001	0.001	0.001	0.0005
Standard Deviation *	0.0006	0.0054	0.0057	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.0038	0	0	0.004
Geometric Standard Deviation *	1.8	2.2	2.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	2.3	1	1	2.8
95% UCL (Student's-t) *	0.0013	0.0101	0.01	0.01	0.025	0.05	0.025	0.025	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.05	0.0025	0.0005	0.0044	0.001	0.001	0.00404
% of Detects	50	50	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10
% of Non-Detects	50	50	60	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	90	100	100	90

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

				Halogenated Benzenes	Phenols	Pesticides				Organochlorine Pes										
	Xylene (m & p)	Xylene (o)	Hexachlorobenzene	Phenolics Total	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	4,4-DDE	α-BHC	Aldrin	Aldrin + Dieldrin	β-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	γ-BHC	DDD	DDT	DDT+DDE+DDD
	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.002	0.002	0.5	50	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5
ANZG (2018) Freshwater 95% toxicant DGVs		0.35					0.004							0.08					0.01	
EPL227 Values																				
DHWQO																				

Date	Lab Report Number	Field ID																				
24 Feb 2025	ES2505149	BG01	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		BG02	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW01	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW02	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW03	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW04	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW05	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
		SW06	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	
	SW07	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5		
	ES2505168	BG03	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	

Statistics																					
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Geometric Average *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Median Concentration *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

	Insecticides											Organophosphorous Pesticides										
	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.0005	0.5	0.5	0.5	0.5	
ANZG (2018) Freshwater 95% toxicant DGVs					0.02			0.2	0.09			0.02				0.01		0.01		0.15		
EPL227 Values																						
DHWQO																						

Date	Lab Report Number	Field ID																				
24 Feb 2025	ES2505149	BG01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		BG02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW07	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
	ES2505168	BG03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	<0.5

Statistics																						
Number of Results	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	<0.5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	<0.5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	0.25
Geometric Average *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	0.25
Median Concentration *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	0.25
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	0.25
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos
	µg/L	µg/L	µg/L	µg/L	µg/L
	0.5	0.5	2	2	0.5
EQL					
ANZG (2018) Freshwater 95% toxicant DGVs					
EPL227 Values					
DHWQO					

Date	Lab Report Number	Field ID					
24 Feb 2025	ES2505149	BG01	<0.5	<0.5	<2.0	<2.0	<0.5
		BG02	<0.5	<0.5	<2.0	<2.0	<0.5
		SW01	<0.5	<0.5	<2.0	<2.0	<0.5
		SW02	<0.5	<0.5	<2.0	<2.0	<0.5
		SW03	<0.5	<0.5	<2.0	<2.0	<0.5
		SW04	<0.5	<0.5	<2.0	<2.0	<0.5
		SW05	<0.5	<0.5	<2.0	<2.0	<0.5
		SW06	<0.5	<0.5	<2.0	<2.0	<0.5
		SW07	<0.5	<0.5	<2.0	<2.0	<0.5
	ES2505168	BG03	<0.5	<0.5	<2.0	<2.0	<0.5

Statistics					
Number of Results	10	10	10	10	10
Number of Detects	0	0	0	0	0
Minimum Concentration	<0.5	<0.5	<2	<2	<0.5
Minimum Detect	ND	ND	ND	ND	ND
Maximum Concentration	<0.5	<0.5	<2	<2	<0.5
Maximum Detect	ND	ND	ND	ND	ND
Average Concentration *	0.25	0.25	1	1	0.25
Geometric Average *	0.25	0.25	1	1	0.25
Median Concentration *	0.25	0.25	1	1	0.25
Standard Deviation *	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1
95% UCL (Student's-t) *	0.25	0.25	1	1	0.25
% of Detects	0	0	0	0	0
% of Non-Detects	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

A.2 Laboratory Reports



CERTIFICATE OF ANALYSIS

Work Order : ES2505149
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 25-Feb-2025 11:30
Date Analysis Commenced : 26-Feb-2025
Issue Date : 03-Mar-2025 16:39



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- EP080: Batch ES2505149-1 result has been confirmed by re-analysis.
- It has been noted that Ammonia is greater than TKN, however this difference is within the limits of experimental variation.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit	ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	60	328	539	696	98
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	8	76	<5	22	<5
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.006	0.006	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	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	<0.005	0.016	<0.005	0.012	<0.005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.007	0.012	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	<0.001	<0.001	0.001	0.001	<0.001
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	<0.005	0.014	<0.005	0.008	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.27	0.22	0.44	0.56
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	<0.01	0.06	<0.01	0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit		ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	1.5	2.9	3.0	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.6	1.6	2.9	3.0	0.5
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.08	0.58	1.15	0.02
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		13	43	97	110	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit	ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit		ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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		13	<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		13	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		89.0	99.1	72.6	93.2	89.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit	ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005	
				Result	Result	Result	Result	Result	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%	87.7	106	84.8	91.2	87.9	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	84.4	84.0	89.4	85.8	87.0	
Toluene-D8	2037-26-5	2	%	85.0	92.5	93.5	81.3	88.0	
4-Bromofluorobenzene	460-00-4	2	%	101	104	105	93.4	101	



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		148	637	34	99	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	51	<5	11	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	0.002	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.002	<0.001	<0.001	0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.015	<0.005	0.009	<0.005	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.007	<0.001	0.003	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.001	0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.011	<0.005	0.007	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.30	0.85	0.26	0.41	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.01	<0.01	0.02	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	3.8	0.4	1.1	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.6	3.8	0.4	1.1	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	0.81	0.04	0.03	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		13	105	<10	26	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG01	BG02	----
Sampling date / time				24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit	ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		89.5	95.7	86.4	80.6	----



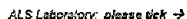
Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		89.0	96.5	88.2	84.0	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		86.4	92.1	103	91.6	----
Toluene-D8	2037-26-5	2	%		85.8	92.2	85.7	92.0	----
4-Bromofluorobenzene	460-00-4	2	%		102	105	111	108	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137

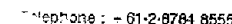


UNGLADSTONE 46 Callamenden Drive, Canton
Ph. 07 247 6205, e-mail: un@unlad.com

BUDGET 123 Eynce Road Nudgee NSW 2
Ph: 01 6272 8735 E: jim@nudgee.com.au

DEPT. OF HOUSING & COMMUNITY DEVELOPMENT

ES2505149



NA

CLIENT: City of Palmerston		TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organism)		☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY USE: Custody Seal	
OFFICE: DARWIN		PROJECT NO. 1001837		ALS QUOTE NO.: ES24E3CON0005		Free Ice / frozen	
PROJECT: Archer		ORDER NUMBER:		PURCHASE ORDER NO.:		COC SEQUENCE NUMBER (Circle)	
PROJECT MANAGER: Jeni Young		CONTACT PH: 0432008851		COUNTRY OF ORIGIN:		COC: 7 2 3 4 5 6 7	
SAMPLER: Tayhlia Casey		SAMPLER MOBILE: 0428710722		RELINQUISHED BY: Tayhlia Casey		RECEIVED BY: [Signature]	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 24-2-25 12:15		DATE/TIME: 24/2	
Email Reports to (will default to PM if no other addresses are listed): YOUNGJEE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		Email Invoice to (will default to PM if no other addresses are listed): YOUNGJEE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		DATE/TIME:		DATE/TIME:	

DATE/TIME: Dec 16/2 11:30 am

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

[illegible]

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic
V = VOA Val HCl Preserved; VB = VOA Val Sodium Bisulfate Preserved; VS = VOA Val Sulfuric Preserved; AV = Airtight Unpreserved Val SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved Bag; L = Lucobol Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

*Please lab filter 1x red/green metals bottle
from SW07 *



CERTIFICATE OF ANALYSIS

Work Order : ES2505168
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 8
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 25-Feb-2025 11:30
Date Analysis Commenced : 26-Feb-2025
Issue Date : 03-Mar-2025 16:39



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
Result						----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		280	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		124	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.004	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
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		0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.005	----	----	----	----
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		0.004	----	----	----	----
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		0.017	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.03	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
Result						----	----	----	----
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		2.0	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	----	----	----	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		58	----	----	----	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BG03	----	----	----	----
Sampling date / time				24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2505168-001	-----	-----	-----	-----
				Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
					Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
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	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		90.4	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
				Sampling date / time	24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
				Result	----	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		93.5	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		95.5	----	----	----	----
Toluene-D8	2037-26-5	2	%		89.6	----	----	----	----
4-Bromofluorobenzene	460-00-4	2	%		109	----	----	----	----



Surrogate Control Limits

Sub-Matrix: **WATER**

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



Telephone : - 61-2-8761 6555

CHAIN OF CUSTODY				TURNAROUND REQUIREMENTS :		FOR LABORATOR								
ALS Laboratory please tick →				☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact?								
CLIENT: City of Palmerston		PROJECT NO. 1001837		ALS QUOTE NO.: ES24E3CON0005		COC SEQUENCE NUMBER (Circle)								
OFFICE: DARWIN		PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		COC: ① 2 3 4 5 6 7								
PROJECT: Archer		CONTACT PH: 0438006851		RELINQUISHED BY: Taylia Casey		RECEIVED BY: [Signature]								
PROJECT MANAGER: Jeni Young		SAMPLER MOBILE: 0428 710724		DATE/TIME: 26.2.25 12:15		DATE/TIME: 24/2								
SAMPLER: Taylia Casey		EDD FORMAT (or default):		DATE/TIME: 26.2.25 12:15		DATE/TIME: 25/2 11:30am								
COC Emailed to ALS? (YES / NO)		Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM										
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:														
ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (fold filtered bottle required).								
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA018H: Total Dissolved Solids - Standard Level	EA025H: Suspended Solids - Standard Level	EW055G: Ammonia as N by Discrete Analyser	EP026P: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP035SF: Total Phenol by Segmented Flow Analyser	NT-11: Total Nitrogen / Total Phosphorus	W401: 6 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W406: YRHCs-C40 / BTEAN / 8 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W12: OC/OP Pesticides
	SW01		WATER		8	x	x	x	x	x	x	x	x	
	SW02		WATER		8	x	x	x	x	x	x	x	x	
	SW03		WATER		8	x	x	x	x	x	x	x	x	
	SW04		WATER		8	x	x	x	x	x	x	x	x	
	SW05		WATER		8	x	x	x	x	x	x	x	x	
	SW06		WATER		8	x	x	x	x	x	x	x	x	
	SW07		WATER		8	x	x	x	x	x	x	x	x	
	BG01		WATER		8	x	x	x	x	x	x	x	x	
	BG02		WATER		8	x	x	x	x	x	x	x	x	
	BG03	24.2.25 10:45	WATER		8	x	x	x	x	x	x	x	x	
TOTAL														

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

31 March 2025
Project Number: 1001837

Jelise Camilleri
City of Palmerston
Acting Manager of Sustainability
PO Box 1
Palmerston NT 0831

Dear Jelise

RE: Wet Season Surface Water Monitoring Round 4: March 2025

On the 19th March 2025, in accordance with the site Water Quality Monitoring and Management Plan (WQMMP), CDM Smith conducted surface water monitoring at Archer Waste Transfer Station (AWTS) as the fourth and final round for the 2024-2025 wet season. Surface water sampling was undertaken by CDM Smith Environmental Scientist Tayhlia Casey.

This letter report details the data results compared to the ANZG 2018 default assessment criteria of the monthly surface water monitoring with interpretation and recommendations.

Sincerely

Tayhlia Casey
Environmental Scientist
e. caseytc@cdmsmith.com



Jeni Young
Associate Environmental Scientist
p. +61 438 006 851
e. youngje@cdmsmith.com

1 Introduction

The surface water monitoring program outlined in the WQMMP has been designed to monitor risks to the natural environment from sites activities. Surface water shed from the site during the wet season flows from the north east to the upper tributaries of Elizabeth River. The surface water sampling locations have been positioned to monitor surface water quality and any potential contamination arising from the sites activities.

1.1 Sampling Locations and Rationale

The surface water sampling locations and rationale are presented in Table 1 and Figure 1. The area north-west of the mulch/garden area was investigated and sampled as part of this round.

Table 1 Sample Locations and Rationale

Sample Name	Rationale
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Locations results reportable under EPL233-02.
SW02	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW03	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Locations results reportable under EPL233-02.
SW05	To be used as an alternative to SW07 if it is dry. Would capture water shed from site activities except for mulch area.
SW06	Upstream of site. To be used to mark any contamination flowing from neighbouring suburbs.
SW07	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.
BG01	To be used to mark any contamination flowing from neighbouring suburbs.
BG02	Upstream of site. Access to SW01 poses a HSE concern, this location is used as an alternative.
BG03	Upgradient of site. Sheet flow capture north of the mulch area.

1.2 Assessment Criteria

Surface water quality is assessed against the following criteria:

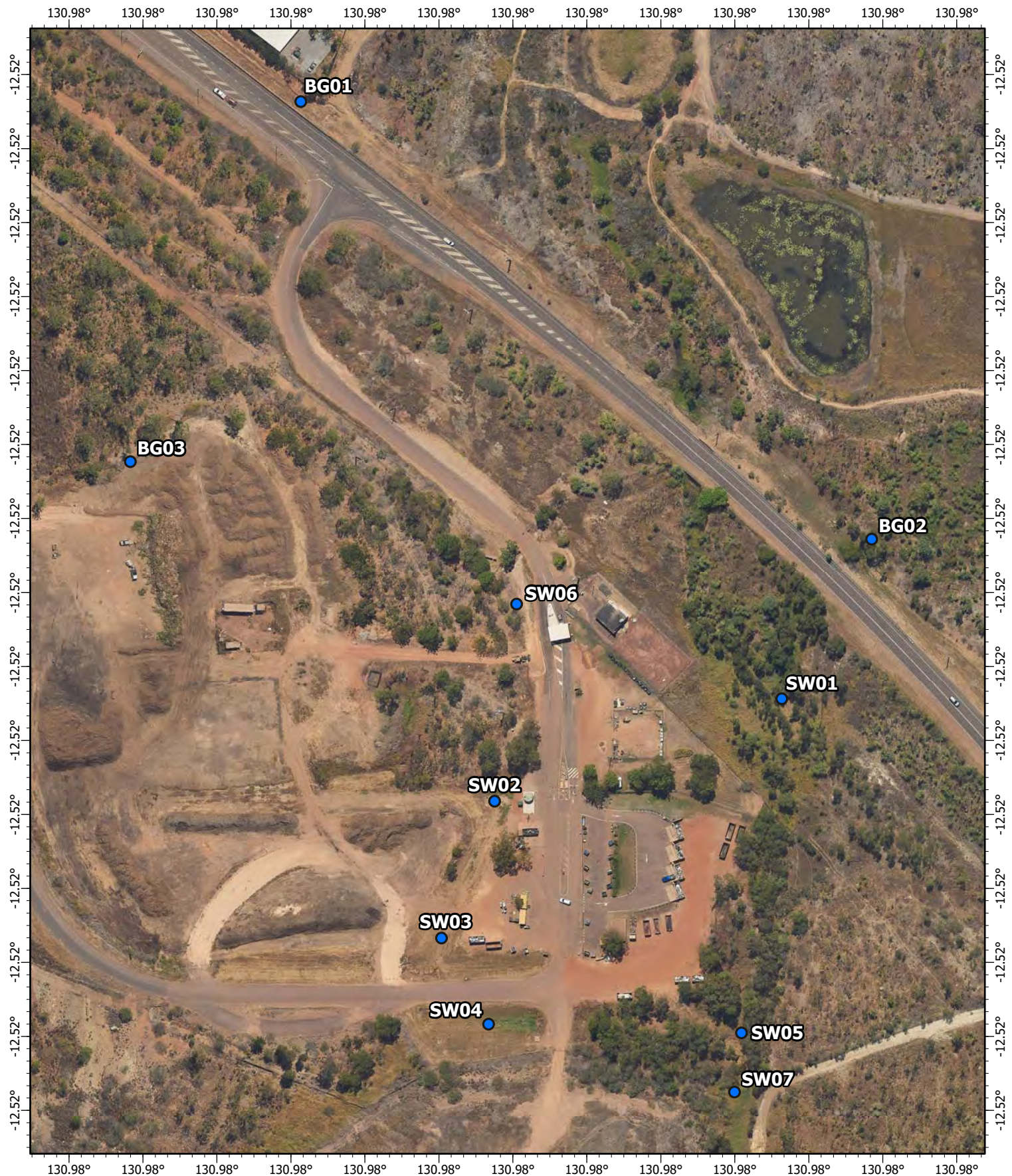
- Trigger Values EPL223-02
- Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)
- 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018).

1.3 Analytical Program

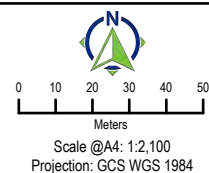
The analytical program outlined in the WQMMP are summarised in Table 2. Two additional upstream sites were added in the December round as part of City of Palmerston due diligence. One additional site was added in the February round north of the Mulch area.

Table 2 Sample analytical program

Sample Location	In situ physico-chemical parameters	Nutrients	Other	Total & Dissolved Metals	Hydrocarbons
	pH, Temp, EC, Redox, DO, Turbidity	Total Nitrogen, Total Phosphorous, Ammonia	Chemical Oxygen Demand, Suspended Solids, Total Dissolved Solids OC/OP Pesticides	As, Cd, Cr, Cu, Pb, Ni, Zn	TRH (C6-C40), BTEXN, Total Phenol
SW01	X	X	X	X	X
SW02	X	X	X	X	X
SW03	X	X	X	X	X
SW04	X	X	X	X	X
SW05	X	X	X	X	X
SW06	X	X	X	X	X
SW07	X	X	X	X	X
BG01	X	X	X	X	X
BG02	X	X	X	X	X
BG03	X	X	X	X	X



Archer Waste Transfer Station Surface Water Sampling Locations



Client: City of Palmerston
Project: 1001837
Data: Geoscience Australia, Topo Series 250k
World Imagery: Source: Esri, Maxar, Earthstar
Geographics, and the GIS User Community
Google Earth:



DISCLAIMER: CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.
Drawn By: CASEYTC 4/03/2025. C:\Users\CASEYTC\OneDrive - CDM Smith\Projects\1001837 - Archer Environmental Monitoring\MyProject\MyProject.aprx

2 In-situ Monitoring and Observations

During the sampling day, little to no flow was observed at most locations. Photos for each site are presented in Figure 2.

Physico-chemical parameters were recorded at each monitoring site and are presented in Table 3.

Dissolved oxygen (DO) was below the assessment criteria range (80-100% saturation) at all sites. pH was below the assessment criteria range (6.00-8.5) at sites SW01, SW06 and BG02.

There was minimal flow within the waterways on the day of sample. The day prior to sampling 2.8.0mm of rain fell in the Palmerston area with approximately 172mm falling since the last round of sampling in February 2025.

Table 3 Surface water field parameters

Sample Site	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
Trigger Values	-	80-100	-	-	-	6.00-8.50	-	-
SW01	28.1	37.6	119	74	0.004	5.95	11.1	8.2
SW02	28.73	24.6	1200	784	0.57	6.46	-168.7	11
SW03	28.7	6.7	115.4	755	0.55	6.69	-86.4	13
SW04	29.6	20.4	1380	897	0.65	6.55	-97.8	8.4
SW05	29.4	9.4	931	605	0.39	6.15	12.4	13
SW06	28.3	28.2	198	130	0.06	5.53	82.1	9.8
SW07	30.50	26.6	1238	808	0.59	6.69	-67.1	55
BG01	DRY							
BG02	27.1	21.3	166	107	0.005	5.93	-36.3	24
BG03	28.3	32.7	580	378	0.24	6.33	-45.3	27

Note: Shaded blue cells denote where parameters were reported outside of trigger value or range.



SW01



SW02



SW03



SW04



SW05



SW06



SW07



BG01



BG02



BG03

Figure 2 Site photos

3 Laboratory Results

Summarised laboratory results with exceedances of the assessment criteria are presented in Table 4.

All parameters were within the assigned trigger values at reportable location SW07 for EPL233-02 except Ammonia, Nitrogen and Total Suspended Solids concentrations.

For all other sites the Ammonia (except SW05 and BG02) and Nitrogen concentrations were recorded above the trigger value.

Total Suspended Solids concentrations were recorded above the trigger value at BG02 and BG03.

Dissolved Copper concentrations were recorded above the trigger value at BG03.

Dissolved Zinc concentrations were recorded above the trigger value at SW06.

Table 4 Laboratory Results Summary

Sample Site	Copper (dissolved)	Zinc (dissolved)	Ammonia as N	Total Nitrogen as N	Total Suspended Solids
Trigger Values EPL233-02	0.0013 mg/L⁷	0.015 mg/L⁷	0.02 mg/L³	0.3 mg/L³	10 mg/L³
SW01	<0.001	0.012	0.32	0.7	9
SW02	<0.001	<0.005	0.06	1.9	<5
SW03	<0.001	<0.005	0.14	2.4	7
SW04	<0.001	<0.005	1.25	3.4	9
SW05	<0.001	0.009	0.02	0.3	<5
SW06	<0.001	0.031	0.19	0.4	6
SW07	<0.001	<0.005	1.01	8.4	99

Sample Site	Copper (dissolved)	Zinc (dissolved)	Ammonia as N	Total Nitrogen as N	Total Suspended Solids
BG01	DRY				
BG02	<0.001	<0.005	0.02	0.6	23
BG03	0.002	0.007	0.03	2.9	396

Note 1: blue shaded cells denotes where parameters were recorded outside trigger values

3 – Based on Darwin Harbour Water Quality Objectives (Marine and Estuarine Systems – Upper Estuary)

7 – Based on 95% species protection for marine waters ANZECC Water Quality Guidelines 2018 (ANZG 2018)

4 Conclusion

The key findings of this surface water monitoring event are:

- This event was the fourth and final sample for the wet season program.
- The high levels of nutrients at all sites are consistent with historical sampling events with no point source being evident.
- No hydrocarbons were recorded in any of the samples.

A.1 Surface Water Results Summary



	Inorganics								Metals												
	Total Suspended Solids (Lab)	Nitrogen (Total)	Ammonia as N	Total Phosphorus as P (Organic Phosphate as P)	Nitrite + Nitrate as N	Kjeldahl Nitrogen Total	Chemical Oxygen Demand	Total Dissolved Solids (Lab)	Arsenic	Arsenic (filtered)	Cadmium	Cadmium (filtered)	Chromium (II+VI)	Chromium (II+VI) (filtered)	Copper	Copper (filtered)	Lead	Lead (filtered)	Mercury	Mercury (filtered)	Nickel
	mg/L	mg/L	mg/L	MG/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	5	0.1	0.01	0.01	0.01	0.1	10	10	0.001	0.001	0.0001	0.0001	0.001	0.001	0.001	0.001	0.001	0.001	0.0001	0.0001	0.001
ANZG (2018) Freshwater 95% toxicant DGVs			0.9								0.0002	0.0002			0.0014	0.0014	0.0034	0.0034	0.0006	0.0006	0.011
EPL227 Values	10	0.3	0.02	0.03							0.0055	0.0055	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07
DHWQO	10	0.27	0.02		0.02						0.0055	0.0055	0.0044	0.0044	0.0013	0.0013	0.0044	0.0044	0.0004	0.0004	0.07

Date	Lab Report Number	Field ID																			
19 Mar 2025	ES2507726	SW01	9	0.7	0.32	0.09	<0.01	0.7	<10	78	0.002	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001
		SW02	<5	1.9	0.06	0.15	0.02	1.9	65	757	0.003	0.003	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	0.001
		SW03	7	2.4	0.14	0.40	<0.01	2.4	70	666	0.006	0.006	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.002
		SW04	9	3.4	1.25	0.63	<0.01	3.4	45	830	0.006	0.006	<0.0001	<0.0001	0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		SW05	<5	0.3	0.02	0.06	<0.01	0.3	<10	130	0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	<0.001
		SW06	6	0.4	0.19	0.06	<0.01	0.4	<10	100	<0.001	<0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.002
		SW07	99	8.4	1.01	4.25	<0.01	8.4	103	774	0.016	0.008	<0.0001	<0.0001	0.002	<0.001	0.003	<0.001	0.002	<0.001	0.001
		BG02	23	0.6		0.02	<0.01	0.6	10	122	0.002	0.001	<0.0001	<0.0001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001
		BG03	396	2.9	0.03	0.33	<0.01	2.9	64	370	0.008	0.006	<0.0001	<0.0001	<0.001	<0.001	0.003	0.002	0.002	<0.001	0.001

Statistics

Number of Results	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Number of Detects	7	9	9	9	1	9	6	9	8	6	0	0	2	1	2	1	2	0	0	0	6
Minimum Concentration	<5	0.3	0.02	0.05	<0.01	0.3	10	78	0.001	0.001	<0.0001	<0.0001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.0001	<0.0001	0.001
Minimum Detect	6	0.3	0.02	0.05	0.02	0.3	10	78	0.001	0.001	ND	ND	0.001	0.001	0.003	0.002	0.002	ND	ND	ND	0.001
Maximum Concentration	396	8.4	1.25	4.25	0.02	8.4	103	830	0.016	0.008	<0.0001	<0.0001	0.002	0.001	0.003	0.002	0.002	<0.001	<0.0001	<0.0001	0.002
Maximum Detect	396	8.4	1.25	4.25	0.02	8.4	103	830	0.016	0.008	ND	ND	0.002	0.001	0.003	0.002	0.002	ND	ND	ND	0.002
Average Concentration *	62	2.3	0.34	0.67	0.0067	2.3	41	425	0.0049	0.0035	0.00005	0.00005	0.00072	0.00056	0.0011	0.00067	0.00083	0.0005	0.00005	0.00005	0.0011
Geometric Average *	14	1.4	0.13	0.21	0.0058	1.4	23	291	0.0031	0.0021	0.00005	0.00005	0.00063	0.00054	0.00074	0.00058	0.00068	0.0005	0.00005	0.00005	0.00093
Median Concentration *	9	1.9	0.14	0.15	0.005	1.9	45	370	0.003	0.003	0.00005	0.00005	0.0005	0.0005	0.0005	0.0005	0.0005	0.0005	0.00005	0.00005	0.001
Standard Deviation *	129	2.5	0.46	1.4	0.005	2.5	36	328	0.0049	0.003	0	0	0.00051	0.00017	0.0011	0.0005	0.00066	0	0	0	0.00058
Geometric Standard Deviation *	5.4	3.1	4.9	4.3	1.6	3.1	3.7	2.7	3	3.4	1	1	1.6	1.3	2.2	1.6	1.8	1	1	1	1.7
95% UCL (Student's-t) *	141.6	3.914	0.625	1.51	0.00977	3.914	63.95	628.7	0.00797	0.00537	0.00005	0.00005	0.00104	0.00065886	0.00174	0.00097659	0.00124	0.0005	0.00005	0.00005	0.00142
% of Detects	78	100	100	100	11	100	67	100	89	67	0	0	22	11	22	11	22	0	0	0	67
% of Non-Detects	22	0	0	0	89	0	33	0	11	33	100	100	78	89	78	89	78	100	100	100	33

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards

ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO



				TPH					TRH							BTEX					
	Nickel (filtered)	Zinc	Zinc (filtered)	C6-C9 Fraction	C10-C14 Fraction	C15-C28 Fraction	C29-C36 Fraction	C10-C36 Fraction (Sum)	C6-C10 Fraction (F1)	C6-C10 (F1 minus BTEX)	>C10-C16 Fraction (F2)	>C10-C16 Fraction (F2 minus Naphthalene)	>C16-C34 Fraction (F3)	>C34-C40 Fraction (F4)	>C10-C40 Fraction (Sum)	Naphthalene (VOC)	Benzene	Toluene	Ethylbenzene	Xylene Total	Total BTEX
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
EQL	0.001	0.005	0.005	0.02	0.05	0.1	0.05	0.05	0.02	0.02	0.1	0.1	0.1	0.1	0.1	0.005	0.001	0.002	0.002	0.002	0.001
ANZG (2018) Freshwater 95% toxicant DGVs	0.011	0.008	0.008														0.95				
EPL227 Values	0.07	0.015	0.015													0.07	0.7				
DHWQO	0.07	0.015	0.015														0.7				

Date	Lab Report Number	Field ID																				
19 Mar 2025	ES2507726	SW01	<0.001	0.014	0.012	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW02	<0.001	0.011	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW03	0.002	0.008	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW04	<0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW05	<0.001	<0.005	0.009	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW06	0.001	0.033	0.031	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		SW07	<0.001	0.016	<0.005	<0.02	<0.05	0.43	0.54	0.97	<0.02	<0.02	<0.1	<0.1	0.85	0.14	0.99	<0.005	<0.001	<0.002	<0.002	<0.002
		BG02	<0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002
		BG03	0.002	0.014	0.007	<0.02	<0.05	<0.1	0.08	0.08	<0.02	<0.02	<0.1	<0.1	0.14	<0.1	0.14	<0.005	<0.001	<0.002	<0.002	<0.002

Statistics																					
Number of Results	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Number of Detects	3	6	4	0	0	1	2	2	0	0	0	0	2	1	2	0	0	0	0	0	0
Minimum Concentration	0.001	<0.005	<0.005	<0.02	<0.05	<0.1	<0.05	<0.05	<0.02	<0.02	<0.1	<0.1	<0.1	<0.1	<0.1	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
Minimum Detect	0.001	0.008	0.007	ND	ND	0.43	0.08	0.08	ND	ND	ND	ND	0.14	0.14	0.14	ND	ND	ND	ND	ND	ND
Maximum Concentration	0.002	0.033	0.031	<0.02	<0.05	0.43	0.54	0.97	<0.02	<0.02	<0.1	<0.1	0.85	0.14	0.99	<0.005	<0.001	<0.002	<0.002	<0.002	<0.001
Maximum Detect	0.002	0.033	0.031	ND	ND	0.43	0.54	0.97	ND	ND	ND	ND	0.85	0.14	0.99	ND	ND	ND	ND	ND	ND
Average Concentration *	0.00089	0.012	0.0079	0.01	0.025	0.092	0.088	0.14	0.01	0.01	0.05	0.05	0.15	0.06	0.16	0.0025	0.0005	0.001	0.001	0.001	0.0005
Geometric Average *	0.00073	0.0081	0.0051	0.01	0.025	0.064	0.04	0.043	0.01	0.01	0.05	0.05	0.077	0.056	0.078	0.0025	0.0005	0.001	0.001	0.001	0.0005
Median Concentration *	0.0005	0.011	0.0025	0.01	0.025	0.05	0.025	0.025	0.01	0.01	0.05	0.05	0.05	0.05	0.05	0.0025	0.0005	0.001	0.001	0.001	0.0005
Standard Deviation *	0.00065	0.0097	0.0093	0	0	0.13	0.17	0.31	0	0	0	0	0.26	0.03	0.31	0	0	0	0	0	0
Geometric Standard Deviation *	1.8	2.6	2.5	1	1	2	2.9	3.4	1	1	1	1	2.6	1.4	2.7	1	1	1	1	1	1
95% UCL (Student's-t) *	0.00129	0.0175	0.0137	0.01	0.025	0.171	0.194	0.33	0.01	0.01	0.05	0.05	0.313	0.0786	0.357	0.0025	0.0005	0.001	0.001	0.001	0.0005
% of Detects	33	67	44	0	0	11	22	22	0	0	0	0	22	11	22	0	0	0	0	0	0
% of Non-Detects	67	33	56	100	100	89	78	78	100	100	100	100	78	89	78	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

			Halogenated Benzenes	Phenols	Pesticides				Organochlorine Pes											
	Xylene (m & p)	Xylene (o)	Hexachlorobenzene	Phenolics Total	Demeton-S-methyl	Fenamiphos	Parathion	Pirimphos-ethyl	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	chlordane	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
	mg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.002	0.002	0.5	50	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5
ANZG (2018) Freshwater 95% toxicant DGVs		0.35					0.004							0.08					0.01	
EPL227 Values																				
DHWQO																				

Date	Lab Report Number	Field ID																			
19 Mar 2025	ES2507726	SW01	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW02	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW03	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW04	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW05	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW06	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		SW07	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		BG02	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5
		BG03	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5

Statistics																				
Number of Results	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minimum Concentration	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Maximum Concentration	<0.002	<0.002	<0.5	<50	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Average Concentration *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Geometric Average *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Median Concentration *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
95% UCL (Student's-t) *	0.001	0.001	0.25	25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

	Insecticides											Organophosphorous Pesticides										
	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor	Azinophos methyl	Bromophos-ethyl	Carbophenothion	Chlorfenvinphos	Chlorpyrifos	Chlorpyrifos-methyl	Diazinon	Dichlorvos	Dimethoate	Ethion	
	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	
EQL	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	2	0.5	0.5	0.5	0.5	0.5	0.0005	0.5	0.5	0.5	0.5	
ANZG (2018) Freshwater 95% toxicant DGVs					0.02			0.2	0.09			0.02				0.01		0.01		0.15		
EPL227 Values																						
DHWQO																						

Date	Lab Report Number	Field ID																				
19 Mar 2025	ES2507726	SW01	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW04	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW05	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW06	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		SW07	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		BG02	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5
		BG03	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2.0	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5

Statistics																					
Number of Results	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
Number of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Minimum Concentration	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	
Minimum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Maximum Concentration	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.0005	<0.5	<0.5	<0.5	
Maximum Detect	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Average Concentration *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	
Geometric Average *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	
Median Concentration *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	
Standard Deviation *	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Geometric Standard Deviation *	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	
95% UCL (Student's-t) *	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	1	0.25	0.25	0.25	0.25	0.25	0.00025	0.25	0.25	0.25	
% of Detects	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% of Non-Detects	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

	Fenthion	Malathion	Methyl parathion	Monocrotophos	Prothiofos
	µg/L	µg/L	µg/L	µg/L	µg/L
EQL	0.5	0.5	2	2	0.5
ANZG (2018) Freshwater 95% toxicant DGVs		0.05			
EPL227 Values					
DHWQO					

Date	Lab Report Number	Field ID					
19 Mar 2025	ES2507726	SW01	<0.5	<0.5	<2.0	<2.0	<0.5
		SW02	<0.5	<0.5	<2.0	<2.0	<0.5
		SW03	<0.5	<0.5	<2.0	<2.0	<0.5
		SW04	<0.5	<0.5	<2.0	<2.0	<0.5
		SW05	<0.5	<0.5	<2.0	<2.0	<0.5
		SW06	<0.5	<0.5	<2.0	<2.0	<0.5
		SW07	<0.5	<0.5	<2.0	<2.0	<0.5
		BG02	<0.5	<0.5	<2.0	<2.0	<0.5
		BG03	<0.5	<0.5	<2.0	<2.0	<0.5

Statistics					
Number of Results	9	9	9	9	9
Number of Detects	0	0	0	0	0
Minimum Concentration	<0.5	<0.5	<2	<2	<0.5
Minimum Detect	ND	ND	ND	ND	ND
Maximum Concentration	<0.5	<0.5	<2	<2	<0.5
Maximum Detect	ND	ND	ND	ND	ND
Average Concentration *	0.25	0.25	1	1	0.25
Geometric Average *	0.25	0.25	1	1	0.25
Median Concentration *	0.25	0.25	1	1	0.25
Standard Deviation *	0	0	0	0	0
Geometric Standard Deviation *	1	1	1	1	1
95% UCL (Student's-t) *	0.25	0.25	1	1	0.25
% of Detects	0	0	0	0	0
% of Non-Detects	100	100	100	100	100

* A Non Detect Multiplier of 0.5 has been applied.

Environmental Standards
ANZG, 2018, ANZG (2018) Freshwater 95% toxicant DGVs
NT Department of Environment and Natural Resources, 2013, DHWQO

A.2 Laboratory Reports



CERTIFICATE OF ANALYSIS

Work Order : ES2507726
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : jeni young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 20-Mar-2025 11:30
Date Analysis Commenced : 20-Mar-2025
Issue Date : 26-Mar-2025 14:48



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	-----	10	mg/L		78	757	666	830	130
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	-----	5	mg/L		9	<5	7	9	<5
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.003	0.006	0.006	<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		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	0.002	<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		0.012	<0.005	<0.005	<0.005	0.009
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.002	0.003	0.006	0.006	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		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	0.001	0.002	<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		0.014	0.011	0.008	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.32	0.06	0.14	1.25	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	-----	0.01	mg/L		<0.01	0.02	<0.01	<0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.7	1.9	2.4	3.4	0.3
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.7	1.9	2.4	3.4	0.3
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.09	0.15	0.40	0.63	0.06
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	65	70	45	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit	ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		71.5	68.5	71.9	70.0	63.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		59.3	71.9	63.8	64.8	54.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	110	107	108	113
Toluene-D8	2037-26-5	2	%		96.8	101	99.4	100	102
4-Bromofluorobenzene	460-00-4	2	%		103	108	104	106	107



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		100	774	122	370	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		6	99	23	396	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.008	0.001	0.006	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	0.002	----
Nickel	7440-02-0	0.001	mg/L		0.001	<0.001	<0.001	0.002	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.031	<0.005	<0.005	0.007	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.016	0.002	0.008	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.002	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	0.003	<0.001	0.003	----
Nickel	7440-02-0	0.001	mg/L		0.002	0.001	0.001	0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	0.002	<0.001	0.002	----
Zinc	7440-66-6	0.005	mg/L		0.033	0.016	<0.005	0.014	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.19	1.01	0.02	0.03	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	8.4	0.6	2.9	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	8.4	0.6	2.9	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	4.25	0.05	0.33	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	103	10	64	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG02	BG03	----
Sampling date / time				19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit	ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	430	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	540	<50	80	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	970	<50	80	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	850	<100	140	----
>C34 - C40 Fraction	----	100	µg/L		<100	140	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	990	<100	140	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		71.4	64.9	71.5	62.3	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		54.0	87.8	74.2	51.1	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	112	114	109	----
Toluene-D8	2037-26-5	2	%		96.8	103	102	100	----
4-Bromofluorobenzene	460-00-4	2	%		102	103	106	105	----



Surrogate Control Limits

Sub-Matrix: **WATER**

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2507726**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : jeni young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : YOUNGJE@CDMSMITH.COM
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-Mar-2025 11:30
Client Requested Due : 26-Mar-2025
Date

Issue Date : 20-Mar-2025
Scheduled Reporting Date : **26-Mar-2025**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : 1

Security Seal : Not Available
Temperature : 21.0°C 24.9°C 22.1°C - Ice
present

Receipt Detail : No. of samples received / analysed : 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2507726-001	19-Mar-2025 08:00	SW01	✓	✓	✓	✓	✓	✓	✓
ES2507726-002	19-Mar-2025 09:15	SW02	✓	✓	✓	✓	✓	✓	✓
ES2507726-003	19-Mar-2025 09:40	SW03	✓	✓	✓	✓	✓	✓	✓
ES2507726-004	19-Mar-2025 10:00	SW04	✓	✓	✓	✓	✓	✓	✓
ES2507726-005	19-Mar-2025 10:55	SW05	✓	✓	✓	✓	✓	✓	✓
ES2507726-006	19-Mar-2025 09:00	SW06	✓	✓	✓	✓	✓	✓	✓
ES2507726-007	19-Mar-2025 10:40	SW07	✓	✓	✓	✓	✓	✓	✓
ES2507726-008	19-Mar-2025 07:30	BG02	✓	✓	✓	✓	✓	✓	✓
ES2507726-009	19-Mar-2025 08:30	BG03	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2507726-001	19-Mar-2025 08:00	SW01	✓	✓
ES2507726-002	19-Mar-2025 09:15	SW02	✓	✓
ES2507726-003	19-Mar-2025 09:40	SW03	✓	✓
ES2507726-004	19-Mar-2025 10:00	SW04	✓	✓
ES2507726-005	19-Mar-2025 10:55	SW05	✓	✓
ES2507726-006	19-Mar-2025 09:00	SW06	✓	✓
ES2507726-007	19-Mar-2025 10:40	SW07	✓	✓
ES2507726-008	19-Mar-2025 07:30	BG02	✓	✓
ES2507726-009	19-Mar-2025 08:30	BG03	✓	✓

Proactive Holding Time Report

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



Telephone: - 61-2-8784 8555

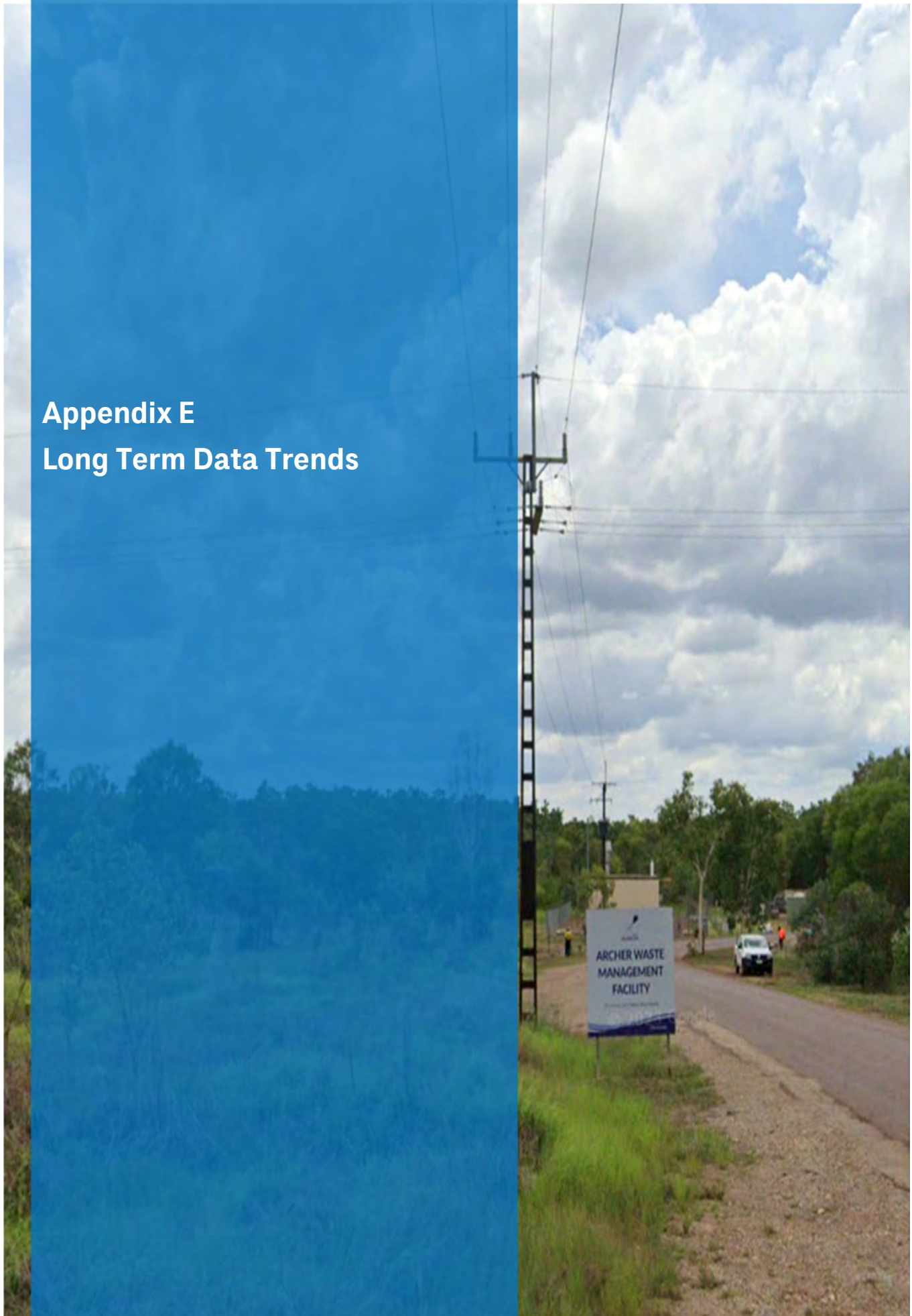
CHAIN OF CUSTODY ALS Laboratory please tick →		1575 LAURE 21 Sunna Road Fozzala SA 5006 Ph 08 8359 3000 E. alshel@alsglobal.com 1200 STANB 3 B Av Street Carlisle QLD 4053 Ph 07 3243 1222 E. samples@alsglobal.com 430 LAURE 1045 45 Calymondan Drive Gorton QLD 4180 Ph 07 3471 8000 E. gordon@alsglobal.com		1575 LAURE 21 Sunna Road Fozzala SA 5006 Ph 08 8359 3000 E. alshel@alsglobal.com 1200 STANB 3 B Av Street Carlisle QLD 4053 Ph 07 3243 1222 E. samples@alsglobal.com 430 LAURE 1045 45 Calymondan Drive Gorton QLD 4180 Ph 07 3471 8000 E. gordon@alsglobal.com		1575 LAURE 21 Sunna Road Fozzala SA 5006 Ph 08 8359 3000 E. alshel@alsglobal.com 1200 STANB 3 B Av Street Carlisle QLD 4053 Ph 07 3243 1222 E. samples@alsglobal.com 430 LAURE 1045 45 Calymondan Drive Gorton QLD 4180 Ph 07 3471 8000 E. gordon@alsglobal.com		1575 LAURE 21 Sunna Road Fozzala SA 5006 Ph 08 8359 3000 E. alshel@alsglobal.com 1200 STANB 3 B Av Street Carlisle QLD 4053 Ph 07 3243 1222 E. samples@alsglobal.com 430 LAURE 1045 45 Calymondan Drive Gorton QLD 4180 Ph 07 3471 8000 E. gordon@alsglobal.com	
CLIENT: City of Palmerston		TURNAROUND REQUIREMENTS:		☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY			
OFFICE: DARWIN		(Standard TAT may be longer for some tests e.g., Ultra Trace Organics)				Custody Seal intact?			
PROJECT: Archer	PROJECT NO. 1001837	ALS QUOTE NO.: ES24E3CON0005		COC SEQUENCE NUMBER (Circle)		Free Ice / frozen ice brk			
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		COC: ① 2 3 4 5 6 7		Random Sample Temp			
PROJECT MANAGER: Jeni Young		CONTACT PH: 0438006851		DF: ① 2 3 4 5 6 7		Other comment:			
SAMPLER: Tayhla Casey		SAMPLER MOBILE: 0428710724		RELINQUISHED BY: Tayhla Casey		RECEIVED BY: Ganesh Shetke			
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME: 19.3.25 11:45		DATE/TIME: 19/03/25 11:50			
Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM						DATE/TIME:			
Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM						DATE/TIME: 20/3/25 1130			
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:									

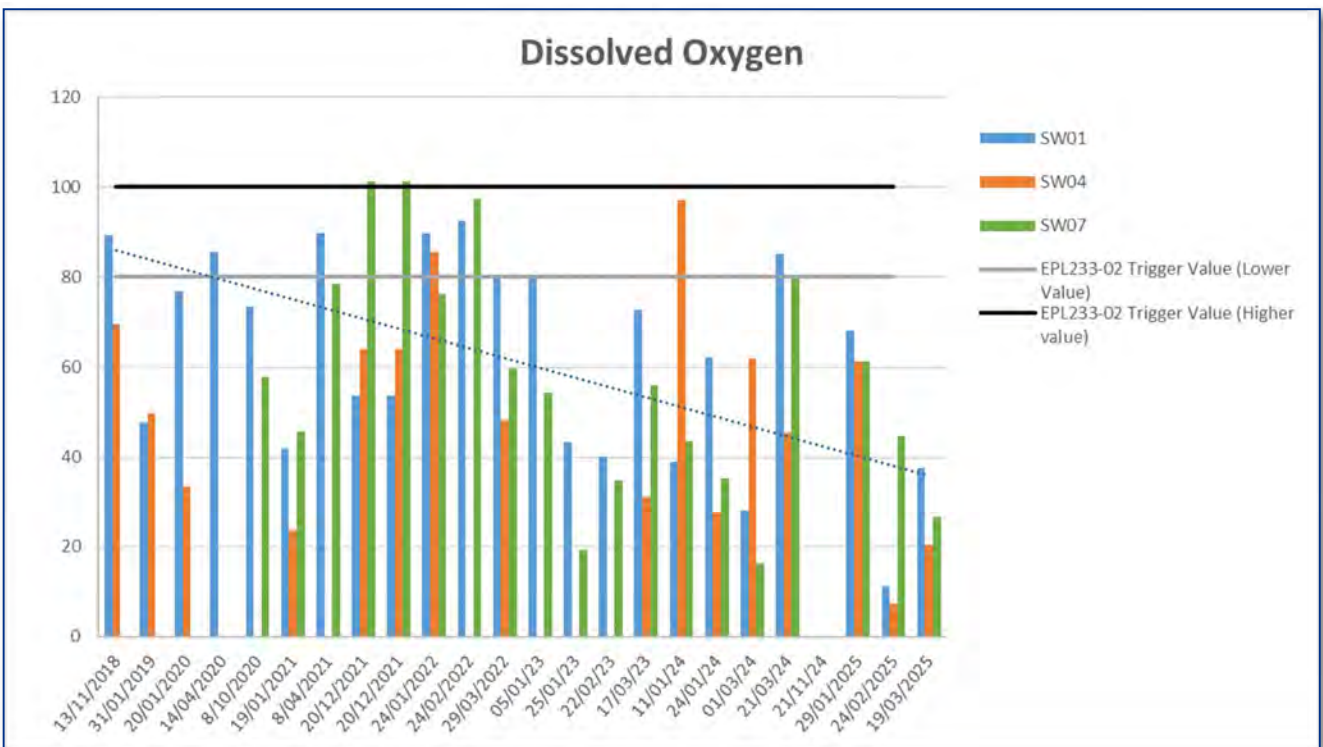
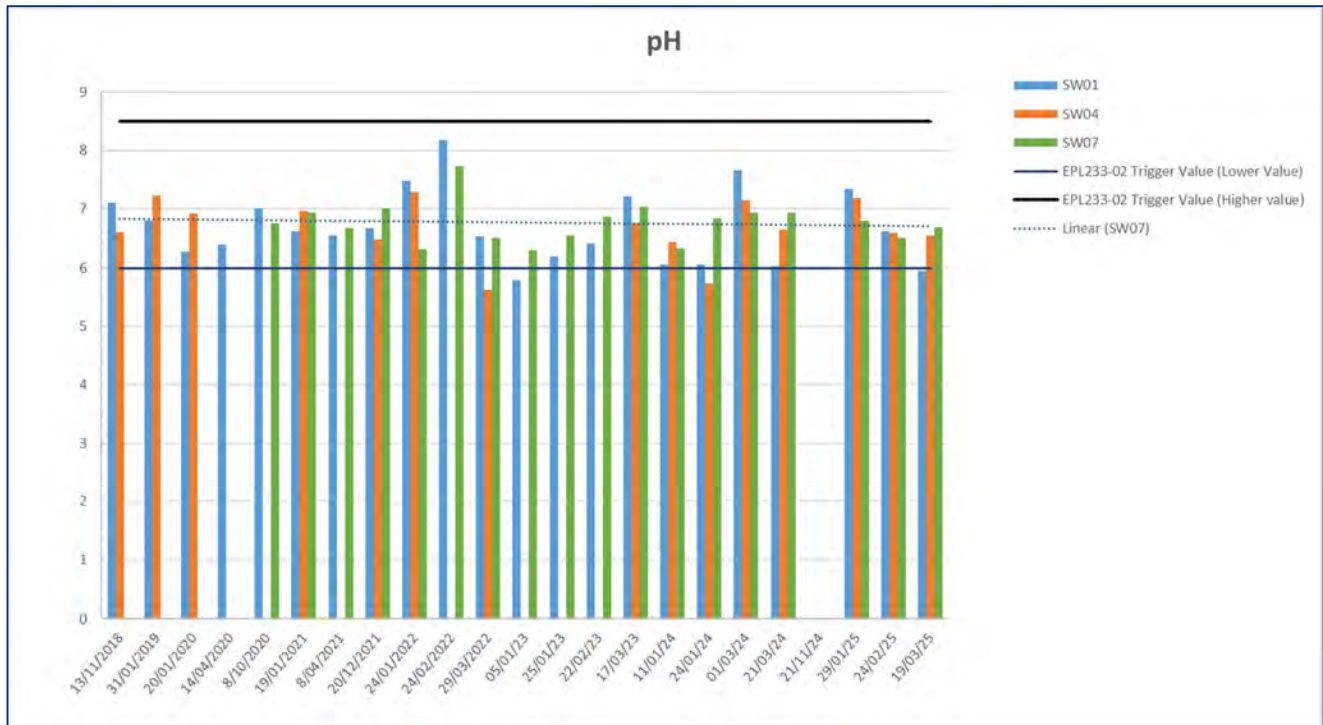
ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required)										Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA019H: Total Dissolved Solids - Standard Level	EA029H: Suspended Solids - Standard Level	EA055G: Ammonia as N By Discrete Analyser	EP036SF: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP036SF: Total Phosphorus by Segmented Flow Analyser	NI-41: Total Nitrogen / Total Phosphorus	W42T: 6 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W405: TRHCS-C409 / BTEXH / 6 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W12-OCOP Pesticides	Comments on likely contaminant levels, durations, or samples requiring specific QC analysis etc.	
1	SW01	19.3.25 8:00	WATER		8	x	x	x	x	x	x	x	x	x		
2	SW02	19.3.25 9:15	WATER		8	x	x	x	x	x	x	x	x	x		
3	SW03	19.3.25 9:40	WATER		8	x	x	x	x	x	x	x	x	x		
4	SW04	19.3.25 10:00	WATER		8	x	x	x	x	x	x	x	x	x		
5	SW05	19.3.25 10:55	WATER		8	x	x	x	x	x	x	x	x	x		
6	SW06	19.3.25 9:00	WATER		8	x	x	x	x	x	x	x	x	x		
7	SW07	19.3.25 10:40	WATER		8	x	x	x	x	x	x	x	x	x		
	BG01		WATER		8	x	x	x	x	x	x	x	x	x		
8	BG02	19.3.25 7:30	WATER		8	x	x	x	x	x	x	x	x	x		
9	BG03	19.3.25 8:30	WATER		8	x	x	x	x	x	x	x	x	x		
TOTAL																

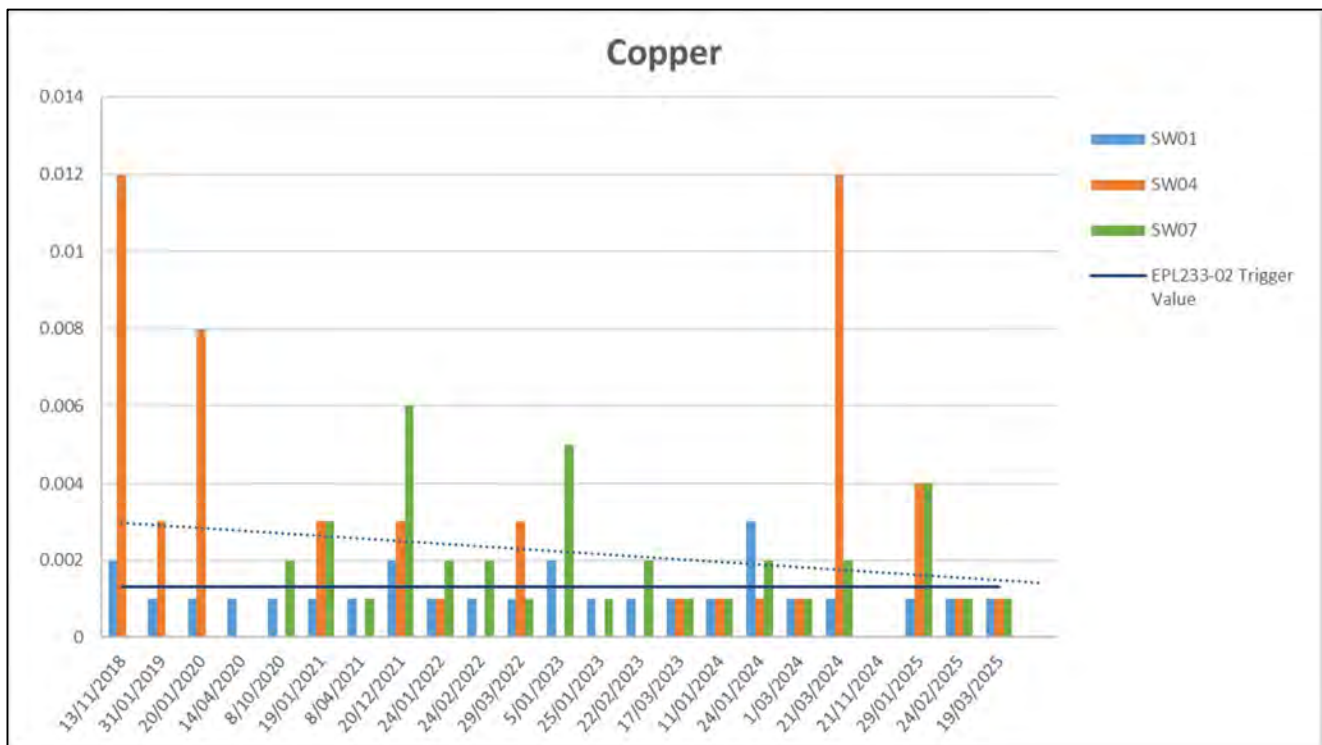
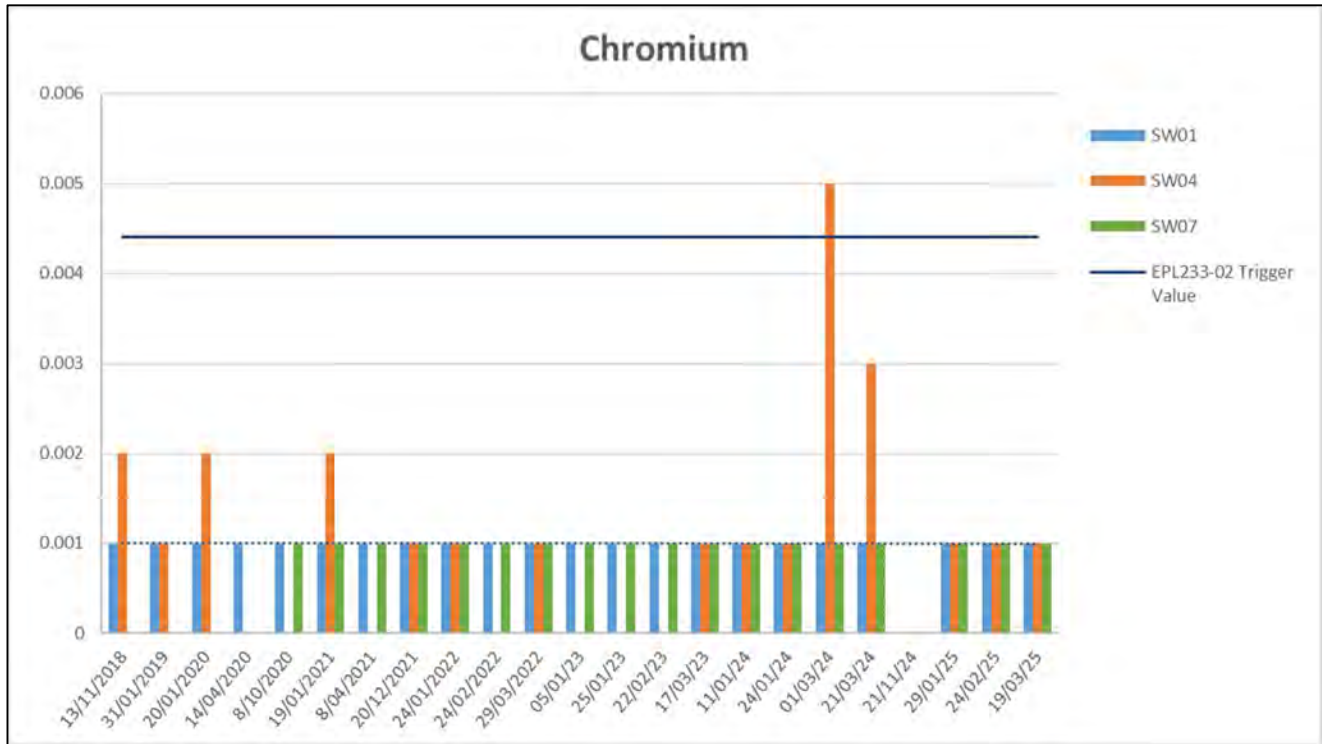
Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lupa Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.

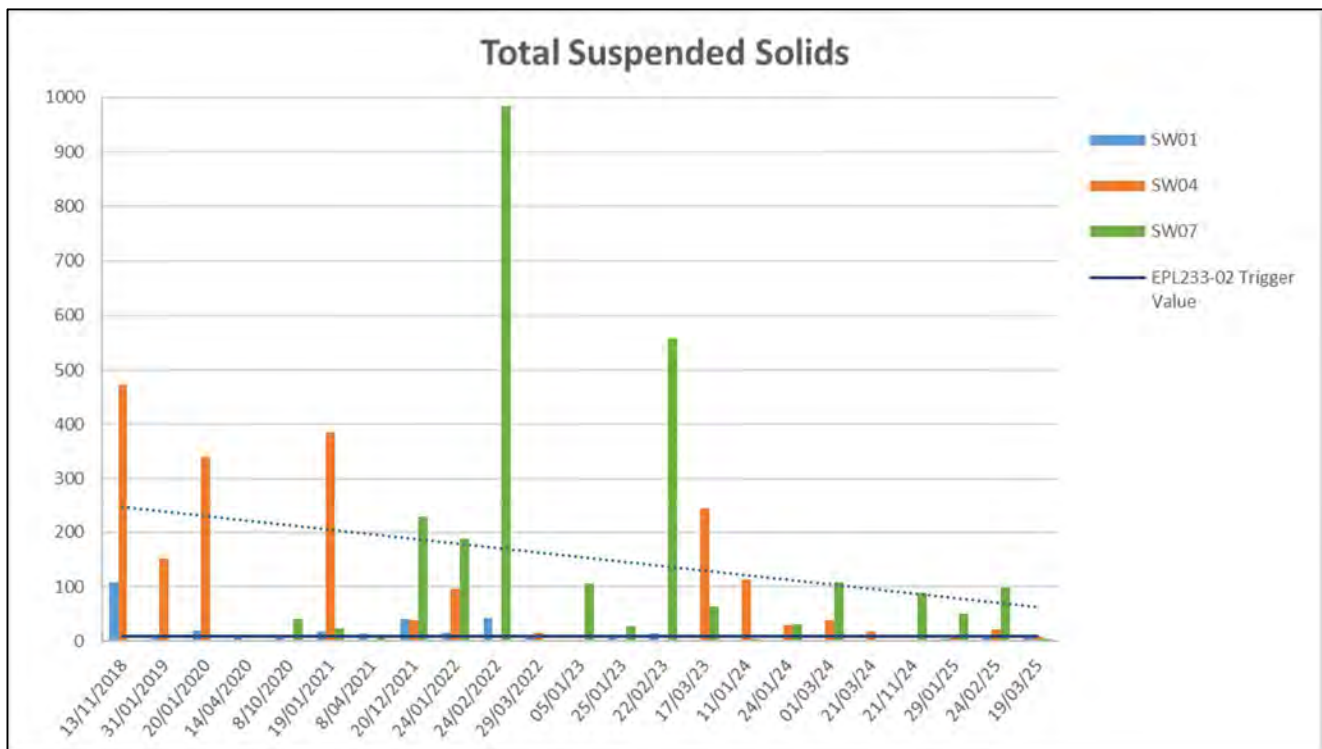
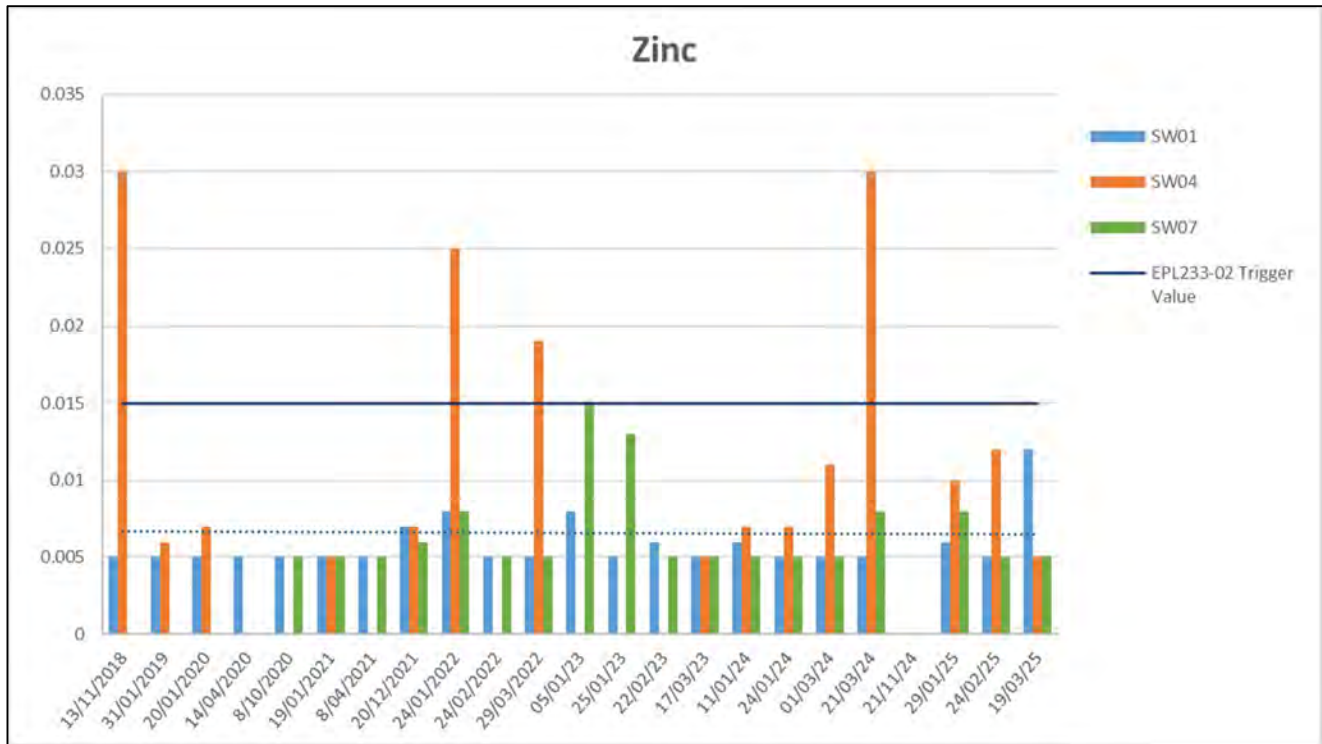
Appendix E

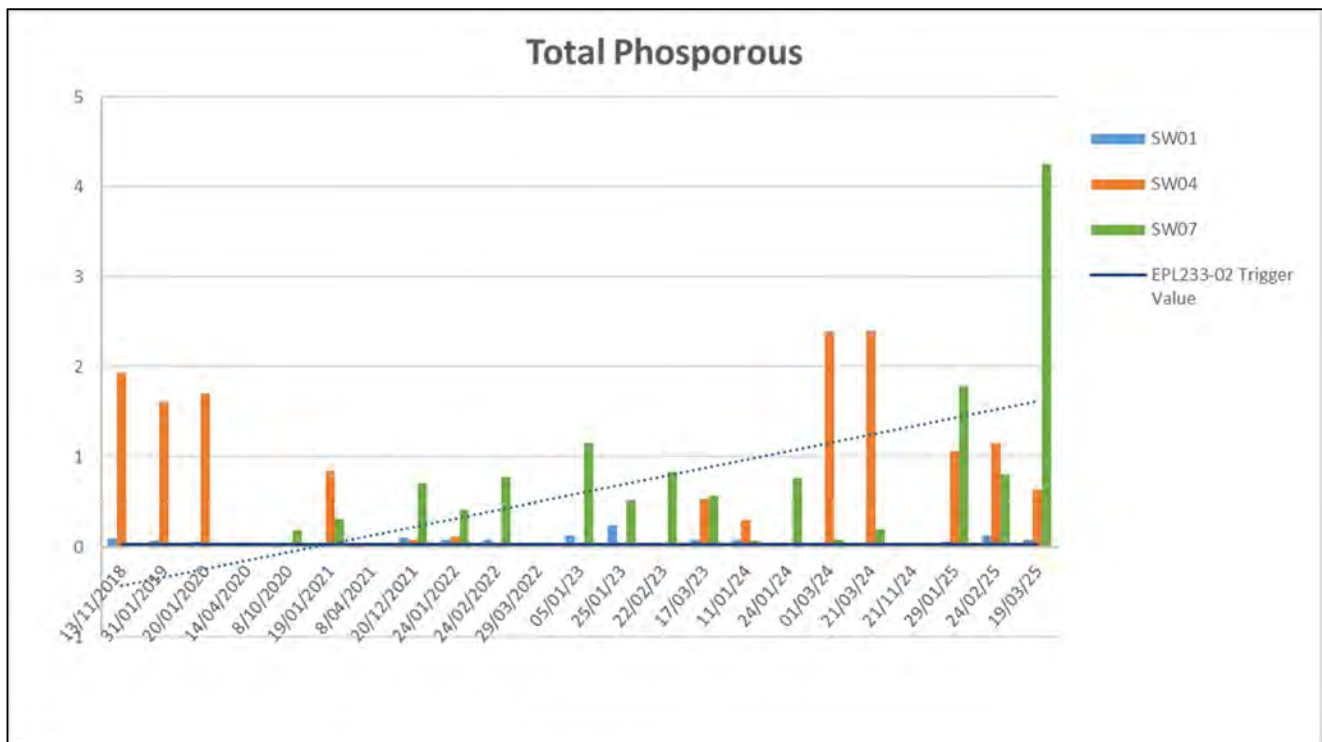
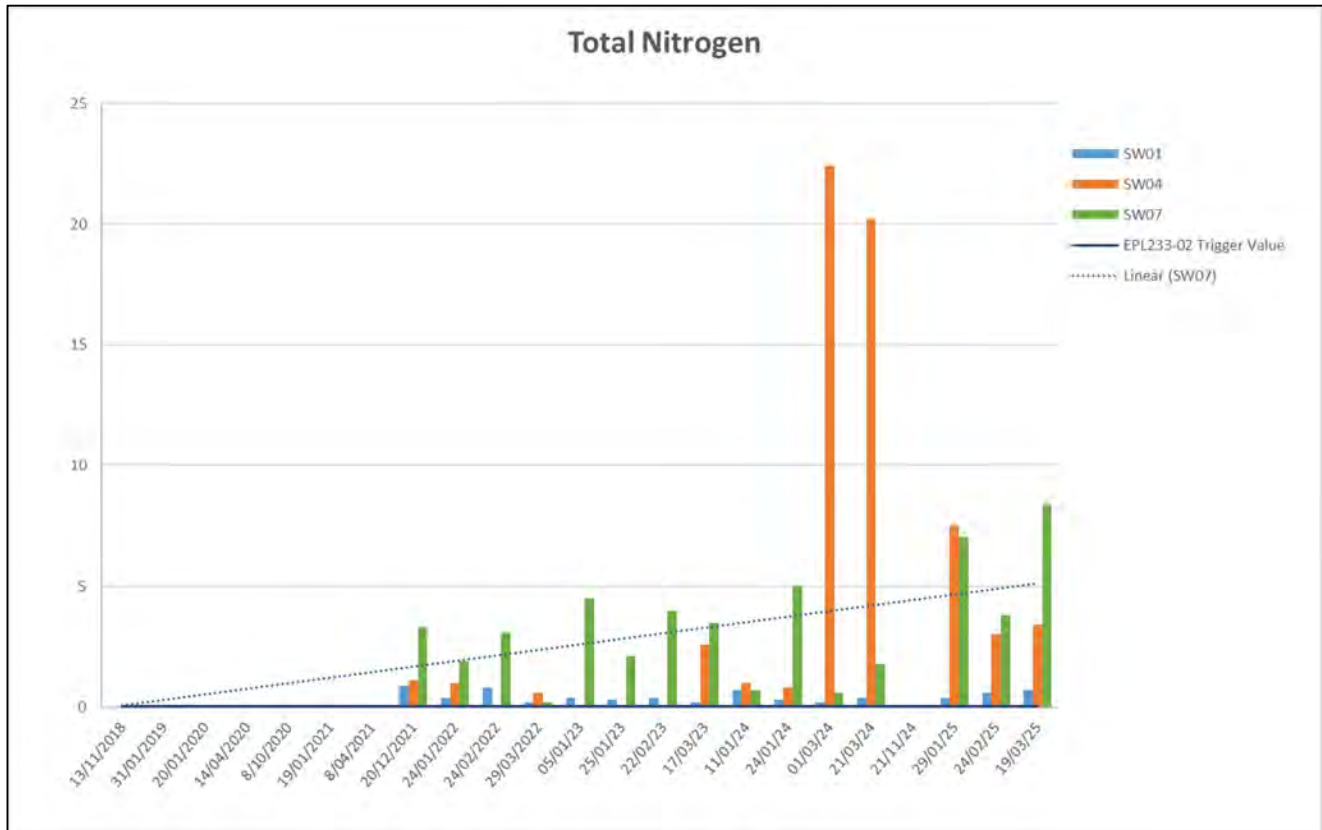
Long Term Data Trends

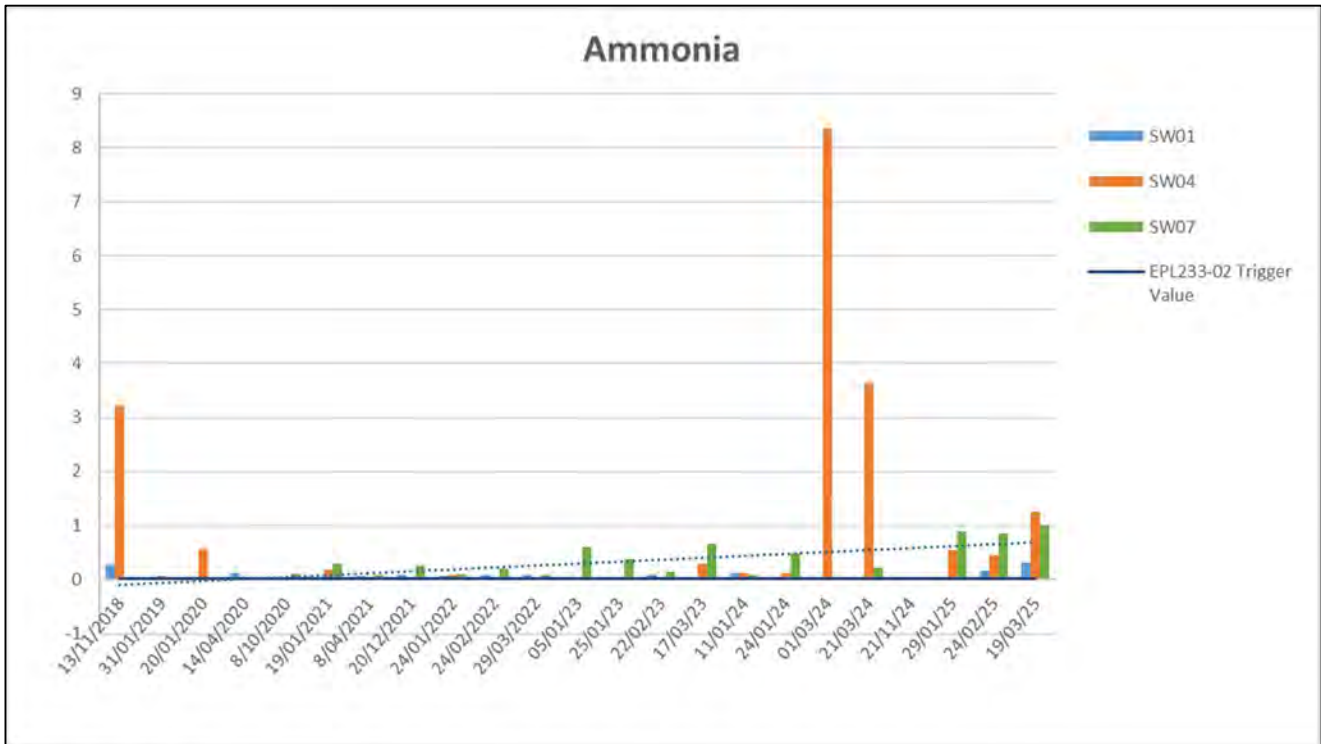


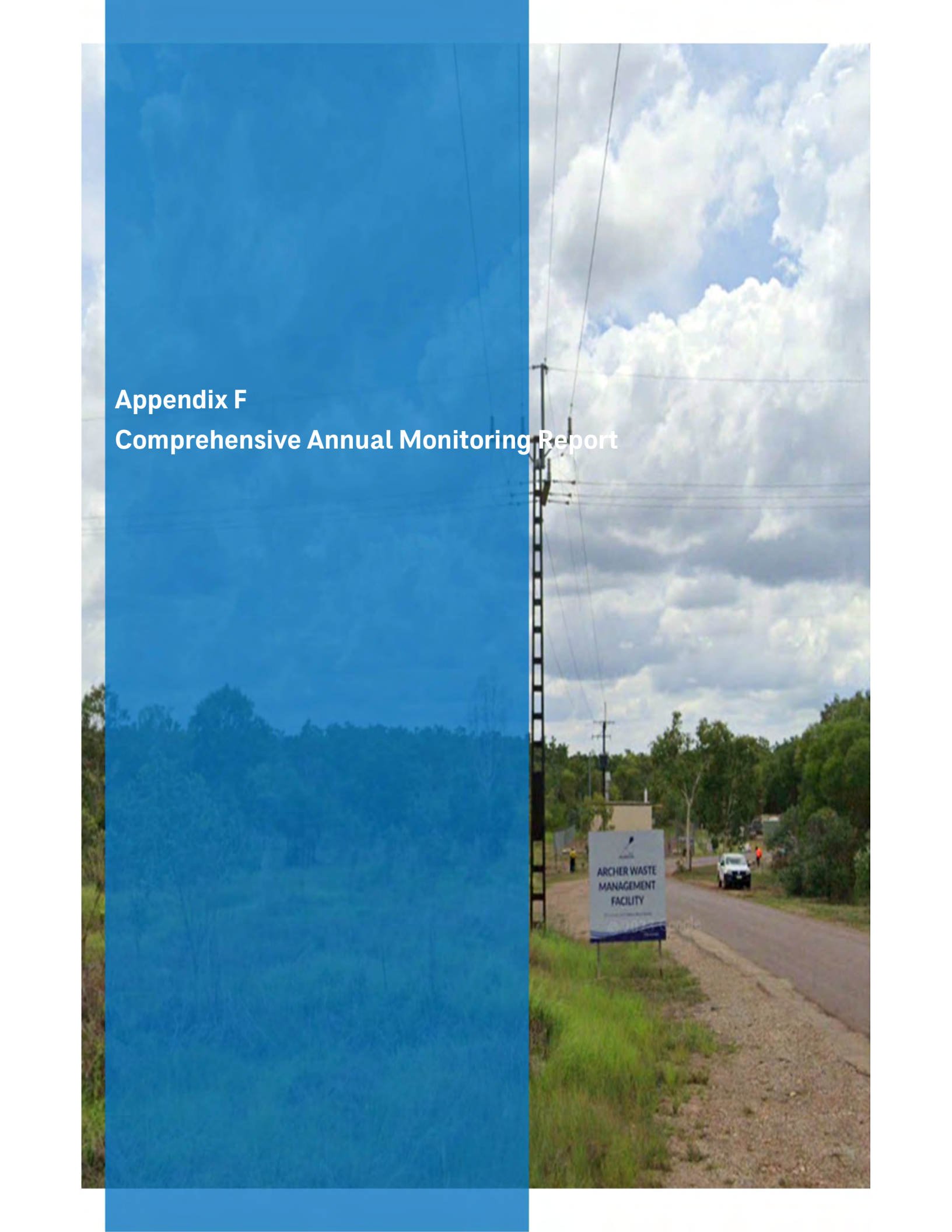










The background of the page is a photograph of a paved road stretching into the distance under a sky filled with large, white, puffy clouds. On the left side of the road, there is a dense line of green trees. On the right side, there are more trees and a utility pole with several power lines. A white sign on the right side of the road reads "ARCHER WASTE MANAGEMENT FACILITY". A white car is visible on the road in the distance. A large, semi-transparent blue rectangle covers the left half of the image, and a solid blue horizontal bar is at the bottom.

Appendix F

Comprehensive Annual Monitoring Report

CDM SMITH AUSTRALIA

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Darwin NT 0800
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Report

The Archer Waste Transfer Station – Comprehensive Annual Monitoring Report 2025

PREPARED FOR:

Palmerston City Council

Civic Plaza,
1 Chung Wah Terrace
Palmerston City NT 0830
<http://www.palmerston.nt.gov.au/>

**CDM
Smith**
listen. think. deliver.



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Acronyms

Acronyms	Description
Ag	Silver
As	Arsenic
AWTS	Archer Waste Transfer Station
Cd	Cadmium
Co	Cobalt
CoP	City of Palmerston
Cr	Chromium
Cu	Copper
Hg	Mercury
Mn	Manganese
NH ₃	Ammonia
Ni	Nickle
NT	Northern Territory
Pb	Lead
Sb	Antimony
TN	Totoal Nitrogen
TRH	Total Recoverable Hydrocarbon
TSS	Total Suspended Solids
TP	Total Phosphorus
Zn	Zinc

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Section 1 Introduction

This annual water quality monitoring report has been developed by CDM Smith Australia (CDM Smith) on behalf of City of Palmerston (CoP) for the Archer Waste Transfer Station (AWTS) located on Lot 11497 Town of Palmerston plan(s) S2013/193, Elrundie Avenue, Archer NT 0830 (the site).

City of Palmerston operate the AWTS and are authorised to 'store' (for a maximum period of 20 business days as per EPL233-02) waste at this facility under the NT *Waste Management and Pollution Control Act* in accordance with Environment Protection Licence (EPL233-02). Wastes stored at the facility prior to transport and disposal at the Shoal Bay Waste Management Facility comprise the following:

- Paper and cardboard
- Plastics
- Glass and aluminium
- General household waste
- Steel and metal
- Batteries
- Paint
- Waste oil
- White goods and gas bottles.

Green waste is accepted and mulched onsite for sale to the general public. Refer to site layout in Figure 1-1.

Surface water monitoring is undertaken at the AWTS in accordance with Attachment 1 of EPL233-02 to ensure that operations do not impact any waterways downstream. Monitoring Reports are required annually, as per Condition 43 of EPL233-02. These must be prepared in accordance with the NT EPA 'Guideline for Reporting on Environmental Monitoring'. Each report must include all requirements as set out in EPL233-02 Condition 44.

This Report covers all surface water quality monitoring undertaken for the reporting period covering the 2024/2025 wet season (herein referred to as the 'reporting period').

In addition to presenting the annual review, this document outlines the basis for proposed amendments to the surface water monitoring program.

1.1 Site Details

The site operates as the waste transfer station for the Palmerston area. The site area is approximately 16ha, however the main operational area used for storage of waste occupies <2ha shown in Figure 1-1. The majority of the operational area of the site is covered with bitumen, except for the green waste area and the truck access to the general waste skip bins, which remain unsealed. Some parts of the site are grassed, but no waste is stored or contained in these grassy areas (EcOz, 2018). The site details are provided in Table 1-1 below.

Table 1-1 Site details*

Item	Description
Site Location	Site is located south of the suburb of Bellamack, on the southern side of Elrundie Avenue, and is accessed via the existing Flack Road and Durack Road
Site Area	Site Area – approx. 16ha

Item	Description
	Operational Areas - <2ha shown in Figure 1-1
Municipality	Palmerston
Planning Zone	GI – General Industry
Planning Overlays	Land subject to flooding – Eastern boundary
Current Use	A waste transfer station
Surround land uses	South: Native bushland and Adelaide to Darwin railway line (800m) and estuarine mangrove flats located ~1,100m. North: Suburban subdivisions along Elrondie Avenue (<500m) East: Predominantly vacant land West: Predominantly vacant land South-east: Old decommissioned landfill
Surrounding Receptors	Nearby receptors comprise: Suburban residents (nearest >300m) Onsite worker/s and public user/s Waterways including two unnamed drainage lines and Elizabeth River approximately 2km south of the site Ecological receptors (terrestrial/aquatic flora & fauna) Recreational user/s in surroundings Groundwater aquifers and shallow seasonal water table
Topography and Drainage	The site typically slopes from north to south. The site has two drains that flow from north to south and discharge into the Elizabeth River. Drainage is influenced by a ridge that runs on a north-south trajectory through the site, thus shedding water toward the east and west respectively (Figure 1-2).
Geology	Geoscience Australia mapping shows that the site's underlying geology is mainly sedimentary rocks. Soils are primarily sandy, with variations of sandy clay and sandy silt, underlain by claystone and siltstone. This suggests that the soils are relatively porous, allowing water to move both vertically and laterally through the soil profiles.
Hydrogeology	Groundwater direction is south-west towards Darwin Harbour. Groundwater depth is generally between 20m and 40m. Previous assessment and hydrogeological studies undertaken by EcOz Environmental indicates that there is a deeper, high yielding aquifer which is unlikely to be impacted by the sites works. There is also a shallower water table that fluctuates seasonally and is tidally influenced in the eastern portion of the site.

*Site details are taken from EcOz, 2016

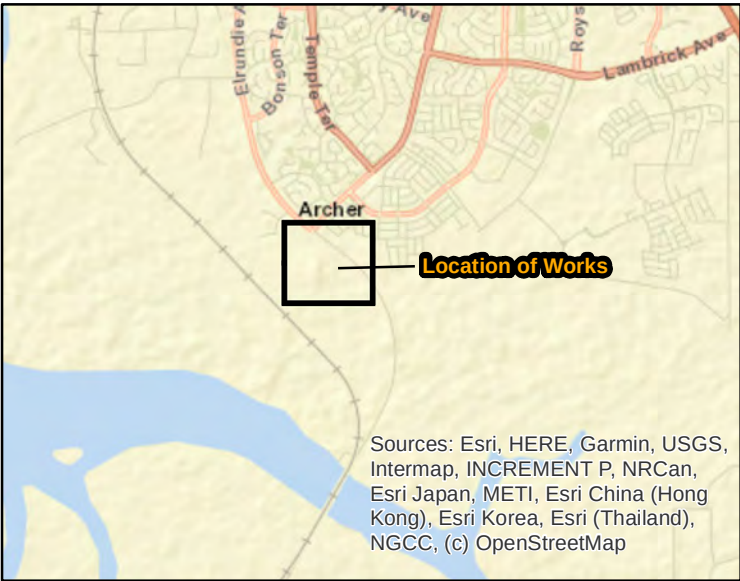
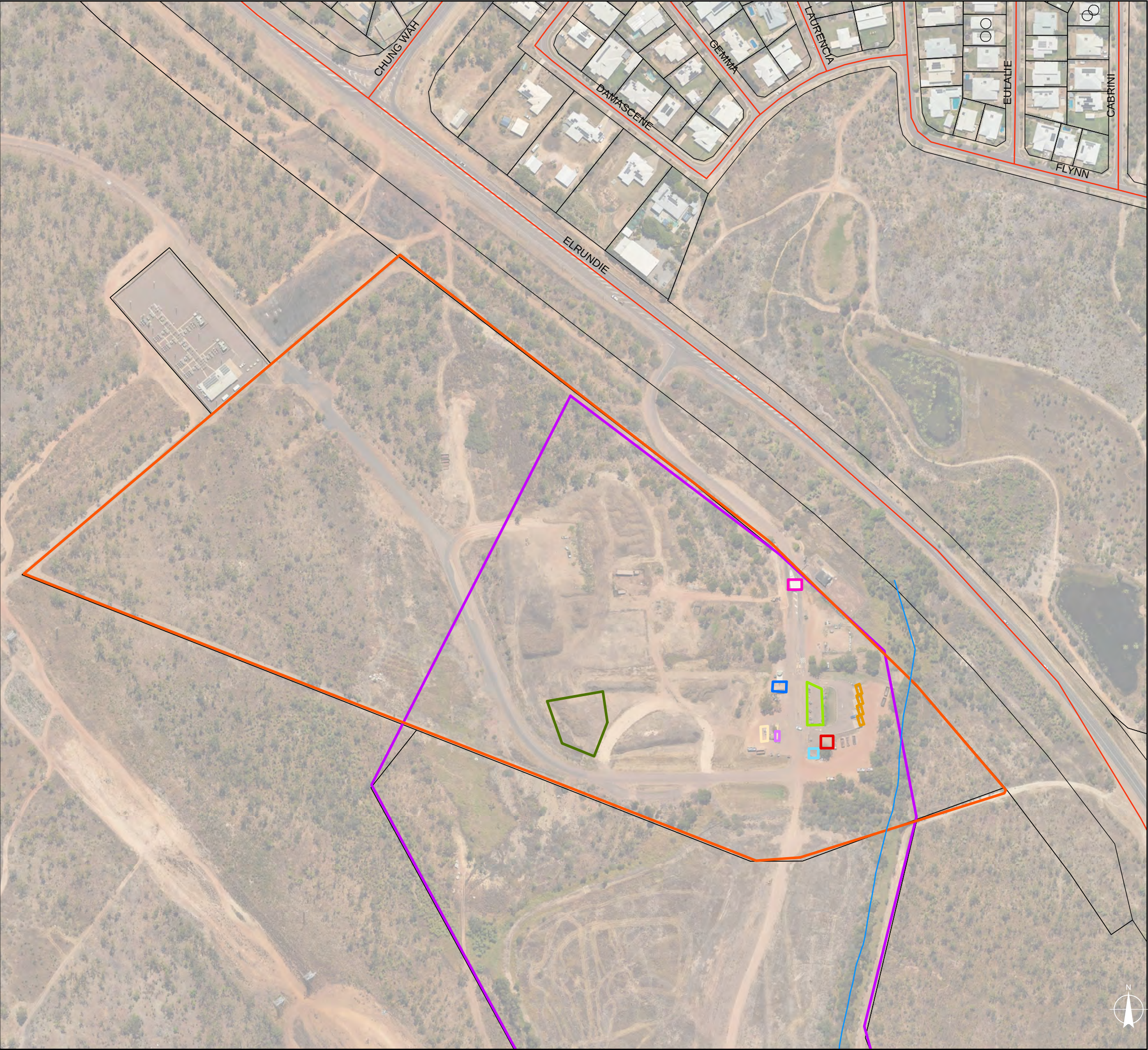
Key site features and operational area of the site are provided in Figure 1-1.

1.2 Activities Overview

A list of operational activities is provided below:

- Receiving of general waste
- Receiving of listed wastes as per EPL 233-02

- Receiving of green waste
- Mulching
- Receiving of recyclables including carboards, steel, white goods
- General operation activities including truck, excavator and forklift movement



Archer Waste Transfer Facility

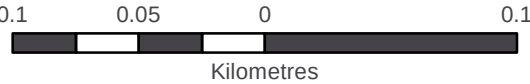
Figure 1-1 Key Features

Legend

- Roads
- Green Waste
- Paint
- White Goods
- Scrap Metal
- Waste Batteries
- Waste Oil
- Dry Recycling
- Gatehouse
- Waste Transfer Bin
- Archer Waste Facility
- Old Facility
- Stream

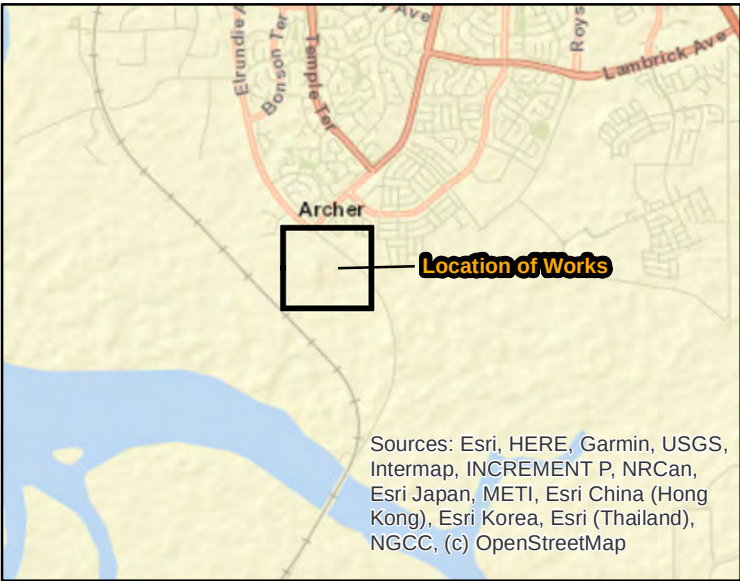
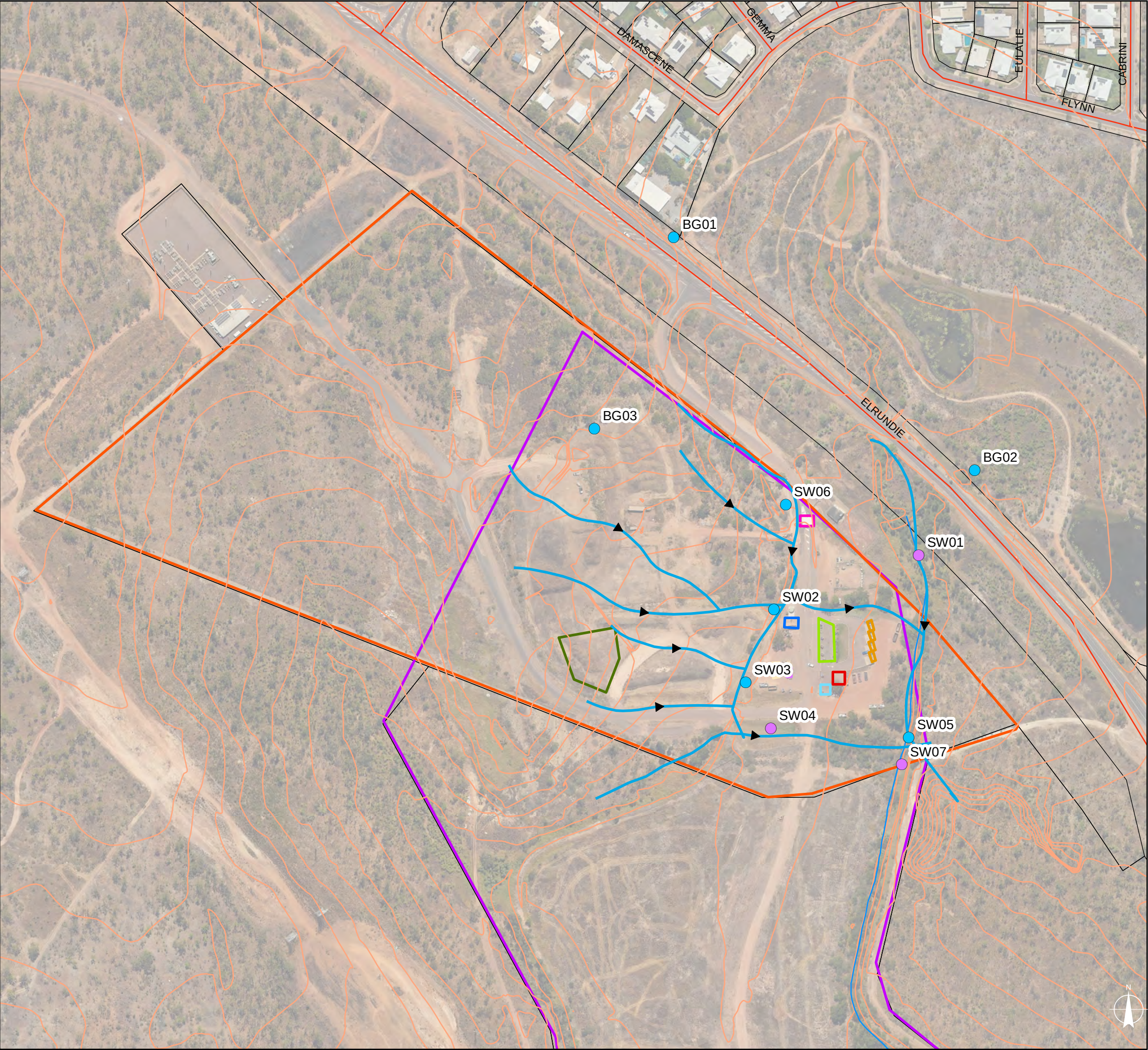
DATA SOURCE:
Esri, Maxar, Geoeye, Earthstar Geographics,
CNES/Airbus DS, USDA, USGS, AeroGRID,
IGN, and the GIS User Community

DISCLAIMER
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and completeness of the data. CDM Smith assumes
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Map Compiled: 17/06/2025



Archer Waste Transfer Facility

Figure 1-2 Water Pathways

Legend

● Compliance Sites	▭ Green Waste
● Surface Water Sites	▭ Paint
— Stream	▭ White Goods
— Contours 1m	▭ Scrap Metal
— Roads	▭ Waste Batteries
▭ Archer Waste Facility	▭ Waste Oil
▭ Old Facility	▭ Dry Recycling
	▭ Gatehouse
	▭ Waste Transfer Bin

DATA SOURCE:
Esri, Maxar, Geoeye, Earthstar Geographics,
CNES/Airbus DS, USDA, USGS, AeroGRID,
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0.1 0.05 0 0.1
Kilometres
Scale @ A4 size: 1:3,000

Section 2 Monitoring Program

Monitoring was undertaken in accordance with the monitoring program developed in the Water Quality Monitoring and Management Plan (sampling locations and analytical suite) (Ecoz, 2016), EPL233-02, CDM Smith Standard Operating Procedures (SOP) for Surface Water (CDM Smith, 2022) and the following standards and guidelines:

- Australian/New Zealand Standard on Water Quality Sampling - Part 1: Guidance on the design of sampling programs, sampling techniques and the preservation and handling of samples (AS/NZS 5667.1:1998), Standards Australia, New South Wales.
- Australian/New Zealand Standard on Water Quality Sampling - Part 6: Guidance on sampling of rivers and streams (AS/NZS 5667.6:1998), Standards Australia, New South Wales.
- Australian Standard/New Zealand Standard on Water Quality Sampling - Part 10: Guidance on sampling of waste waters (AN/NZS 5667.10:1998), Standards Australia, New South Wales.

2.1 Surface Water Monitoring

Surface water samples were collected from 10 locations (Table 2-1, Figure 1-2 and Figure 2-1). Monthly samples were collected when surface water was flowing during the wet season (December 2024 to April 2025).

Samples were collected using a telescopic sample pole with a sample cup attached. The sample pole was lowered below the water surface and samples collected. The sample cup was triple washed with water from the sample site before samples were collected.

In-situ parameters were recorded at each sample site as per Table 2-2. These parameters were measured by placing a calibrated water quality meter (Aquaread) into a triple washed cup containing the water sample and results recorded on a field sheet. The water quality meter is calibrated prior to mobilising to site to ensure accurate readings of in-situ measurements. Calibration records for the water quality meter are provided in Appendix A and surface water field records are included Appendix B.

Samples collected for laboratory analysis were transferred directly from the sample cup to the specific laboratory supplied bottles. The analytical suite is detailed in Table 2-2.

Sample water for primary dissolved metals analysis was filtered through a 0.45µm syringe filter into the appropriate bottle for dissolved metals analysis. Disposable powderless nitrile gloves were worn during sample handling and changed between sample sites to prevent cross-contamination.

All samples were dispatched to the NATA accredited laboratory under a chain of custody in accordance with the surface water sampling SOP (Appendix C).

Laboratory results for the surface water samples were compared against EPL233-02 trigger values.

Table 2-1 Sample Locations

Sample Name	Rationale	Latitude	Longitude
SW01	Upstream of site. Captures water quality of stream before impact of runoff from site. Locations results reportable under EPL233-02.	715054	8615118
SW02	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.	714938	8615084
SW03	Minor drainage line flowing north to south in the centre of the site. Would capture water shed from mulching area.	714916	8615027

Sample Name	Rationale	Latitude	Longitude
SW04	Minor drainage line at the southern boundary of site. Would capture water shed from mulching area. Locations results reportable under EPL233-02.	714895	8614982
SW05	To be used as an alternative to SW07 if it is dry. Would capture water shed from site activities except for mulch area.	715041	8614983
SW06	Upstream of site. To be used to mark any contamination flowing from neighbouring suburbs.	714948	8615166
SW07 ¹	Downstream of confluence of ephemeral stream and runoff from site. Captures impact of runoff from site. Trigger values apply only to this site. Locations results reportable under EPL233-02.	715031	8614965
BG01	To be used to mark any contamination flowing from neighbouring suburbs.	714864	8615375
BG02	Upstream of site. Access to SW01 poses a HSE concern, this location is used as an alternative.	715093	8615191
BG03	Upgradient of site. Sheet flow capture north of the mulch area.	714793	8615226.

Table 2-2 Sample analytical program and trigger values

Parameter	Unit	Trigger value
Field Measurement		
pH	pH units	6 – 8.5 ³
Temperature	°C	-
Electrical Conductivity (EC)	µS/cm	-
Dissolved Oxygen (DO)	% saturation	80 – 100 ³
Turbidity	NTU	-
Metals		
Cadmium (Ca)	µg/L	5.5 ⁷
Chromium (Cr)	µg/L	4.4 ^{6,7}
Copper (Cu)	µg/L	1.3 ⁷
Lead (Pb)	µg/L	4.4 ⁷
Mercury (Hg)	µg/L	0.4 ⁷
Nickel (Ni)	µg/L	70 ⁷

Parameter	Unit	Trigger value
Zinc (Zn)	µg/L	15 ⁷
Other		
Chemical Oxygen Demand (COD)	mg/L	-
Total Suspended Solids (TSS)	mg/L	10 ³
Total Dissolved Solids (TDS)	mg/L	-
Nutrients		
Total Nitrogen (TN)	µg/L	20 ³
Total Phosphorous (TP)	µg/L	300 ³
Ammonia (NH ₃ as N)	µg/L	30 ³
Hydrocarbons		
Total Recoverable Hydrocarbons (TRH) (C6-C40)	µg/L	-
Benzene	µg/L	700 ⁷
Toluene	µg/L	-
Ethylbenzene	µg/L	-
Xylene	µg/L	-
Naphthalene	µg/L	70 ⁷

1. Trigger values only apply to monitoring location SW07
2. Only during months December to March
3. Based on Darwin Harbour Water Quality Objectives (Marine and Estuary Systems – Upper Estuary)
4. Estimate the flow at time of sampling
5. Analyse for Trivalent and Hexavalent Chromium if total chromium exceeds trigger value
6. Based on Hexavalent Chromium 95% species protection ANZECC Water Quality Guidelines 2018 (ANZG 2018)
7. Based on 95% species protection for marine water ANZECC Water Quality Guidelines 2018 (ANZG 2018)



SW01 – Compliance, Upstream



SW02 - Upstream



SW03



SW04 - Compliance



SW05



SW06



SW07 - Compliance



BG01 - Upstream



BG02 - Upstream



BG03 - Upstream

Figure 2-1 Monitoring Location Photos – March Sampling Event

Section 3 Results and Discussion

Field and laboratory results for the 2024-2025 wet season are presented in Table 3-1 and Table 3-2 compared against the EPL233-02 trigger values, noting that the trigger values apply only to the downstream compliance point SW07. Assessment of data from all sites against the trigger values have been included to set the context for the proposed recommendations of future monitoring programs. Laboratory certificates and documents are provided in Appendix D.

3.1 Field Recording Results

Throughout the 2024-2025 reporting period, field parameter records remained generally consistent across all monitoring locations. This stability is likely influenced by broader catchment-scale processes. In the Darwin region, upstream catchments contribute significantly to surface water conditions, particularly during the wet season. High rainfall and surface runoff mobilise sediments and nutrients from the landscape, which can affect downstream water quality.

DO levels were below the assessment criterion of 80-100% saturation at all sites during all sampling events, with the lowest reading (17.6%) recorded at SW05 in November 2024. There was a single exception to the DO levels on the 25th of March 2025 where site BG03 recorded a DO concentration of 91.4%, which falls within the acceptable range and represents the only compliant result for this parameter throughout the year. The 80% saturation trigger value comes from data collected in the open tidal waters of Darwin Harbour. The persistent low DO levels across the site may reflect natural site conditions, limited water movement, or organic load influencing oxygen availability. These trends that have also been noted in previous monitoring years.

Similarly, pH values exhibited intermittent non-compliance with the acceptable range of 6.00 to 8.50. Slightly acidic conditions were observed sporadically at sites SW01, SW02, and BG02, suggesting localised or event-driven fluctuations rather than persistent pH issues. However, at SW06, pH values were consistently below the lower threshold of 6.00 across all monitoring events, indicating a trend of acidity at this location.

These field parameter exceedances, particularly those that are site-specific or recurring, should continue to be closely monitored to assess whether they indicate broader water quality trends or are reflective of natural variability at the site.

Table 3-1 2024- 2025 Wet Season Sampling - In- Situ Results

Sample Site	Event	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
Trigger Values		-	80-100	-	-	-	6.00-8.50	-	-
SW01	Nov 24	Not sampled due to HSE access concerns							
	Jan 25	31	68.2	67	44	0.02	7.34	85.7	17
	Feb 25	30.1	11.1	127	83	0.04	6.61	-39.7	12
	Mar 25	28.1	37.6	119	74	0.004	5.95	11.1	8.2
SW02	Nov 24	29	66.9	274	17.3	0.09	6.35	60	31
	Jan 25	28.3	60.3	231	149	0.07	5.48	152.8	24
	Feb 25	28.8	17	678	444	0.29	6.17	-62.8	15
	Mar 25	28.73	24.6	1200	784	0.57	6.46	-168.7	11

Sample Site	Event	Temperature (°C)	Dissolved Oxygen (% saturation)	Electrical Conductivity (µS/cm)	Total Dissolved Solids (mg/L)	Salinity (ppt)	pH	Oxidation Reduction Potential (mV)	Turbidity (NTU)
SW03	Nov 24	29.9	64.1	373	242	0.12	6.58	33.4	500
	Jan 25	28.68	58.2	966	627	0.41	7.02	38	24
	Feb 25	28.3	24.3	1047	682	0.50	6.61	-25.7	8.8
	Mar 25	28.7	6.7	115.4	755	0.55	6.69	-86.4	13
SW04	Nov 24	DRY							
	Jan 25	28.6	61.2	969	628	0.4	7.19	11.7	55
	Feb 25	29.3	7.2	1349	872	0.63	6.59	-126.7	24
	Mar 25	29.6	20.4	1380	897	0.65	6.55	-97.8	8.4
SW05	Nov 24	28.4	17.6	357	232	0.11	6.34	16.3	18
	Jan 25	28.7	68.1	105	66	0.03	7.40	36.9	13
	Feb 25	29.98	23	542	347	0.23	6.40	-27.0	11
	Mar 25	29.4	9.4	931	605	0.39	6.15	12.4	13
SW06	Nov 24	DRY							
	Jan 25	28.5	69	140	89	0.04	5.69	150.9	14
	Feb 25	27.6	61.5	229	146	0.07	5.71	26.9	5.8
	Mar 25	28.3	28.2	198	130	0.06	5.53	82.1	9.8
SW07	Nov 24	DRY							
	Jan 25	28.8	61.2	799	519	0.33	6.79	39.4	130
	Feb 25	29.4	44.7	1125	725	0.53	6.50	-37.3	38
	Mar 25	30.50	26.6	1238	808	0.59	6.69	-67.1	55
BG01	Nov 24	30.3	77.8	51	33	0.02	6.26	14.4	55
	Jan 25	28	96.4	98	63	0.03	6.08	174.6	85
	Feb 25	28.6	66.7	113	71	0.04	6.45	65.2	9.5
	Mar 25	DRY							
BG02	Nov 24	28.5	23.8	340	221	0.11	6.38	-74	28
	Jan 25	27.85	50.9	99	64	0.03	6.27	103.2	26
	Feb 25	27.4	35.2	164	107	0.05	5.94	-43.7	21
	Mar 25	27.1	21.3	166	107	0.005	5.93	-36.3	24
BG03	Nov 24	DRY							
	Jan 25	DRY							
	Feb 25	39.3	91.4	541	351	0.23	6.79	-79.4	45
	Mar 25	28.3	32.7	580	378	0.24	6.33	-45.3	27

1 Shaded blue cells denote where parameters were reported outside of trigger value or range

3.2 Laboratory Results

During the 2025 reporting period, several exceedances of trigger values were recorded across all monitored sites, indicating a range of water quality constituents of interest both within the site and the broader catchment.

Exceedances occurred for copper, zinc, TSS, TN, TP and ammonia. By contrast, no exceedances were recorded at any site for Cd, Cr, Pb, Hg, Ni, benzene, or naphthalene throughout the monitoring period, indicating these contaminants were either not present or remained below detectable or guideline levels. According to the NT EPA's published water quality data, dissolved copper and zinc are frequently detected at levels near or above guideline values in surface waters across multiple sites. These concentrations are often attributed to natural geological sources, particularly in areas with weathered soils and mineral-rich catchments. Additionally, the NT EPA's Environmental Assessment Report for Darwin Harbour notes that trace metals such as copper and zinc are commonly present in background sediments and waters, influenced by both natural weathering and diffuse runoff.

Copper concentrations exceeded trigger values at background sites BG01 and BG03, as well as at downstream sites SW03 (on two occasions), SW04, and SW07. The highest copper concentration, 0.009 mg/L, was detected at SW03 in November 2024. This peak value diminished downstream, with lower concentrations measured at SW05 and SW07, indicating some level of attenuation or dilution along the flow path. The spatial distribution of copper exceedances, including those at background sites, suggests that elevated concentrations may not be solely linked to site activities, but could also reflect broader catchment inputs or naturally elevated background levels.

Zinc exceedances were recorded at SW02 in November 2024 and February 2025, at SW03 in November 2024, and at SW06 in both February and March 2025. The highest zinc concentration observed was 0.031 mg/L at SW06 in March 2025. Notably no exceedances were recorded at the compliance point SW07.

Exceedances of TN, TP, and ammonia were the most widespread, occurring at nearly every site during each sampling event, including the background monitoring locations. This persistent pattern underscores a broader nutrient enrichment issue within the catchment. While nutrient exceedances were recorded at SW01, concentrations remained comparatively lower than those observed at SW07. This suggests that the drainage line discharge point at SW04 is a contributor to the elevated nutrient concentrations downstream. The widespread and consistent nature of nutrient exceedances across both background and downstream sites indicates that catchment-level influences, such as upstream land use or natural sources, may be playing a substantial role, rather than the exceedances being solely attributable to the site's operational activities.

TSS concentrations also exceeded trigger values at numerous locations. The majority of these exceedances occurred at background sites BG01, BG02, and BG03, reinforcing the likelihood that elevated sediment loads are influenced by natural catchment conditions, such as rainfall-driven erosion or upstream land disturbance. The highest TSS concentration of 396 mg/L was recorded at BG03 in November 2024. Sporadic TSS exceedances were also observed at SW02, SW03, SW04, SW05, and SW07, though these events were generally in lower concentrations than at the background sites.

Table 3-2 2024-2025 Water Sampling – Laboratory Results

Sample Site	Event	Cd dissolved	Cr ² dissolved	Cu dissolved	Pb dissolved	Hg dissolved	Ni dissolved	Zn dissolved	TSS	TN	TP	NH ₃ as N	Benzene	Naphthalene
Trigger Values ¹		0.0055 mg/L	0.0044 mg/L	0.0013 mg/L	0.0044 mg/L	0.0004 mg/L	0.07 mg/L	0.015 mg/L	10 mg/L	0.3 mg/L	0.03 mg/L	0.02 mg/L	0.7 mg/L	0.07 mg/L
SW01	Nov 24	Not sampled due to HSE access concerns												
	Jan 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.006	<5	0.4	0.6	0.02	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	8	0.6	0.13	0.16	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.012	9	0.7	0.09	0.32	<0.001	<0.005
SW02	Nov 24	<0.0001	<0.001	0.004	<0.001	<0.0001	<0.001	0.028	6	1.6	0.13	0.12	<0.001	<0.005
	Jan 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<5	3.7	0.04	0.20	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.016	76	1.6	0.08	0.27	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<5	1.9	0.15	0.06	<0.001	<0.005
SW03	Nov 24	<0.0001	0.001	0.009	<0.001	<0.0001	<0.001	0.028	280	4	0.54	0.18	<0.001	<0.005
	Jan 25	<0.0001	0.001	0.004	<0.001	<0.0001	0.002	0.014	7	8.2	0.93	0.74	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.002	<0.005	<5	2.9	0.58	0.22	<0.001	<0.005
	Mar 25	<0.0001	0.001	<0.001	<0.001	<0.0001	0.002	<0.005	7	2.4	0.4	0.14	<0.001	<0.005
SW04	Nov 24	DRY												
	Jan 25	<0.0001	0.001	0.004	<0.001	<0.0001	0.002	0.01	11	7.5	1.06	0.55	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.001	0.012	22	3	1.15	0.44	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	9	3.4	0.63	1.25	<0.001	<0.005

Sample Site	Event	Cd dissolved	Cr ² dissolved	Cu dissolved	Pb dissolved	Hg dissolved	Ni dissolved	Zn dissolved	TSS	TN	TP	NH ₃ as N	Benzene	Naphthalene
SW05	Nov 24	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.008	22	1.7	0.15	0.1	<0.001	<0.005
	Jan 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<5	0.6	0.2	0.13	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	<5	0.5	0.02	0.56	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.009	<5	0.3	0.06	0.2	<0.001	<0.005
SW06	Nov 24	DRY												
	Jan 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.013	<5	1	0.01	0.8	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.002	0.015	<5	0.6	0.02	0.3	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	0.001	0.031	6	0.4	0.06	1.9	<0.001	<0.005
SW07	Nov 24	DRY												
	Jan 25	<0.0001	0.001	0.004	<0.001	<0.0001	0.002	0.008	89	7	1.78	0.89	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	51	3.8	0.81	0.85	<0.001	<0.005
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	99	8.4	4.25	1.01	<0.001	<0.005
BG01	Nov 24	<0.0001	<0.001	0.002	<0.001	<0.0001	0.002	0.008	6	1	0.03	<0.01	<0.001	<0.005
	Jan 25	<0.0001	<0.001	0.002	<0.001	<0.0001	0.002	0.008	18	1	0.34	0.02	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.009	<5	0.4	0.04	0.26	<0.001	<0.005
	Mar 25	DRY												
BG02	Nov 24	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	0.009	51	1.6	0.14	0.07	<0.001	<0.005
	Jan 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	12	0.6	0.37	0.12	<0.001	<0.005
	Feb 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	11	1.1	0.03	0.41	<0.001	<0.005

Sample Site	Event	Cd dissolved	Cr ² dissolved	Cu dissolved	Pb dissolved	Hg dissolved	Ni dissolved	Zn dissolved	TSS	TN	TP	NH ₃ as N	Benzene	Naphthalene
	Mar 25	<0.0001	<0.001	<0.001	<0.001	<0.0001	<0.001	<0.005	23	0.6	0.05	0.02	<0.001	<0.005
BG03	Nov 24													
	Jan 25													
	Feb 25	<0.0001	<0.001	0.002	<0.001	<0.0001	0.001	<0.005	124	2	0.18	0.03	<0.001	<0.005
	Mar 25	<0.0001	<0.001	0.002	<0.001	<0.0001	0.002	0.007	396	9	0.33	0.03	<0.001	<0.005

1 Shaded blue cells denote where parameters were reported outside of trigger value or range

2 Analyse for Trivalent and Hexavalent Chromium if total chromium exceeds trigger value (which non the total chromium results triggered the values)

Section 4 Recommendations

The observed decline in exceedances towards the end of each wet season potentially indicates that the dissolvable fraction reduces from flushing, then builds up again prior to the next wet season. The levels observed at this site are partly contributed to upstream catchment inputs which are likely to persist outside of any management actions taken by the WTF operator. Additionally, the modest downward trend in dissolved metal and nutrient concentrations since 2018 supports the view that on-site management measures are effectively improving the quality of runoff water.

Based on recent wet-season sampling and the long-term monitoring record, it is evident that the current trigger values for nutrients and turbidity may not fully reflect the natural variability of site-specific conditions. While parameters such as ammonia, TSS, TP, and TN frequently exceed thresholds both upstream and downstream of the facility, downstream concentrations are often higher. This suggests that although background water quality contributes significantly to observed exceedances, site-related influences may also be playing a role. The similarity in timing between upstream and downstream peaks indicates a shared response to broader catchment processes, but the elevated downstream levels warrant further investigation to assess potential site contributions.

It is recommended that the trigger values are recalibrated using a site-specific derivation approach through establishing background baselines from upstream data (for example, the 80th percentile of wet-season readings) and then apply a modest downstream adjustment to capture only facility-related impacts. A transparent, staged process should be undertaken in collaboration with the regulator, including the submission of supporting data, the proposal of provisional revised values, a defined validation period, and clear protocols for managing interim exceedances. Such an approach would ensure that compliance thresholds are both scientifically robust and contextually appropriate, while continuing to safeguard environmental outcomes.

Indicative trigger values calculated based upon long term averages are provided in Table 4-1.

Table 4-1 Indicative Trigger Values for Nutrients

Parameter	Current Trigger Value	Average Value ¹	Proposed Provisional Trigger Value ²
TN	0.3 mg/L	3.327 mg/L	0.5 mg/L
TP	0.03 mg/L	0.748 mg/L	0.08 mg/L
NH ₃ as N	0.02 mg/L	0.358 mg/L	0.08 mg/L

1. Average values are derived from data obtained between 2018-2025 at SW07

2. Proposed trigger values are based upstream site averages

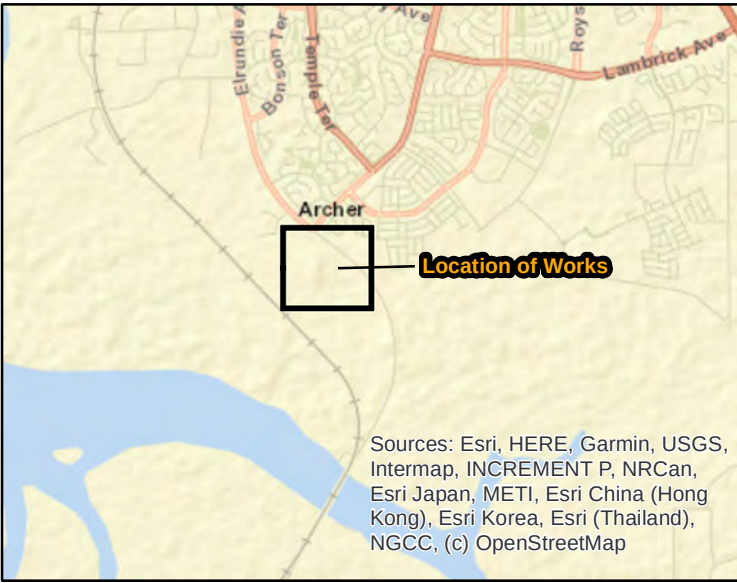
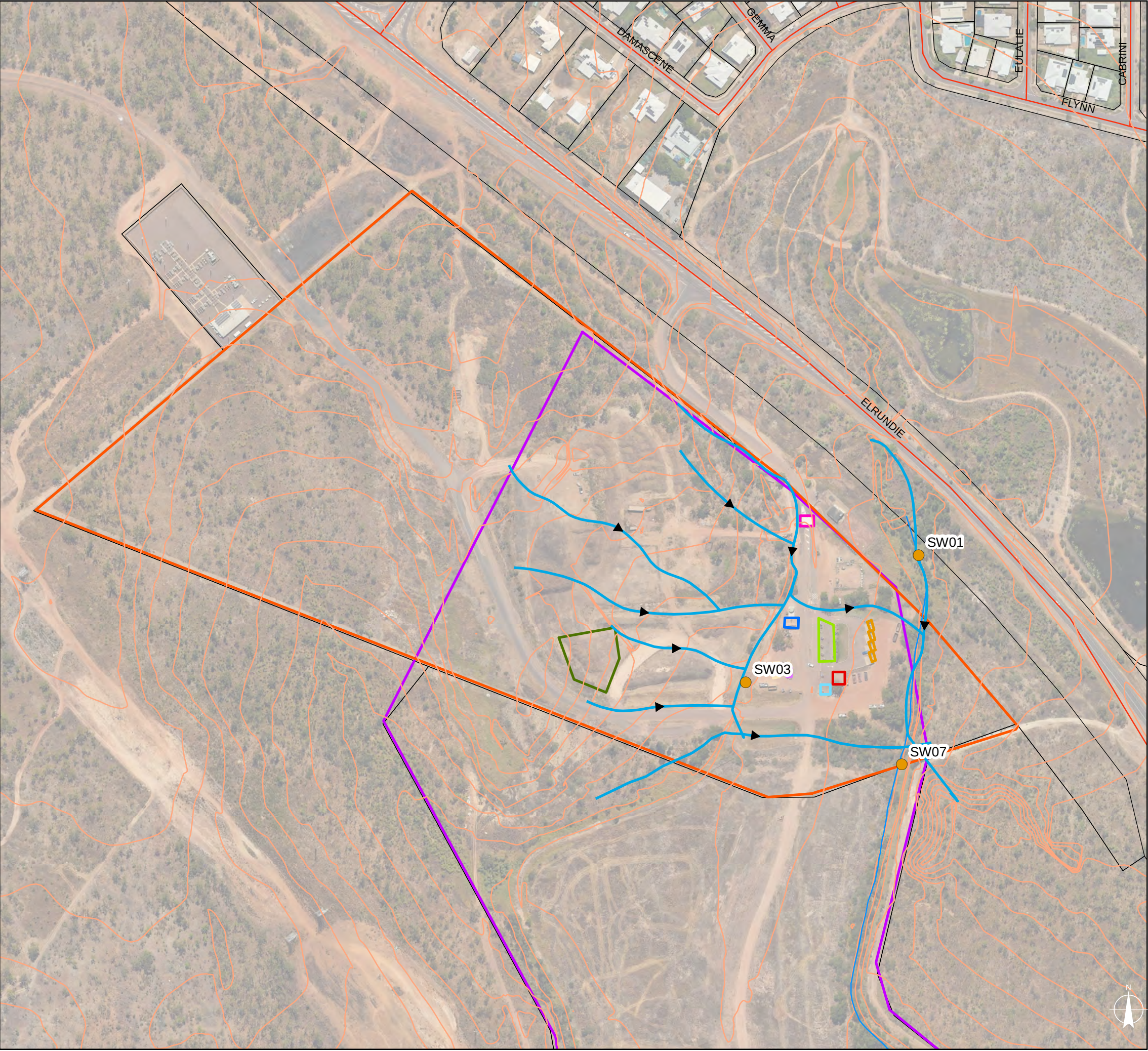
It is recommended that the CoP consider planned infrastructure development in the surrounding region when interpreting future water quality monitoring results. It is understood that significant roadworks and infrastructure upgrades are proposed in proximity to the site, including along Roystonea Avenue, Channel Island Road, and Elrundie Road. These construction activities have the potential to influence surface water quality entering the site. Such off-site works may introduce additional sediment loads or contaminants into the catchment area, potentially resulting in exceedances of trigger values at downstream monitoring locations. These exceedances, while recorded within the sampling area, may not reflect impacts directly attributable to on-site activities and instead may be linked to third-party land disturbance or stormwater redirection.

Accordingly, it is recommended that the CoP closely monitor regional development schedules and maintain ongoing communication with the regulator on this matter. Where feasible, temporary adjustments to the monitoring program—such as increased sampling frequency during construction phases, or the inclusion of additional upstream reference sites—may assist in distinguishing between site-related impacts and external influences. This proactive approach will support a more accurate interpretation of monitoring data and ensure that compliance assessments remain fair, evidence-based, and contextually informed.

Based on the findings of this report, along with the historical monitoring record, it is further recommended that the permanent sampling locations associated with the EPL be reviewed and adjusted to improve the representativeness of site-specific monitoring. Specifically, it is recommended that site SW03 be adopted in place of SW04. SW03 provides more direct and reliable data on operational influences, including activities associated with the mulching area and material laydown zones. In contrast, SW04 is more susceptible to inputs from off-site activities, which can compromise its effectiveness in isolating the impacts of on-site operations.

Retaining both SW01 with SW03 as a permanent sampling point would improve the capacity to distinguish between site-derived contamination and external catchment influences. SW03 offers a more appropriate location for detecting changes directly attributable to facility activities, whereas SW01 may reflect broader environmental inputs unrelated to operational processes (Figure 4-1).

It is also recommended that SW07 be retained as a permanent compliance monitoring location. This site remains a valuable indicator of cumulative impacts, capturing the overall water quality of runoff leaving the site. Its position downstream makes it particularly effective for assessing the net effect of site activities and management controls on surface water quality (Figure 4-1).



**Archer
Waste Transfer Facility**

**Figure 4-1 Proposed Sample
Sites**

Legend

- Proposed site 2
- Proposed site
- Stream
- Contours 1m
- Roads
- Green Waste
- Paint
- White Goods
- Scrap Metal
- Waste Batteries
- Waste Oil
- Dry Recycling
- Gatehouse
- Waste Transfer Bin
- Archer Waste Facility
- Old Facility

DATA SOURCE:
Esri, Maxar, Geoeye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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GCS GDA 1994
Map Compiled: 17/06/2025

DISCLAIMER
CDM Smith has endeavoured to ensure accuracy and completeness of the data. CDM Smith assumes no legal liability or responsibility for any decisions or actions resulting from the information contained within this map.

0.1 0.05 0 0.1
Kilometres
Scale @ A4 size: 1:3,000

Section 5 Disclaimers and Limitations

This report has been prepared by CDM Smith Australia Pty Ltd (CDM Smith) for the sole benefit of Palmerston City Council for the sole purpose of preparing a Conceptual Site Model associated with current operational activities.

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- has not verified the accuracy or reliability of this information (other than as expressly stated in this report);
- has not made any independent investigations or enquiries in respect of those matters of which it has no actual knowledge at the time of giving this report to Palmerston City Council; and
- makes no warranty or guarantee, expressed or implied, as to the accuracy or reliability of this information.

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If further information becomes available, or additional assumptions need to be made, CDM Smith reserves its right to amend this report.

Section 6 References

CDM Smith (2022). Standard Operating Procedures for Sampling Surface Waters, February 2022.

Ecoz (2016). Updated Conceptual Site Model and Risk Assessment for the Archer Waste Transfer Station, Palmerston. Prepared for City of Palmerston, October 2016.

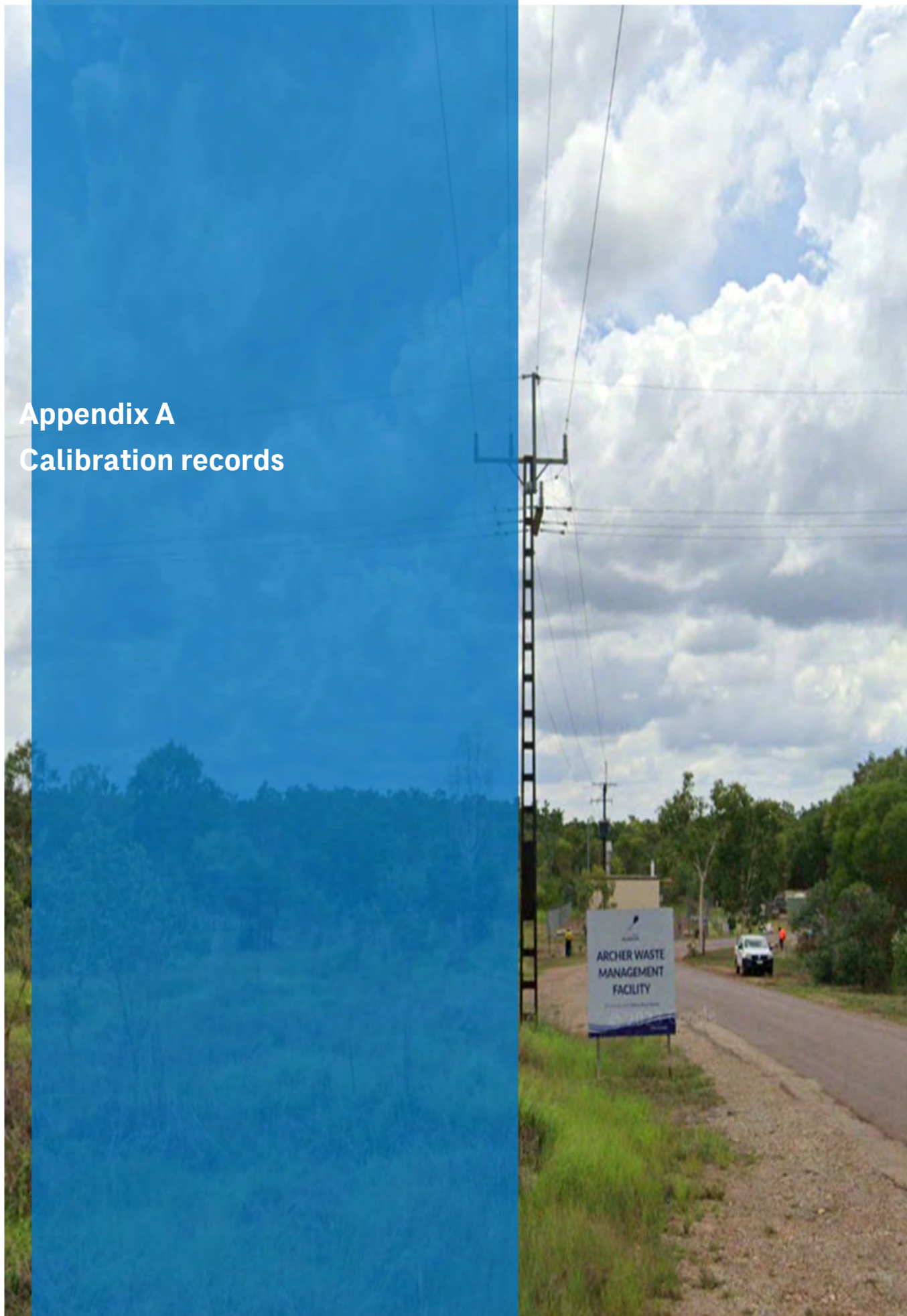
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Appendix A

Calibration records



Job Name: Archer		Job No.: 1001837			
CALIBRATION NOTES					
DATE and TIME	EQUIPMENT MODEL and SERIAL NUMBER	CALIBRATION METHOD / STANDARD	CALIBRATION RESULT	OTHER COMMENTS	INITIAL
18/11	TPS	EC zero	0	PASS	T.C
		EC 1413 $\mu S/cm$	1306	PASS	T.C
		EC 12.88 ms/cm	12.22	PASS	T.C
		EC 58 ms/cm	53.97 read 58.00 actual	PASS	T.C
18/11	" "	pH 7.00	7.01	PASS	T.C
		pH 4.00	4.01	PASS	T.C

Equipment Field Calibration Sheet

Job Name: Archer SW

Job No.: 1001837

CALIBRATION NOTES

[illegible]



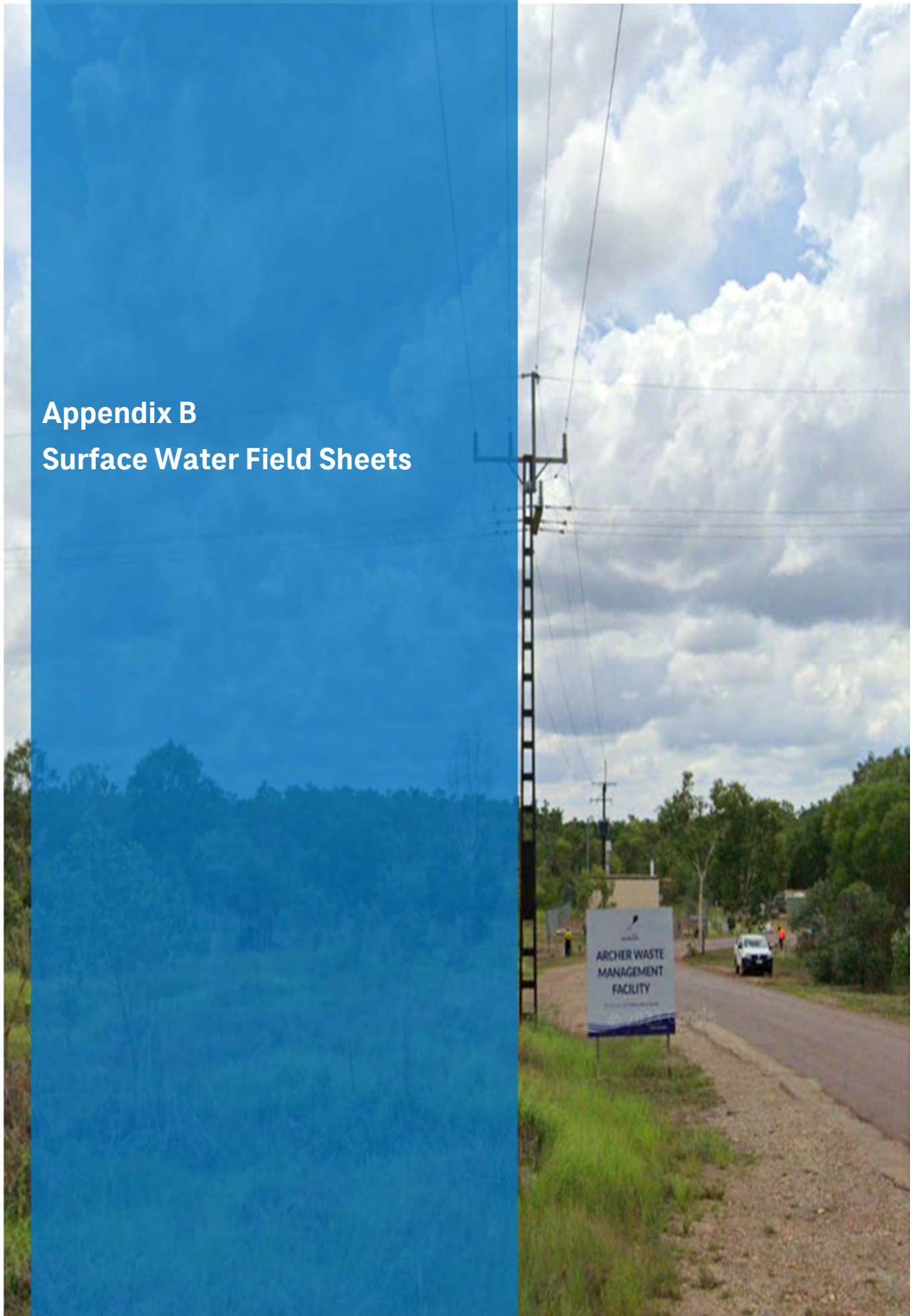
Equipment Field Calibration Sheet

Job Name: ~~XXXXXXXX~~ Archer		Job No.: 1001837			
CALIBRATION NOTES					
DATE and TIME	EQUIPMENT MODEL and SERIAL NUMBER	CALIBRATION METHOD / STANDARD	CALIBRATION RESULT	OTHER COMMENTS	INITIAL
23/2/25 6:00 PM	Aquaread	RapidCal	100%	PASS	TC
		D0100%	100%	PASS	TC
	Turbidimeter	<0.10	0.05	PASS	TC
		15	15	PASS	TC
		100	100	PASS	TC
		750	750	PASS	TC

[illegible]

Appendix B

Surface Water Field Sheets



Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 4:15 21.11.24	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: Tayhliq		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	None
ODOUR	No odour	AQUATIC PLANTS	grass
SURFACE SCUM/ALGAE	None	EROSION	N/A
RIPARIAN CONDITION	grass healthy on one side, dead on other	GROSS POLLUTANTS	Sheen present at dump running towards site (not present near sample site)
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	shallow pool 1-2cm	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy / overcast , recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29	
D.O	%	66.9	
E.C	µS/cm	274	
TDS	mg/L	173	
Salinity	ppt	0.09	
pH		6.35	
ORP	mV	+60	
Turbidity	NTU	31	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaredd		Turbidlimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 4:35 21.11.24	
SITE NUMBER / NAME: SW03			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	dark brown turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	No odour	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	No	EROSION	No
RIPARIAN CONDITION	lined w/ green grass	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	~~open~~ open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10cm	WATER FLOW (m/sec)	No flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy / overcast, recent rainfall			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.9	
D.O	%	64.1	
E.C	µS/cm	373	
TDS	mg/L	242	
Salinity	ppt	0.12	
pH		6.58	
ORP	mV	33.4	
Turbidity	NTU	500	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 5:15 21.11.24	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: Tayhlia		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	lizard, insects (moggies)
ODOUR	No odour	AQUATIC PLANTS	Paperbark Pandanus
SURFACE SCUM/ALGAE	None	EROSION	N/A
RIPARIAN CONDITION	good/healthy	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	Natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5 cm	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy/overcast, recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.4	
D.O	%	17.6	
E.C	µS/cm	857	
TDS	mg/L	232	
Salinity	ppt	0.11	
pH		6.34	
ORP	mV	16.3	
Turbidity	NTU	18	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 5:45 21.11.24	
SITE NUMBER / NAME: ~~444~~ BG02			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	Frogs nearby
ODOUR	no odour	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	none	EROSION	N/A
RIPARIAN CONDITION	good/healthy grass	GROSS POLLUTANTS	Sheen in nearby puddle (not sampled)
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	No flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy, recent rain			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.5	
D.O	%	23.8	
E.C	µS/cm	340	
TDS	mg/L	221	
Salinity	ppt	0.11	
pH		6.38	
ORP	mV	-74	
Turbidity	NTU	28	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer - 1001837		DATE and TIME: 6:15 21.11.24	
SITE NUMBER / NAME: BGO1			
SAMPLERS NAME: Tayhla		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	none	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	None	EROSION	steep bank
RIPARIAN CONDITION	Bank eroded, rocky, grasses	GROSS POLLUTANTS	litter on bank
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15 cm	WATER FLOW (m/sec)	none
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: cloudy, recent rains			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.3	
D.O	%	77.8	
E.C	µS/cm	51	
TDS	mg/L	33	
Salinity	ppt	0.02	
pH		6.26	
ORP	mV	74.4	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquared		Turbidimetre

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 7:30 29.1.25	
SITE NUMBER / NAME: BGO1			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	~~N/A~~ tadpole eggs
ODOUR	N/A	AQUATIC PLANTS	grasses, plants
SURFACE SCUM/ALGAE	N/A	EROSION	water in eroded drain
RIPARIAN CONDITION	eroded, plants on bank	GROSS POLLUTANTS	litter upstream
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	.10 (10cm)	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, overnight rain, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.00	
D.O	%	96.4	
E.C	µS/cm	98	
TDS	mg/L	63	
Salinity	ppt	0.03	
pH		6.08	
ORP	mV	+174.6	
Turbidity	NTU	85	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidity meter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 8:00 29.1.25	
SITE NUMBER / NAME: BGO2			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy, plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 cm	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, overnight rain, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.85	
D.O	%	50.9	
E.C	µS/cm	99	
TDS	mg/L	64	
Salinity	ppt	0.03	
pH		6.27	
ORP	mV	+108.2	
Turbidity	NTU	26	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 8:20	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: K		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear but brown	PRESENCE OF AQUATIC FAUNA	~~fish~~ bugs underwater
ODOUR	N/A	AQUATIC PLANTS	grasses, plants
SURFACE SCUM/ALGAE	debris (leaf litter)	EROSION	N/A
RIPARIAN CONDITION	good, healthy plants	GROSS POLLUTANTS	Litter, glass / plastic bottles
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15cm	WATER FLOW (m/sec)	0 no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, rain overnight, no wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.5	
D.O	%	69	
E.C	µS/cm	140	
TDS	mg/L	89	
Salinity	ppt	0.04	
pH		5.69	
ORP	mV	+150.9	
Turbidity	NTU	14	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 8:45	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	sheen	EROSION	N/A
RIPARIAN CONDITION	Plants	GROSS POLLUTANTS	sheen, litter
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	slow, slight flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, partial sun, humid, rain overnight, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	60.3	
E.C	µS/cm	281	
TDS	mg/L	149	
Salinity	ppt	0.07	
pH		5.48	
ORP	mV	152.8	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 9:00	
SITE NUMBER / NAME: SW03			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	dark brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10 - 15 cm	WATER FLOW (m/sec)	slow flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, partial sun, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.68	
D.O	%	58.2	
E.C	µS/cm	966	
TDS	mg/L	627	
Salinity	ppt	0.41	
pH		7.02	
ORP	mV	+38	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001857		DATE and TIME: 29.1.25 9:15	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	sheen on edges	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	sheen on edges
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	5cm	WATER FLOW (m/sec)	0.2? flowing
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, sun out, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.6	
D.O	%	61.2	
E.C	µS/cm	969	
TDS	mg/L	628	
Salinity	ppt	0.40	
pH		7.19	
ORP	mV	11.7	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use			

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25 9:45	
SITE NUMBER / NAME: SWOS			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	bubbles in water
ODOUR	N/A	AQUATIC PLANTS	Pandanus, Paper bark, grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	20cm	WATER FLOW (m/sec)	minimal flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.7	
D.O	%	68.1	
E.C	µS/cm	105	
TDS	mg/L	66	
Salinity	ppt	0.03	
pH		7.40	
ORP	mV	+36.9	
Turbidity	NTU	13	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.1.25	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME:		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural / open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	10cm	WATER FLOW (m/sec)	slow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Partly cloudy, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.8	
D.O	%	61.2	
E.C	µS/cm	799	
TDS	mg/L	519	
Salinity	ppt	0.33	
pH		6.79	
ORP	mV	39.4	
Turbidity	NTU	130	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		turbidimeter

Any other comments or special procedures (see over):

sampled at junction connecting SW04, SW05 and SW07 - unable to access SW07 due to water

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 29.7.25 10:30	
SITE NUMBER / NAME: SW01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	underwater bugs
ODOUR	N/A	AQUATIC PLANTS	grass, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy plants	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	deep (0.50 - 1m)	WATER FLOW (m/sec)	Slight flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sun out, clouds around, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	31	
D.O	%	68.2	
E.C	µS/cm	67	
TDS	mg/L	44	
Salinity	ppt	0.02	
pH		7.34	
ORP	mV	+85.7	
Turbidity	NTU	17	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquared		turbidimeter

Any other comments or special procedures (see over):

sampled slightly upstream

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 7:30	
SITE NUMBER / NAME: BG01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear/brown	PRESENCE OF AQUATIC FAUNA	~~no~~ tadpoles
ODOUR	N/A	AQUATIC PLANTS	Grasses
SURFACE SCUM/ALGAE	N/A	EROSION	Yes, steep banks
RIPARIAN CONDITION	eroded, plants healthy	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.6	
D.O	%	66.7	
E.C	µS/cm	113	
TDS	mg/L	71	
Salinity	ppt	0.04	
pH		6.45	
ORP	mV	+65.2	
Turbidity	NTU	9.5	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 7:45	
SITE NUMBER / NAME: BG02			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear/brown	PRESENCE OF AQUATIC FAUNA	N/A (frog sounds)
ODOUR	N/A	AQUATIC PLANTS	grasses, paperbark Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.4	
D.O	%	35.2	
E.C	µS/cm	164	
TDS	mg/L	107	
Salinity	ppt	0.05	
pH		5.94	
ORP	mV	-43.7	
Turbidity	NTU	21	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 8:15	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Clear/brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Shewn near edge	EROSION	N/A
RIPARIAN CONDITION	healthy plants	GROSS POLLUTANTS	N/A (rubbish upstream)
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.6	
D.O	%	61.5	
E.C	µS/cm	229	
TDS	mg/L	146	
Salinity	ppt	6.07	
pH		5.71	
ORP	mV	+26.9	
Turbidity	NTU	5.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 8:40	
SITE NUMBER / NAME: SW02			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	Spider on water
ODOUR	Slight - Possibly stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain/wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.8	
D.O	%	17	
E.C	µS/cm	678	
TDS	mg/L	444	
Salinity	ppt	8.29	
pH		6.17	
ORP	mV	-62.8	
Turbidity	NTU	15	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 9:00	
SITE NUMBER / NAME: ~~101~~ SW03			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Dark brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	~~slight~~ slight - Poss stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	~~sheen~~ Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	24.3	
E.C	µS/cm	1047	
TDS	mg/L	682	
Salinity	ppt	0.50	
pH		6.61	
ORP	mV	-25.7	
Turbidity	NTU	8.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 9:30	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	~~slight~~ slight - possibly stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined, concrete drain/pipe under road e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.3	
D.O	%	7.2	
E.C	µS/cm	1349	
TDS	mg/L	872	
Salinity	ppt	0.63	
pH		6.59	
ORP	mV	-126.7	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquavead		Turbidimeter

Any other comments or special procedures (see over):

Sampled downstream near drain

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 10:15	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A mosses
ODOUR	N/A	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Sheen, algae	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined/natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.4	
D.O	%	44.7	
E.C	µS/cm	1125	
TDS	mg/L	725	
Salinity	ppt	0.53	
pH		6.50	
ORP	mV	-37.3	
Turbidity	NTU	38	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Sampled at junction of SW05 + SW04

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.25 10:00	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	clear / brown	PRESENCE OF AQUATIC FAUNA	splashes in water - fish? mozzies
ODOUR	N/A	AQUATIC PLANTS	Paperbark, grasses pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.98	
D.O	%	23	
E.C	µS/cm	542	
TDS	mg/L	347	
Salinity	ppt	0.23	
pH		6.40	
ORP	mV	-27.0	
Turbidity	NTU	11	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 14.2.25 11:00	
SITE NUMBER / NAME: B603			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, shrubs tree
SURFACE SCUM/ALGAE	Algae, leaf litter	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Puddle of water above greenwaste e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.03	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	39.3	
D.O	%	91.4	
E.C	µS/cm	541	
TDS	mg/L	351	
Salinity	ppt	0.23	
pH		6.79	
ORP	mV	-79.4	
Turbidity	NTU	45	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

- 12.519335, 130.97672

Surface Water Field Data Sheet

PROJECT: 1001837		DATE and TIME: 24.2.23 11:30	
SITE NUMBER / NAME: SW01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	trees, grasses
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	> 1m	WATER FLOW (m/sec)	0 (no flow)
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, no rain, slight breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.1	
D.O	%	11.1	
E.C	µS/cm	127	
TDS	mg/L	83	
Salinity	ppt	0.04	
pH		6.61	
ORP	mV	-39.7	
Turbidity	NTU	12	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 10:40 19.3.25	
SITE NUMBER / NAME: SW07			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown / turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	Stagnant	AQUATIC PLANTS	grasses
SURFACE SCUM/ALGAE	Algae, Sheen	EROSION	N/A
RIPARIAN CONDITION	grassy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined		
e.g., open unlined, open concrete lined, natural			
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.2	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Overcast, no breeze			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	30.50	
D.O	%	26.6	
E.C	µS/cm	1238	
TDS	mg/L	808	
Salinity	ppt	0.59	
pH		6.69	
ORP	mV	-67.1	
Turbidity	NTU	55	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquacoread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 10:55	
SITE NUMBER / NAME: SW05			
SAMPLERS NAME: TK		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Clear / light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, trees, Pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	good, healthy veg	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, no wind, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.4	
D.O	%	9.4	
E.C	µS/cm	931	
TDS	mg/L	605	
Salinity	ppt	0.39	
pH		6.15	
ORP	mV	+12.4	
Turbidity	NTU	13	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 1000	
SITE NUMBER / NAME: SW04			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	Stagnant	AQUATIC PLANTS	grasses ↳ dying
SURFACE SCUM/ALGAE	Algae	EROSION	N/A
RIPARIAN CONDITION	grasses - dying	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.1	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Sunny, clouds, breeze, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	29.6	
D.O	%	20.4	
E.C	µS/cm	1380	
TDS	mg/L	897	
Salinity	ppt	0.65	
pH		6.55	
ORP	mV	-97.8	
Turbidity	NTU	8.4	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 9:40	
SITE NUMBER / NAME: SWO3			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	fish
ODOUR	N/A	AQUATIC PLANTS	grass
SURFACE SCUM/ALGAE	white surface scum	EROSION	N/A
RIPARIAN CONDITION	grassy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.3	WATER FLOW (m/sec)	0
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Slight breeze . sunny, clouds around			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.7	
D.O	%	6.7	
E.C	µS/cm	1154	
TDS	mg/L	755	
Salinity	ppt	0.55	
pH		6.69	
ORP	mV	-86.4	
Turbidity	NTU	13	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: <i>Archer</i>		DATE and TIME: <i>19.3.25 9:15</i>	
SITE NUMBER / NAME: <i>SW02</i>			
SAMPLERS NAME: <i>TC</i>		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	<i>light brown, clear</i>	PRESENCE OF AQUATIC FAUNA	<i>grasshopper underwater</i>
ODOUR	<i>N/A</i>	AQUATIC PLANTS	<i>grasses</i>
SURFACE SCUM/ALGAE	<i>Sheen/white scum</i>	EROSION	<i>N/A</i>
RIPARIAN CONDITION	<i>grassy</i>	GROSS POLLUTANTS	<i>N/A</i>
TYPE OF DRAINAGE CONSTRUCTION	<i>open unlined</i> e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	<i>0.1 m</i>	WATER FLOW (m/sec)	<i>0</i>
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions:			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	<i>28.73</i>	
D.O	%	<i>24.6</i>	
E.C	µS/cm	<i>1200</i>	
TDS	mg/L	<i>784</i>	
Salinity	ppt	<i>0.57</i>	
pH		<i>6.46</i>	
ORP	mV	<i>-168.7</i>	
Turbidity	NTU	<i>11</i>	
WATER QUALITY EQUIPMENT			
Equipment in use	<i>Aquaread</i>		<i>Turbidimeter</i>

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 8:30	
SITE NUMBER / NAME: BGO3			
SAMPLERS NAME: JC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, small shrubs, trees
SURFACE SCUM/ALGAE	Algae, sheen	EROSION	N/A
RIPARIAN CONDITION	grasses, muddy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Puddle e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.03	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	~~28.3~~ 28.3	
D.O	%	32.7	
E.C	µS/cm	580	
TDS	mg/L	378	
Salinity	ppt	0.24	
pH		6.33	
ORP	mV	-45.3	
Turbidity	NTU	27	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19-3-25 8:00	
SITE NUMBER / NAME: SW01			
SAMPLERS NAME: TC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown	PRESENCE OF AQUATIC FAUNA	~~None~~ Dubbles possibly fish
ODOUR	N/A	AQUATIC PLANTS	grasses, pandanus
SURFACE SCUM/ALGAE	N/A	EROSION	N/A
RIPARIAN CONDITION	grassy, good	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	> 1.0	WATER FLOW (m/sec)	
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Overcast, humid			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.1	
D.O	%	37.6	
E.C	µS/cm	119	
TDS	mg/L	74	
Salinity	ppt	0.04	
pH		5.95	
ORP	mV	+11.1	
Turbidity	NTU	8.2	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.25 7.30	
SITE NUMBER / NAME: BG02			
SAMPLERS NAME: JC		PHOTO NOS:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	Brown turbid	PRESENCE OF AQUATIC FAUNA	N/A
ODOUR	N/A	AQUATIC PLANTS	grasses, trees, Pandanus
SURFACE SCUM/ALGAE	Some ~~thin~~ sheen on surface	EROSION	N/A
RIPARIAN CONDITION	good, healthy	GROSS POLLUTANTS	N/A
TYPE OF DRAINAGE CONSTRUCTION	Natural e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	Shallow 0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: Overcast, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	27.1	
D.O	%	21.3	
E.C	µS/cm	166	
TDS	mg/L	107	
Salinity	ppt	0.05	
pH		5.93	
ORP	mV	-36.3	
Turbidity	NTU	24	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread		Turbidimeter

Any other comments or special procedures (see over):

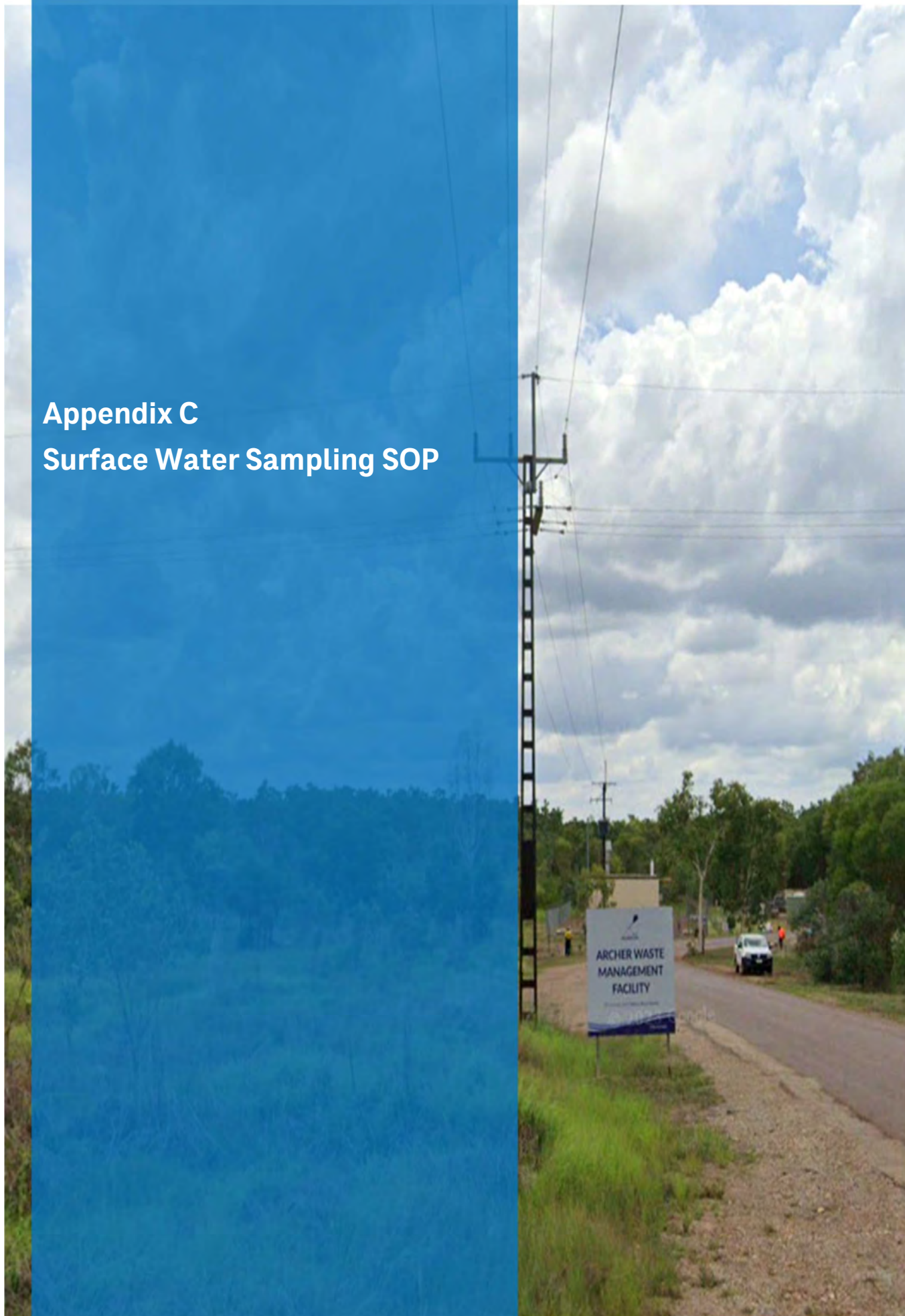
Surface Water Field Data Sheet

PROJECT: Archer		DATE and TIME: 19.3.28 9:00	
SITE NUMBER / NAME: SW06			
SAMPLERS NAME: TC		PHOTO NOs:	
EASTING:		NORTHING:	
GENERAL OBSERVATIONS			
WATER COLOUR	light brown	PRESENCE OF AQUATIC FAUNA	Spider
ODOUR	N/A	AQUATIC PLANTS	grasses, shrubs
SURFACE SCUM/ALGAE	Sheen	EROSION	N/A
RIPARIAN CONDITION	good	GROSS POLLUTANTS	litter nearby
TYPE OF DRAINAGE CONSTRUCTION	natural / open unlined e.g., open unlined, open concrete lined, natural		
WATER CONDITIONS			
APPROX DEPTH OF WATER (m)	0.05	WATER FLOW (m/sec)	no flow
WEATHER CONDITIONS			
Cloud cover/ precipitation/ wind conditions: overcast, sun out, humid, no wind			
FIELD SAMPLES			
Parameter	Unit	Result	
Temperature	°C	28.3	
D.O	%	28.2	
E.C	µS/cm	198	
TDS	mg/L	130	
Salinity	ppt	0.06	
pH		5.53	
ORP	mV	+82.1	
Turbidity	NTU	9.8	
WATER QUALITY EQUIPMENT			
Equipment in use	Aquaread	Turbidimeter	

Any other comments or special procedures (see over):

Appendix C

Surface Water Sampling SOP



Introduction

City of Palmerston (CoP) operate the Archer Waste Transfer Station (WTS) situated on Lot 11497, Town of Palmerston, Elrundie Avenue, Archer. The site area is approximately 16 hectares, however the main areas of use for storage of waste and green waste occupies less than 2 hectares. The site is bounded by Channel Island Road to the north and east, vacant bushland to the west and the former Archer landfill to the south. The southeastern portion of the site lies within the former Archer landfill. The boundary of the former landfill extends further to the south. Surface water monitoring is undertaken at the Archer WTS to ensure that operations do not impact any waterways downstream.

Field Preparation

Equipment

- Pre-calibrated Water Quality Meter (WQM) and spare batteries (or ensure it is fully charged before use)
- Sample pole
- Sample bottles (see below)
- Sample cup
- Filters and syringes (always take extra)
- Sampling gloves – disposable, nitrile, powder-free.
- Clipboard, pens/pencils and permanent markers (and spares)
- Ziplock bags for each set of bottles (if the lab does not provide them)
- Field sheets/field record
- Camera/phone to take photos
- Personal Field Folder containing; relevant SWMS, COC's, emergency contact information, staff contacts, site maps, spare field record sheets, standard operating procedure.
- Esky (with ice or ice bricks to keep the samples chilled).

Personal Protection Equipment (PPE)

- GPS
- Handheld UHF radio (if required)
- Mobile phone
- First aid kit
- Long sleeved shirt
- Safety glasses (tinted and clear)
- Midge bite repellent (Aerogard)
- Enclosed shoes/Gumboots
- High-vis (shirt or vest)
- Hat

- Sunscreen
- Drinking water and electrolyte additives where required
- Wet season gear (only when working during the wet season).

Sampling Procedure

Mobilisation

- Ensure equipment is charged and equipment is calibrated. Take spare batteries if the WQM requires them.
- Ensure equipment including vehicle is functioning, clean and has been booked.
- Create the Chain of Custody.
- Ensure that your mobile phone is charged (or carry a charger/battery pack).
- Double check all equipment is packed before leaving the office to undertake sampling.
- Always notify your team leader/manager upon arrival at site.

Things to consider - reducing sample contamination

Ensure that samples are not contaminated during sampling. Sources of sample contamination when collecting the sample include sunscreen, insect repellent, cigarette smoke and preservatives from other bottles. Reduce the risk of contamination by the following:

- Apply sunscreen and insect repellent prior to leaving for sampling and avoid applying directly on hands and wrists. Ensure that hands and wrists are washed with soap and water to remove any excess product.
- Do not smoke or eat when sampling.
- Use clean disposable gloves at each sampling site immediately before opening sample bottles. Ensure you do not wipe gloved hands on your skin or clothing.
- Keep sample bottles closed until sampling. If grime is present on the outside of the bottle, rinse with sample water prior to opening.
- Always sample with hands away from the bottle opening (wear clean disposable gloves when collecting the sample and change gloves between sites or if contamination is suspected).

On Arrival

At each sample location, take a moment to assess the area for dangers, including potential slips/trip hazards, dangerous fauna (e.g., snakes) and signs of crocodile habitat (e.g., slides, nests).

If the sample location cannot be accessed, write the reason on the field record, and make the Project Manager aware of why it was not sampled.

Consider a site dry only when the pool at its deepest point is too shallow to fill the sample bottles.

Take care not to introduce sediments when sampling water from shallow pools. Record the depth and pool dimensions on the field data sheet.

If possible, sample alternative locations within the same reach (i.e. the visible section of the stream when standing at the sampling site) if the usual sampling site is dry. The location of an alternative site should be relative to the impact

and its position. This will provide a continuity of data. Ensure that the alternative site location is documented on the field data sheet.

Field Records/Sheet

At each sampling location, field records should include the following minimum information:

- Exact location information (sample point number/name and/or GPS coordinates), sampling time, date and the name of the sampler(s)
- Sample type and number of containers
- Weather conditions
- Sample collection equipment and method
- In-situ water quality parameter (pH, EC, DO, TDS, temperature etc) readings
- Physical characteristics of sample (e.g. odour, sheen, colour)
- Sample equipment decontamination procedures, where non-disposable sampling equipment is utilised
- Photograph of sample location
- Record comments on field observations including, water depth, flow, visibility, creek width, presence of fish / tadpoles etc and other fauna / flora in the area, and any unusual observations such as visible grease/scum, floating fish. Also make a note on the field book which samples have been collected at the site.

FILL IN ALL SECTIONS OF FIELD RECORD SHEET.

- Label all bottles with permanent marker. Fill in the sticker with Client/Company name, sample ID, date of sample and samplers' initials. On the large Ziplock bag, record date and sample ID. Mark which bottles have been filtered in the field.
- Prior to taking the sample, don nitrile gloves to avoid sample contamination and skin burns from preservative in some of the bottles.
- If using the sample pole, place the cup in the carrier of the sample pole.
 - Face the cup upstream, capture water and discard of it downstream away from the sample collection location three times (this is part of the decontamination process and cleans the sample cup). Make sure you are collecting from at least 10cm below the water's surface.
 - Collect the water sample and fill up all the sample bottles that do not require field filtered water.
 - Collect water in the sample cup and put it on a flat surface. Use syringe to draw up water, attach the filter and push water through into the sample bottle marked 'field filtered'. This may take several draw ups of water and remember do not overflow the sample bottle. If you require the use of more than one filter while sampling (it will get hard to squeeze the sample into the bottle), remove the filter from the syringe and re-attach new filters, avoiding possible contamination (hold by the packaging only to avoid contamination)
 - Use one syringe for each sampling site
- Alternatively, samples can be collected directly from the water course if safe to do so.
 - If wading into the water to collect a sample, aim to minimise the amount of substrate disturbance. Sample water outside of the sediment plume or wait until the plume has been washed downstream. Note that during rapid flow if it is not safe to enter the water, and samples should be collected using a sampling pole, with the operator standing on the bank.

- If standing in the water, stand downstream of the sample bottle with the opening facing upstream. If using a sampling pole (or other appropriate device), place the sampling container in the water with the opening facing upstream and avoid placing hands near the mouth of the bottle. Water samples should be collected from as near to the centre of the channel as possible.
- The sample container should be placed approximately 10 cm below the water surface. If the water is shallow, hold the bottle opening above the substrate to prevent the collection of settled solids (this will depend on the substrate type: silt, sand etc). Fill the bottle to the top and replace the lid, so as not to trap air bubbles. Replace the lid immediately after the bottle has been filled.
- Use syringe to draw up water, attach the filter and push water through into the sample bottle marked 'field filtered'. This may take several draw ups of water and remember not to overflow the sample bottle.
- Put all full bottles in the sample bag with the site ID on it and place in the esky of ice/ice bricks.
- Undertake field duplicates, triplicates and rinsate blank samples, if required (see Quality Control/Quality Assurance below).
- Put rubbish into a bag (e.g., used gloves, syringe, filters) and dispose of responsibly.

Field Readings

- Turn on the WQM Unit.
- After sampling re-fill the sample cup with water from the sample point.
- Ensure all protective covers on the probes are removed (if applicable, this depends on the WQM – pH and DO probes often have protective caps)
- Rinse the water quality meter sensors over with the sample water.
- Re-fill the sample cup with sample water and place on a flat surface.
- Put the sensors into the sample cup. Care must be taken to ensure this equipment is not damaged whilst taking readings.
- Record the general site observations on the surface water field sheet while the sensors are stabilising their readings. Record comments on field observations including, water depth, flow, visibility, creek width, presence of fish / tadpoles etc and other fauna / flora in the area, and any unusual observations such as visible grease/scum, floating fish.
- Record the in-situ readings on the surface water field sheet.
- Remove the sensors from the water, careful not to damage them on removal.
- Replace the protective covers of the probes (if applicable) and turn off WQM Unit.
- Ensure the WQM Unit is stored appropriately so as not to damage the equipment.

Packing Up

- As we are rinsing all equipment in the sample locations prior to collecting the actual samples all equipment just need a good rinse off at the last location and dried.
- Ensure WQM unit is turned off and packed up appropriately. Make sure to open it up in a safe location in the office to dry out before packing it away.
- Always notify your team leader/ manager on departure from site.
- Calibrate equipment as per the manufacturer's specifications in the relevant manuals and complete the calibration register.

- Take a photo of all field sheets and send it to the project manager.

Sample Dispatch

- The Chain of Custody (CoC) is to be completed prior to samples being dispatched to the laboratory. Ensure all samples are listed in the sample ID column and marked analysis is correct.
- Take a photo of the paperwork and send it to the project manager.
- Samples are to be taken to the laboratory in eskies with ice bricks (ice bricks can be bottles of frozen water).

Quality Control / Assurance

Field Duplicates

Take one field duplicate for every ten location points sampled using the following method:

- Collect primary sample.
- Collect field duplicate with a second set of the same bottles used for the primary sample.
- Label the bottles with a code not related to the site number (e.g. SWQA01_ddmmyy).
- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWQA01_ddmmyy was collected.
- Make sure the QA/QC field log is filled out.

Field Triplicates

Take one field triplicate for every 20 location points sampled.

- Collect the primary sample.
- Collect the duplicate sample.
- Collect field triplicate with a third set of the same bottles used for the primary sample.
- Label the bottles with a code not related to the site number and subsequent to the field duplicate (e.g. SWQA02_ddmmyy). Generally, field duplicates are named with odd numbers and field triplicates are named with even numbers.
- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWQA02_ddmmyy was collected.
- Make sure the QA/QC field log is filled out.

Field Blanks

For each sampling day, a field blank needs to be collected. The field blank sample is to test the level of potential contamination of a sample from the surrounding environment during the collection procedure.

- Arrive at the sample location.
- Set up Field blank on a flat surface and open the bottles. Be mindful not to spill the bottles.
- Fill a plastic red/green metals bottle with deionised water and close.
- Label the bottles with a code not related to the field blank (e.g. SWFB01_ddmmyy).

- Make sure it is on the CoC as its own sample and it is noted on the sites field sheet that SWFB01 was collected.
- Make sure the QA/QC field log is filled out.

Relevant Documentation

- AS/NZS 5667.4:1998 'Water Quality – Sampling Part 4: Guidance on Sampling from Lakes, natural and man-made'.
- AS/NZS 5667.6:1998 'Water Quality – Sampling, Part 6: Guidance on sampling of rivers and streams'.

Archer Surface Water Locations

Locations

Terrestrial Sampling Locations

Sample Location Reference	Coordinates (GDA94)	
	Latitude	Longitude
SW1	715054	8615118
SW2	714938	8615084
SW3	714916	8615027
SW4	714895	8614982
SW5	715041	8614983
SW6	714948	8615166
SW7	715031	8614965

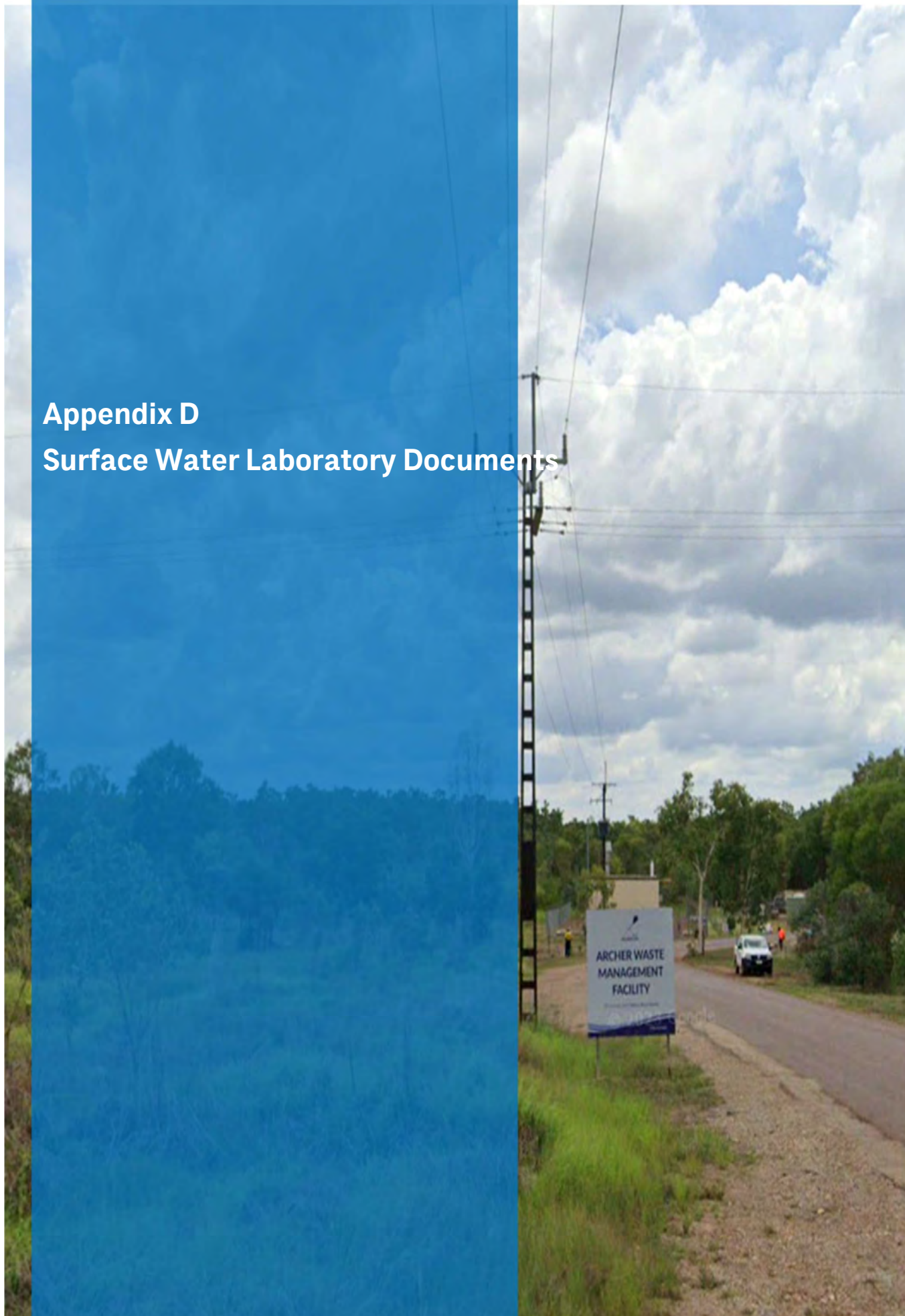
Bottles

Bottle	Description
1x 100ml	Amber glass bottle Unpreserved Orange label OC/OP Pesticides, TRH(C10-C40)
2x 40ml	Amber glass vial Sulfuric Acid (Preservative) Purple label Zero head space TRH(C6-C9)/BTEXN
2x 60ml	Clear plastic bottle Sulfuric Acid (Preservative) Purple label Ammonia, COD, TN, TP, T. Phenolics
1x 500ml	Clear plastic bottle Unpreserved Green label SS, TDS
2x 60 ml	Clear plastic bottle Lab-acidified Red/green label As, Cd, Cr, Cu, Pb, Ni, Zn 1x filtered (dissolved metals), 1x unfiltered (total metals)



Appendix D

Surface Water Laboratory Documents





CERTIFICATE OF ANALYSIS

Work Order : **ES2438129**
Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 8
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 26-Nov-2024 11:00
Date Analysis Commenced : 27-Nov-2024
Issue Date : 02-Dec-2024 09:58



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- Bottles received as BG02
- Bottles received as SW02
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 sample 2,4 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		129	348	157	52	122
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		6	280	22	6	51
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.002	0.003	<0.001	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	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		0.004	0.009	<0.001	0.002	<0.001
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		0.028	0.028	0.008	0.008	0.009
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.004	0.003	<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	0.008	<0.001	<0.001	<0.001
Copper	7440-50-8	0.001	mg/L		0.006	0.021	0.001	0.004	0.001
Nickel	7440-02-0	0.001	mg/L		0.001	0.006	0.001	<0.001	<0.001
Lead	7439-92-1	0.001	mg/L		0.002	0.015	<0.001	<0.001	<0.001
Zinc	7440-66-6	0.005	mg/L		0.032	0.129	0.008	0.008	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.12	0.18	0.10	<0.01	0.07
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.15	1.15	0.01	0.16	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		1.5	2.9	1.7	0.8	1.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.6	4.0	1.7	1.0	1.6
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.54	0.15	0.03	0.14
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		47	56	58	40	35
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW02	SW03	SW05	BG01	BG02
Sampling date / time				21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit	ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		86.6	90.8	82.8	71.4	65.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW02	SW03	SW05	BG01	BG02
Sampling date / time					21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00	21-Nov-2024 00:00
Compound	CAS Number	LOR	Unit		ES2438129-001	ES2438129-002	ES2438129-003	ES2438129-004	ES2438129-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		91.2	90.5	85.0	66.7	64.3
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		82.3	84.7	85.9	85.8	85.9
Toluene-D8	2037-26-5	2	%		96.0	96.0	95.8	98.1	96.6
4-Bromofluorobenzene	460-00-4	2	%		114	114	113	117	117



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2438129**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : youngje@cdmsmith.com
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 26-Nov-2024 11:00
Client Requested Due : 02-Dec-2024
Date

Issue Date : 26-Nov-2024
Scheduled Reporting Date : **02-Dec-2024**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : ----
Receipt Detail :

Security Seal : Not Available
Temperature : 8.7'c 10.1'c 8.4'c
No. of samples received / analysed : 5 / 5

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Bottles received as BG02
- Bottles received as SW02
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months ± 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2438129-001	21-Nov-2024 00:00	SW02	✓	✓	✓	✓	✓	✓	✓
ES2438129-002	21-Nov-2024 00:00	SW03	✓	✓	✓	✓	✓	✓	✓
ES2438129-003	21-Nov-2024 00:00	SW05	✓	✓	✓	✓	✓	✓	✓
ES2438129-004	21-Nov-2024 00:00	BG01	✓	✓	✓	✓	✓	✓	✓
ES2438129-005	21-Nov-2024 00:00	BG02	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2438129-001	21-Nov-2024 00:00	SW02	✓	✓
ES2438129-002	21-Nov-2024 00:00	SW03	✓	✓
ES2438129-003	21-Nov-2024 00:00	SW05	✓	✓
ES2438129-004	21-Nov-2024 00:00	BG01	✓	✓
ES2438129-005	21-Nov-2024 00:00	BG02	✓	✓

Proactive Holding Time Report

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

ACCOUNTS PAYABLE (AU ACC)

Email au-accounts@cdmsmith.com

Email twycrossjt@cdmsmith.com

- [illegible]

Email youngje@cdmsmith.com

- [illegible]

Email caseytc@cdmsmith.com

- [illegible]

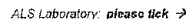
Ph: 07 7472 5600 E: gladstone@ais-global.comPh. 02 6372 6736 E. nudgea@mail.gabgobsl.com

Fig. 03 2239 7855 E. samples gedagaloginohi con

Ph: 02 42213123 E: vo-nguy@ab-global.com.

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Val HCl Preserved; VB = VOA Val Sodium Bisulphate Preserved; VS = VOA Val Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Bottle; F = Formaldehyde
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; HTT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order : **ES2502339**
Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 31-Jan-2025 09:30
Date Analysis Commenced : 03-Feb-2025
Issue Date : 07-Feb-2025 14:12



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- TDS by method EA-015 various samples may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.
- TDS by method EA-015 sample various samples may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit	ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	51	154	538	547	58
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	<5	<5	7	11	<5
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.006	0.006	<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	<0.001	<0.001	0.004	0.004	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	0.006	<0.005	0.014	0.010	<0.005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.006	0.006	<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	<0.001	<0.001	0.005	0.006	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	0.006	0.008	0.015	0.017	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.02	0.20	0.74	0.55	0.13
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	----	0.01	mg/L	0.14	2.48	1.70	1.41	0.02



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.3	1.2	6.5	6.1	0.6
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	3.7	8.2	7.5	0.6
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	0.04	0.93	1.06	0.20
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	18	130	134	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit	ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		79.2	80.4	62.5	72.5	67.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					29-Jan-2025 10:30	29-Jan-2025 08:45	29-Jan-2025 09:00	29-Jan-2025 09:15	29-Jan-2025 09:45
Compound	CAS Number	LOR	Unit		ES2502339-001	ES2502339-002	ES2502339-003	ES2502339-004	ES2502339-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		84.3	86.2	67.8	81.7	72.4
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		76.4	89.5	76.9	76.9	79.0
Toluene-D8	2037-26-5	2	%		89.8	97.1	91.5	93.3	91.0
4-Bromofluorobenzene	460-00-4	2	%		96.6	104	96.6	95.9	97.4



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		118	559	76	40	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	89	18	12	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.005	<0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	0.004	0.002	<0.001	----
Nickel	7440-02-0	0.001	mg/L		<0.001	0.002	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.013	0.008	0.009	<0.005	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.006	0.001	<0.001	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.002	0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		0.002	0.007	0.004	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.001	0.003	0.002	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	0.002	0.002	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.015	0.016	0.015	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.08	0.89	0.02	0.12	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.31	0.90	0.30	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.7	6.1	0.7	0.6	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		1.0	7.0	1.0	0.6	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.01	1.78	0.34	0.37	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		15	166	17	10	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG01	BG02	----
Sampling date / time				29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit	ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		69.2	74.2	80.1	87.0	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					29-Jan-2025 08:20	29-Jan-2025 10:00	29-Jan-2025 07:30	29-Jan-2025 08:00	----
Compound	CAS Number	LOR	Unit		ES2502339-006	ES2502339-007	ES2502339-008	ES2502339-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		77.5	80.1	86.0	84.5	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		75.6	81.0	74.1	93.7	----
Toluene-D8	2037-26-5	2	%		87.5	96.0	92.4	100	----
4-Bromofluorobenzene	460-00-4	2	%		93.1	98.9	99.3	108	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2502339**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : youngje@cdmsmith.com
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 31-Jan-2025 09:30
Client Requested Due : 07-Feb-2025
Date

Issue Date : 31-Jan-2025
Scheduled Reporting Date : **07-Feb-2025**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : 1
Receipt Detail :

Security Seal : Not Available
Temperature : 29.9'C 29.9'C 30.2'C
No. of samples received / analysed : 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2502339-001	29-Jan-2025 10:30	SW01	✓	✓	✓	✓	✓	✓	✓
ES2502339-002	29-Jan-2025 08:45	SW02	✓	✓	✓	✓	✓	✓	✓
ES2502339-003	29-Jan-2025 09:00	SW03	✓	✓	✓	✓	✓	✓	✓
ES2502339-004	29-Jan-2025 09:15	SW04	✓	✓	✓	✓	✓	✓	✓
ES2502339-005	29-Jan-2025 09:45	SW05	✓	✓	✓	✓	✓	✓	✓
ES2502339-006	29-Jan-2025 08:20	SW06	✓	✓	✓	✓	✓	✓	✓
ES2502339-007	29-Jan-2025 10:00	SW07	✓	✓	✓	✓	✓	✓	✓
ES2502339-008	29-Jan-2025 07:30	BG01	✓	✓	✓	✓	✓	✓	✓
ES2502339-009	29-Jan-2025 08:00	BG02	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2502339-001	29-Jan-2025 10:30	SW01	✓	✓
ES2502339-002	29-Jan-2025 08:45	SW02	✓	✓
ES2502339-003	29-Jan-2025 09:00	SW03	✓	✓
ES2502339-004	29-Jan-2025 09:15	SW04	✓	✓
ES2502339-005	29-Jan-2025 09:45	SW05	✓	✓
ES2502339-006	29-Jan-2025 08:20	SW06	✓	✓
ES2502339-007	29-Jan-2025 10:00	SW07	✓	✓
ES2502339-008	29-Jan-2025 07:30	BG01	✓	✓
ES2502339-009	29-Jan-2025 08:00	BG02	✓	✓

Proactive Holding Time Report

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



CHAIN OF CUSTODY

ALS Laboratory please tick ->

QINDSLAND 21 Burnie Road Poolara SA 5705
Ph 08 4351 0820 E: qindslan@alsglobal.com

CERTIFICATE 21 Syth Street Stafford QLD 4053
Ph 07 3240 1222 E: samples.torban@alsglobal.com

QINDSLAND 40 Colak Road Drive Chivern QLD 3690
Ph 07 7471 5500 E: gindslan@alsglobal.com

QINDSLAND 21 Burnie Road Poolara SA 5705
Ph 07 4351 0820 E: qindslan@alsglobal.com

QINDSLAND 21 Syth Street Stafford QLD 4053
Ph 07 3240 1222 E: samples.torban@alsglobal.com

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Ph 07 3240 1222 E: samples.torban@alsglobal.com

QINDSLAND 40 Colak Road Drive Chivern QLD 3690
Ph 07 7471 5500 E: gindslan@alsglobal.com

CLIENT: City of Palmerston		TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)		FOR LABORATORY USE Custody Seal Intact?	
OFFICE: DARWIN		☐ Non Standard or urgent TAT (List due date):		Free ice / frozen ice bricks on:	
PROJECT: Archer	PROJECT NO. 1001837	ALS QUOTE NO.: ES24E3CON0005		Random Sample Temperature	
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Other comment:	
PROJECT MANAGER: Jeni Young		CONTACT PH: 0438008851			
SAMPLER: <i>Yaghlia Casey</i>		SAMPLER MOBILE:		RELINQUISHED BY:	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM				DATE/TIME:	
Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM				DATE/TIME:	

Environmental Division
Sydney
Work Order Reference
ES2502339



Telephone : + 61-2-8784 8555

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

Telephone : - 61-2-8784 8555

ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suit Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).										Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA015H: Total Dissolved Solids - Standard Level	EA025H: Suspended Solids - Standard Level	EA035G: Ammonia as N By Discrete Analyser	EP025P: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP035SF: Total Phenol by Segmented Flow Analyser	NT-11: Total Nitrogen / Total Phosphorus	W-02T: 8 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W-05: TRH(Cd-Cu) / BTEXN / 8 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W-12: DGIOP Pesticides		
1	SW01	29-1-25 10:30	WATER		8	x	x	x	x	x	x	x	x	x		
2	SW02	29-1-25 8:45	WATER		8	x	x	x	x	x	x	x	x	x		
3	SW03	29-1-25 9:00	WATER		8	x	x	x	x	x	x	x	x	x		
4	SW04	29-1-25 9:15	WATER		8	x	x	x	x	x	x	x	x	x		
5	SW05	29-1-25 9:45	WATER		8	x	x	x	x	x	x	x	x	x		
6	SW06	29-1-25 8:20	WATER		8	x	x	x	x	x	x	x	x	x		
7	SW07	29-1-25 10:00	WATER		8	x	x	x	x	x	x	x	x	x		
8	BG01	29-1-25 7:30	WATER		8	x	x	x	x	x	x	x	x	x		
9	BG02	29-1-25 8:00	WATER		8	x	x	x	x	x	x	x	x	x		
TOTAL																

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order : ES2505149
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : Jeni Young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 25-Feb-2025 11:30
Date Analysis Commenced : 26-Feb-2025
Issue Date : 03-Mar-2025 16:39



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- EP080: Batch ES2505149-1 result has been confirmed by re-analysis.
- It has been noted that Ammonia is greater than TKN, however this difference is within the limits of experimental variation.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit	ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
				Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	-----	10	mg/L	60	328	539	696	98
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	-----	5	mg/L	8	76	<5	22	<5
EG020F: Dissolved Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.001	<0.001	0.006	0.006	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	<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.002	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	<0.005	0.016	<0.005	0.012	<0.005
EG020T: Total Metals by ICP-MS								
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001	0.007	0.012	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	<0.001	<0.001	0.001	0.001	<0.001
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	<0.005	0.014	<0.005	0.008	<0.005
EG035F: Dissolved Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser								
Ammonia as N	7664-41-7	0.01	mg/L	0.16	0.27	0.22	0.44	0.56
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser								
Nitrite + Nitrate as N	-----	0.01	mg/L	<0.01	0.06	<0.01	0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit		ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	1.5	2.9	3.0	0.5
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
[^] Total Nitrogen as N	----	0.1	mg/L		0.6	1.6	2.9	3.0	0.5
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.13	0.08	0.58	1.15	0.02
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		13	43	97	110	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit	ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit		ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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		13	<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		13	<1	<1	<1	<1
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	<5
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		89.0	99.1	72.6	93.2	89.1



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					24-Feb-2025 00:00	24-Feb-2025 08:45	24-Feb-2025 09:00	24-Feb-2025 09:30	24-Feb-2025 10:00
Compound	CAS Number	LOR	Unit		ES2505149-001	ES2505149-002	ES2505149-003	ES2505149-004	ES2505149-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		87.7	106	84.8	91.2	87.9
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		84.4	84.0	89.4	85.8	87.0
Toluene-D8	2037-26-5	2	%		85.0	92.5	93.5	81.3	88.0
4-Bromofluorobenzene	460-00-4	2	%		101	104	105	93.4	101



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		148	637	34	99	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		<5	51	<5	11	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	<0.001	<0.001	0.002	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.002	<0.001	<0.001	0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.015	<0.005	0.009	<0.005	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.007	<0.001	0.003	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Nickel	7440-02-0	0.001	mg/L		0.001	0.001	<0.001	<0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.011	<0.005	0.007	<0.005	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.30	0.85	0.26	0.41	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		0.01	<0.01	0.02	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.6	3.8	0.4	1.1	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.6	3.8	0.4	1.1	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.02	0.81	0.04	0.03	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		13	105	<10	26	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG01	BG02	----
Sampling date / time				24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit	ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	<100	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	<50	<50	<50	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	<50	<50	<50	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C34 - C40 Fraction	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	<100	<100	<100	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		89.5	95.7	86.4	80.6	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG01	BG02	----
Sampling date / time					24-Feb-2025 08:15	24-Feb-2025 10:15	24-Feb-2025 07:15	24-Feb-2025 07:45	----
Compound	CAS Number	LOR	Unit		ES2505149-006	ES2505149-007	ES2505149-008	ES2505149-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		89.0	96.5	88.2	84.0	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		86.4	92.1	103	91.6	----
Toluene-D8	2037-26-5	2	%		85.8	92.2	85.7	92.0	----
4-Bromofluorobenzene	460-00-4	2	%		102	105	111	108	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



CHAIN OF CUSTODY

ALS Laboratory please tick →

LABS/DA 21 Quinn Road Roseville SA 5026
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Environmental Division
Sydney

Work Order Reference

ES2505149



Telephone : + 61-2-8784 8555

CLIENT: City of Palmerston		TURNAROUND REQUIREMENTS : ☒ Standard TAT (List due date):		FOR LAB USE	
OFFICE: DARWIN		(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)		Custody Seal I	
PROJECT: Archer	PROJECT NO.: 1001837	ALS QUOTE NO.: ES24E3CON0005		Free Ice / Free	
ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN:		Random Sam	
PROJECT MANAGER: Jeni Young		CONTACT PH: 0438008851		Other comme	
SAMPLER: Tayhla Casey		SAMPLER MOBILE: 0428710788		RELINQUISHED I	
COC Emailed to ALS? (YES / NO)		EDD FORMAT (or default):		DATE/TIME:	
Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		DATE/TIME: 24-2-25 12:15		DATE/TIME: 24/2	
Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		DATE/TIME: 24-2-25 12:15		DATE/TIME: 24/2	

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:															
ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).									Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA01SH: Total Dissolved Solids - Standard Level	EA02SH: Suspended Solids - Standard Level	EA03SH: Ammonia as N By Discrete Analyser	EP02SP: Chemical Oxygen Demand (COD) (spectrophotometric)	EP03SP: Total Phenol by Segmented Flow Analyser	NT-11: Total Nitrogen / Total Phosphorus	W421: 6 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W445: 11H(Cd-Cd0) / BTEXN / s Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W12COP Pesticides	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SW01	24.2.25	WATER		8	x	x	x	x	x	x	x	x	x	
	SW02	" " 8:45	WATER		8	x	x	x	x	x	x	x	x	x	
	SW03	" " 9:00	WATER		8	x	x	x	x	x	x	x	x	x	
	SW04	" " 9:30	WATER		8	x	x	x	x	x	x	x	x	x	
	SW05	" " 10:00	WATER		8	x	x	x	x	x	x	x	x	x	
	SW06	" " 8:15	WATER		8	x	x	x	x	x	x	x	x	x	
	SW07	" " 10:15	WATER		8	x	x	x	x	x	x	x	x	x	
	BG01	" " 7:15	WATER		8	x	x	x	x	x	x	x	x	x	
	BG02	" " 7:45	WATER		8	x	x	x	x	x	x	x	x	x	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugels iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

* Please lab filter 1x red/green metals bottle from SW07 *



CERTIFICATE OF ANALYSIS

Work Order	: ES2505168	Page	: 1 of 8
Client	: CDM SMITH AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: Jeni Young	Contact	: Customer Services ES
Address	: 1/48-50 SMITH STREET DARWIN CITY NT 0800	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61-2-8784 8555
Project	: Archer 1001837	Date Samples Received	: 25-Feb-2025 11:30
Order number	: ----	Date Analysis Commenced	: 26-Feb-2025
C-O-C number	: ----	Issue Date	: 03-Mar-2025 16:39
Sampler	: TAYHLIA CASEY		
Site	: Archer Waste Facility		
Quote number	: ES24E3CON0005		
No. of samples received	: 1		
No. of samples analysed	: 1		



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Sanjeshni Jyoti	Senior Chemist Volatiles	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
				Result		----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		280	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		124	----	----	----	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.004	----	----	----	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	----	----	----	----
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		0.001	----	----	----	----
Lead	7439-92-1	0.001	mg/L		<0.001	----	----	----	----
Zinc	7440-66-6	0.005	mg/L		<0.005	----	----	----	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.005	----	----	----	----
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		0.004	----	----	----	----
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		0.017	----	----	----	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	----	----	----	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.03	----	----	----	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
Result						----	----	----	----
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		2.0	----	----	----	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.18	----	----	----	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		58	----	----	----	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	----	----	----	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L		<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L		<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				BG03	----	----	----	----
Sampling date / time				24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2505168-001	-----	-----	-----	-----
				Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
Sampling date / time					24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2505168-001	-----	-----	-----	-----
					Result	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	----	----	----	----
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	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		90.4	----	----	----	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	BG03	----	----	----	----
				Sampling date / time	24-Feb-2025 10:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2505168-001	-----	-----	-----	-----	
					Result	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%	93.5	---	---	---	---	
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%	95.5	---	---	---	---	
Toluene-D8	2037-26-5	2	%	89.6	---	---	---	---	
4-Bromofluorobenzene	460-00-4	2	%	109	---	---	---	---	



Surrogate Control Limits

Sub-Matrix: **WATER**

		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



Telephone : - 61-2-8761 6555

CHAIN OF CUSTODY				TURNAROUND REQUIREMENTS :		FOR LABORATOR									
ALS Laboratory please tick →				☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		Custody Seal Intact?									
CLIENT: City of Palmerston		PROJECT NO. 1001837		ALS QUOTE NO.: ES24E3CON0005		COC SEQUENCE NUMBER (Circle)									
OFFICE: DARWIN		PURCHASE ORDER NO.:		COUNTRY OF ORIGIN:		COC: ① 2 3 4 5 6 7									
PROJECT: Archer		CONTACT PH: 0438006851		RELINQUISHED BY: Taylia Casey		RECEIVED BY: [Signature]									
PROJECT MANAGER: Jeni Young		SAMPLER MOBILE: 0428 710724		DATE/TIME: 26.2.25 12:15		DATE/TIME: 24/2									
SAMPLER: Taylia Casey		EDD FORMAT (or default):		DATE/TIME: 26.2.25 12:15		DATE/TIME: 25/2 11:30am									
COC Emailed to ALS? (YES / NO)		Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM		Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM											
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:															
ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (fold filtered bottle required).				Additional Information					
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA01SH: Total Dissolved Solids - Standard Level	EA02SH: Suspended Solids - Standard Level	EW05SG: Ammonia as N by Discrete Analyser	EP02GP: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP03SP: Total Phenol by Segmented Flow Analyser	NT-11: Total Nitrogen / Total Phosphorus	W401: 6 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W406: YRHCs-C40 / BTEAN / 8 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W12OCOP Pesticides	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SW01		WATER		8	x	x	x	x	x	x	x	x	x	
	SW02		WATER		8	x	x	x	x	x	x	x	x	x	
	SW03		WATER		8	x	x	x	x	x	x	x	x	x	
	SW04		WATER		8	x	x	x	x	x	x	x	x	x	
	SW05		WATER		8	x	x	x	x	x	x	x	x	x	
	SW06		WATER		8	x	x	x	x	x	x	x	x	x	
	SW07		WATER		8	x	x	x	x	x	x	x	x	x	
	BG01		WATER		8	x	x	x	x	x	x	x	x	x	
	BG02		WATER		8	x	x	x	x	x	x	x	x	x	
	BG03	24.2.25 10:45	WATER		8	x	x	x	x	x	x	x	x	x	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugols iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CERTIFICATE OF ANALYSIS

Work Order : ES2507726
Client : CDM SMITH AUSTRALIA PTY LTD
Contact : jeni young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800
Telephone : ----
Project : Archer 1001837
Order number : ----
C-O-C number : ----
Sampler : TAYHLIA CASEY
Site : Archer Waste Facility
Quote number : ES24E3CON0005
No. of samples received : 9
No. of samples analysed : 9

Page : 1 of 13
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 20-Mar-2025 11:30
Date Analysis Commenced : 20-Mar-2025
Issue Date : 26-Mar-2025 14:48



This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, unless the sampling was conducted by ALS. 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
Alex Rossi	Organic Chemist	Sydney Organics, Smithfield, NSW
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW



General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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 Contract 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.

- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EG020: It is recognised that total concentration is less than dissolved for some metal analytes. However, the difference is within experimental variation of the methods.
- TDS by method EA-015 may bias high due to the presence of fine particulate matter, which may pass through the prescribed GF/C paper.



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		78	757	666	830	130
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		9	<5	7	9	<5
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.003	0.006	0.006	<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		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	<0.001	0.002	<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		0.012	<0.005	<0.005	<0.005	0.009
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		0.002	0.003	0.006	0.006	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		<0.001	<0.001	<0.001	<0.001	<0.001
Nickel	7440-02-0	0.001	mg/L		<0.001	0.001	0.002	<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		0.014	0.011	0.008	<0.005	<0.005
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.32	0.06	0.14	1.25	0.02
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	0.02	<0.01	<0.01	<0.01



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.7	1.9	2.4	3.4	0.3
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.7	1.9	2.4	3.4	0.3
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.09	0.15	0.40	0.63	0.06
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	65	70	45	<10
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	<0.05
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW01	SW02	SW03	SW04	SW05
Sampling date / time				19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit	ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
				Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	<2.0
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	<0.5
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
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		71.5	68.5	71.9	70.0	63.7



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW01	SW02	SW03	SW04	SW05
Sampling date / time					19-Mar-2025 08:00	19-Mar-2025 09:15	19-Mar-2025 09:40	19-Mar-2025 10:00	19-Mar-2025 10:55
Compound	CAS Number	LOR	Unit		ES2507726-001	ES2507726-002	ES2507726-003	ES2507726-004	ES2507726-005
					Result	Result	Result	Result	Result
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		59.3	71.9	63.8	64.8	54.7
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	110	107	108	113
Toluene-D8	2037-26-5	2	%		96.8	101	99.4	100	102
4-Bromofluorobenzene	460-00-4	2	%		103	108	104	106	107



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		100	774	122	370	----
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		6	99	23	396	----
EG020F: Dissolved Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.008	0.001	0.006	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	<0.001	<0.001	0.002	----
Nickel	7440-02-0	0.001	mg/L		0.001	<0.001	<0.001	0.002	----
Lead	7439-92-1	0.001	mg/L		<0.001	<0.001	<0.001	<0.001	----
Zinc	7440-66-6	0.005	mg/L		0.031	<0.005	<0.005	0.007	----
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L		<0.001	0.016	0.002	0.008	----
Cadmium	7440-43-9	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
Chromium	7440-47-3	0.001	mg/L		<0.001	0.002	<0.001	<0.001	----
Copper	7440-50-8	0.001	mg/L		<0.001	0.003	<0.001	0.003	----
Nickel	7440-02-0	0.001	mg/L		0.002	0.001	0.001	0.001	----
Lead	7439-92-1	0.001	mg/L		<0.001	0.002	<0.001	0.002	----
Zinc	7440-66-6	0.005	mg/L		0.033	0.016	<0.005	0.014	----
EG035F: Dissolved Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L		<0.0001	<0.0001	<0.0001	<0.0001	----
EK055G: Ammonia as N by Discrete Analyser									
Ammonia as N	7664-41-7	0.01	mg/L		0.19	1.01	0.02	0.03	----
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete Analyser									
Nitrite + Nitrate as N	----	0.01	mg/L		<0.01	<0.01	<0.01	<0.01	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EK061G: Total Kjeldahl Nitrogen By Discrete Analyser									
Total Kjeldahl Nitrogen as N	----	0.1	mg/L		0.4	8.4	0.6	2.9	----
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete Analyser									
^ Total Nitrogen as N	----	0.1	mg/L		0.4	8.4	0.6	2.9	----
EK067G: Total Phosphorus as P by Discrete Analyser									
Total Phosphorus as P	----	0.01	mg/L		0.06	4.25	0.05	0.33	----
EP026SP: Chemical Oxygen Demand (Spectrophotometric)									
Chemical Oxygen Demand	----	10	mg/L		<10	103	10	64	----
EP035SF: Total Phenol by Segmented Flow Analyser									
Phenols (Total)	----	0.05	mg/L		<0.05	<0.05	<0.05	<0.05	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-BHC	319-85-7	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
gamma-BHC - (Lindane)	58-89-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
delta-BHC	319-86-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor	76-44-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Aldrin	309-00-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Heptachlor epoxide	1024-57-3	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
trans-Chlordane	5103-74-2	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
alpha-Endosulfan	959-98-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
cis-Chlordane	5103-71-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Dieldrin	60-57-1	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDE	72-55-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin	72-20-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
beta-Endosulfan	33213-65-9	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
4,4'-DDD	72-54-8	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
Endrin aldehyde	7421-93-4	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER
 (Matrix: WATER)

Sample ID

				SW06	SW07	BG02	BG03	----
Sampling date / time				19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit	ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
				Result	Result	Result	Result	----
EP068A: Organochlorine Pesticides (OC) - Continued								
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
^ Total Chlordane (sum)	-----	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/5 0-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Malathion	121-75-5	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenthion	55-38-9	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Parathion	56-38-2	2.0	µg/L	<2.0	<2.0	<2.0	<2.0	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5	<0.5	<0.5	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EP068B: Organophosphorus Pesticides (OP) - Continued									
Azinphos Methyl	86-50-0	0.5	µg/L		<0.5	<0.5	<0.5	<0.5	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	20	µg/L		<20	<20	<20	<20	----
C10 - C14 Fraction	----	50	µg/L		<50	<50	<50	<50	----
C15 - C28 Fraction	----	100	µg/L		<100	430	<100	<100	----
C29 - C36 Fraction	----	50	µg/L		<50	540	<50	80	----
^ C10 - C36 Fraction (sum)	----	50	µg/L		<50	970	<50	80	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	20	µg/L		<20	<20	<20	<20	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L		<20	<20	<20	<20	----
>C10 - C16 Fraction	----	100	µg/L		<100	<100	<100	<100	----
>C16 - C34 Fraction	----	100	µg/L		<100	850	<100	140	----
>C34 - C40 Fraction	----	100	µg/L		<100	140	<100	<100	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L		<100	990	<100	140	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L		<100	<100	<100	<100	----
EP080: BTEXN									
Benzene	71-43-2	1	µg/L		<1	<1	<1	<1	----
Toluene	108-88-3	2	µg/L		<2	<2	<2	<2	----
Ethylbenzene	100-41-4	2	µg/L		<2	<2	<2	<2	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L		<2	<2	<2	<2	----
ortho-Xylene	95-47-6	2	µg/L		<2	<2	<2	<2	----
^ Total Xylenes	----	2	µg/L		<2	<2	<2	<2	----
^ Sum of BTEX	----	1	µg/L		<1	<1	<1	<1	----
Naphthalene	91-20-3	5	µg/L		<5	<5	<5	<5	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.5	%		71.4	64.9	71.5	62.3	----



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Sample ID	SW06	SW07	BG02	BG03	----
Sampling date / time					19-Mar-2025 09:00	19-Mar-2025 10:40	19-Mar-2025 07:30	19-Mar-2025 08:30	----
Compound	CAS Number	LOR	Unit		ES2507726-006	ES2507726-007	ES2507726-008	ES2507726-009	-----
					Result	Result	Result	Result	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.5	%		54.0	87.8	74.2	51.1	----
EP080S: TPH(V)/BTEX Surrogates									
1,2-Dichloroethane-D4	17060-07-0	2	%		108	112	114	109	----
Toluene-D8	2037-26-5	2	%		96.8	103	102	100	----
4-Bromofluorobenzene	460-00-4	2	%		102	103	106	105	----



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	50	150
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	50	150
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72	143
Toluene-D8	2037-26-5	75	131
4-Bromofluorobenzene	460-00-4	73	137



SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2507726**

Client : **CDM SMITH AUSTRALIA PTY LTD**
Contact : jeni young
Address : 1/48-50 SMITH STREET
DARWIN CITY NT 0800

E-mail : YOUNGJE@CDMSMITH.COM
Telephone : ----
Facsimile : ----

Project : Archer 1001837
Order number : ----

C-O-C number : ----
Site : Archer Waste Facility
Sampler : TAYHLIA CASEY

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

E-mail : ALSEnviro.Sydney@ALSGlobal.com
Telephone : +61-2-8784 8555
Facsimile : +61-2-8784 8500

Page : 1 of 3
Quote number : ES2024E3CON0005
(ES24E3CON0005)
QC Level : NEPM 2013 B3 & ALS QC Standard

Dates

Date Samples Received : 20-Mar-2025 11:30
Client Requested Due : 26-Mar-2025
Date

Issue Date : 20-Mar-2025
Scheduled Reporting Date : **26-Mar-2025**

Delivery Details

Mode of Delivery : Client Drop Off
No. of coolers/boxes : 1

Security Seal : Not Available
Temperature : 21.0°C 24.9°C 22.1°C - Ice
present

Receipt Detail : No. of samples received / analysed : 9 / 9

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The laboratory will process these samples unless instructions are received from you indicating you do not wish to proceed. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).**
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Unless otherwise stated, analytical work for this work order will be conducted at ALS Sydney, NATA accreditation no. 825, site no. 10911.
- Sample Disposal - Aqueous (3 weeks), Solid (2 months $\pm$ 1 week) from receipt of samples.
- Please be aware that APHA/NEPM recommends water and soil samples be chilled to less than or equal to 6°C for chemical analysis, and less than or equal to 10°C but unfrozen for Microbiological analysis. Where samples are received above this temperature, it should be taken into consideration when interpreting results. Refer to ALS EnviroMail 85 for ALS recommendations of the best practice for chilling samples after sampling and for maintaining a cool temperature during transit.



Sample Container(s)/Preservation Non-Compliances

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

- No sample container / preservation non-compliance exists.

Summary of Sample(s) and Requested Analysis

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

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

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA025H Suspended Solids - Standard Level	WATER - EK055G Ammonia as N By Discrete Analyser	WATER - EP035SF Total Phenol by Segmented Flow Analyser	WATER - NT-11 Total Nitrogen and Total Phosphorus	WATER - W-02T 8 metals (Total)	WATER - W-05 TRH/BTEXN/8 Metals	WATER - W-12 OC/OP Pesticides
ES2507726-001	19-Mar-2025 08:00	SW01	✓	✓	✓	✓	✓	✓	✓
ES2507726-002	19-Mar-2025 09:15	SW02	✓	✓	✓	✓	✓	✓	✓
ES2507726-003	19-Mar-2025 09:40	SW03	✓	✓	✓	✓	✓	✓	✓
ES2507726-004	19-Mar-2025 10:00	SW04	✓	✓	✓	✓	✓	✓	✓
ES2507726-005	19-Mar-2025 10:55	SW05	✓	✓	✓	✓	✓	✓	✓
ES2507726-006	19-Mar-2025 09:00	SW06	✓	✓	✓	✓	✓	✓	✓
ES2507726-007	19-Mar-2025 10:40	SW07	✓	✓	✓	✓	✓	✓	✓
ES2507726-008	19-Mar-2025 07:30	BG02	✓	✓	✓	✓	✓	✓	✓
ES2507726-009	19-Mar-2025 08:30	BG03	✓	✓	✓	✓	✓	✓	✓

Matrix: **WATER**

Laboratory sample ID	Sampling date / time	Sample ID	WATER - EA015H Total Dissolved Solids - Standard Level	WATER - EP026SP Chemical Oxygen Demand (COD)
ES2507726-001	19-Mar-2025 08:00	SW01	✓	✓
ES2507726-002	19-Mar-2025 09:15	SW02	✓	✓
ES2507726-003	19-Mar-2025 09:40	SW03	✓	✓
ES2507726-004	19-Mar-2025 10:00	SW04	✓	✓
ES2507726-005	19-Mar-2025 10:55	SW05	✓	✓
ES2507726-006	19-Mar-2025 09:00	SW06	✓	✓
ES2507726-007	19-Mar-2025 10:40	SW07	✓	✓
ES2507726-008	19-Mar-2025 07:30	BG02	✓	✓
ES2507726-009	19-Mar-2025 08:30	BG03	✓	✓

Proactive Holding Time Report

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



Telephone: - 61-2-8784 6555

CHAIN OF CUSTODY ALS Laboratory please tick →		1575 LAUREL 21 Sunna Road Fozzies SA 5006 Ph 08 8359 3000 E. als@als.com.au		1/100 FIVE 100 FIVE Road Mawson Mawson SA 5071 Ph 08 8359 3000 E. als@als.com.au		JUNE CASTLE 5/255 Mustard Road Maryland 4106 SA 5007 Ph 08 8359 3000 E. als@als.com.au		1/100 FIVE 100 FIVE Road Mawson Mawson SA 5071 Ph 08 8359 3000 E. als@als.com.au							
CLIENT: City of Palmerston OFFICE: DARWIN PROJECT: Archer ORDER NUMBER: PROJECT MANAGER: Jani Young		TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics) ALS QUOTE NO.: ES24E3CON0005 COUNTRY OF ORIGIN:		☒ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):		FOR LABORATORY: Custody Seal intact? Free Ice / frozen ice brk Random Sample Temp Other comment:		COC SEQUENCE NUMBER (Circle) COC: 1 2 3 4 5 6 7 DF: 1 2 3 4 5 6 7							
PROJECT NO. 1001837 PURCHASE ORDER NO.: CONTACT PH: 0438006851		RELINQUISHED BY: Tayhlia Casey DATE/TIME: 19.3.25 11:45		RECEIVED BY: Ganesh Shetke DATE/TIME: 19/03/25 11:50		RELINQUISHED BY: Jonathan DATE/TIME: 20/3/25 1130		Email Reports to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM Email Invoice to (will default to PM if no other addresses are listed): YOUNGJE@CDMSMITH.COM, CASEYTC@CDMSMITH.COM							
COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:															
ALS USE ONLY		SAMPLE DETAILS MATRIX: Solid(S) Water(W)		CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required)				Additional Information					
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	EA019H: Total Dissolved Solids - Standard Level	EA029H: Suspended Solids - Standard Level	EA055G: Ammonia as N By Discrete Analyser	EP036SF: Chemical Oxygen Demand (COD) (Spectrophotometric)	EP036SF: Total Phosphorus by Segmented Flow Analyser	NT-41: Total Nitrogen / Total Phosphorus	W42T: 6 metals (Total): As, Cd, Cr, Cu, Pb, Ni, Zn	W405: TRHCS-C409 / BTEXH / 6 Metals (Dissolved): As, Cd, Cr, Cu, Pb, Ni, Zn	W12-OC10P: Pesticides	Comments on likely contaminant levels, durations, or samples requiring specific QC analysis etc.
1	SW01	19.3.25 8:00	WATER		8	x	x	x	x	x	x	x	x	x	
2	SW02	19.3.25 9:15	WATER		8	x	x	x	x	x	x	x	x	x	
3	SW03	19.3.25 9:40	WATER		8	x	x	x	x	x	x	x	x	x	
4	SW04	19.3.25 10:00	WATER		8	x	x	x	x	x	x	x	x	x	
5	SW05	19.3.25 10:55	WATER		8	x	x	x	x	x	x	x	x	x	
6	SW06	19.3.25 9:00	WATER		8	x	x	x	x	x	x	x	x	x	
7	SW07	19.3.25 10:40	WATER		8	x	x	x	x	x	x	x	x	x	
	BG01		WATER		8	x	x	x	x	x	x	x	x	x	
8	BG02	19.3.25 7:30	WATER		8	x	x	x	x	x	x	x	x	x	
9	BG03	19.3.25 8:30	WATER		8	x	x	x	x	x	x	x	x	x	
TOTAL															

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic
 V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
 Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lupa's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.