ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

26 November 2020

Mackellar Excavations
PO Box 259
16 Torrens Road
Gunnedah NSW 2380

Attention: **Greig Holloway**
Project Manager

Waste Classification of Topsoil and Fill Material –
85 Byron Road and 63 Ingleburn Road, Leppington NSW.

1 INTRODUCTION & BACKGROUND

Environmental Earth Sciences NSW was commissioned by Mackellar Excavations Pty Ltd (MEX) to characterise in-situ material at 85 Byron Road and 63 Ingleburn Road, Leppington NSW (the "site"). Assessment was required to classify the material for offsite disposal prior to excavation and redevelopment of the site. The site locality and site boundary have been presented on **Figure 1** at the rear of this report.

Two soil investigations were undertaken by GeoEnviro Consultancy Pty Ltd (GeoEnviro) summarised in the following report:

> GeoEnviro (May 2019a) – Stage 1 and 2 Contamination Assessment Proposed New Amity College Campus *Lot 1 DP 525996 No 85 Byron Rd and Lot 2 DP 525996 No 63 Ingleburn Road Leppington NSW* (ref: JC18322AB-rl(rev2), dated 30 May 2019).

Data from the GeoEnviro assessment relevant to the site, was used to prepare this soil characterisation, alongside further assessment completed by Environmental Earth Sciences, also summarised and documented in this letter.

It is understood that there are six areas which require assessment of shallow soils. These are known as Area 1 – Area 6 with only a small portion of Area 6 required for assessment at this stage, within the current site boundary. All Areas have been identified on **Figure 2**. Area 4 is known to be a backfilled depression along the western boundary of the site which has been investigated at depth. Area 1 and 2 currently have buildings and structures overlaying and will also be classified separately. Area 3, Area 5 and Area 6 (**Figure 2**) are considered to have the same soil type and so have been classified together. Note that stockpiled material in Area 5 has been classified and reported in a separate letter, with this investigation focusing on the material below ground surface.

Table 1 summarises the determined waste classification for each specified area onsite. These results are contingent on the excavation volumes specified in the table below and based off investigations by both GeoEnviro and Environmental Earth Sciences.

Table 1: Summary of Soil Investigation

Location	Approximate Area	Approximate Volume	Waste Classification
Area 1 – Building and shed area	890 m^2	178 m^3	General Solid Waste – Special waste - asbestos
Area 2 – Shed	420 m^2	84 m^3	General Solid Waste
Area 4 – Uncontrolled fill	1,500 m^2	1090 m^3	General Solid Waste – Special waste - asbestos (bonded asbestos)
Area 3 – Driveway	1,301 m^2	993 m^3	General Solid Waste
Area 5	2,327 m^2		
Area 6	1,337 m^2		

Note:
Area 3, Area 5 and Area 6 have been classified together as they represent the same soil type.

2 OBJECTIVES

Undertake chemical characterisation of subject material to provide waste classification and disposal advice in accordance with NSW EPA (2014) - *Waste Classification Guidelines: Part 1 – Classifying Waste* (the "Waste Guidelines").

3 CRITERIA

3.1 Chemical criteria

Waste classification was undertaken in accordance with the Waste Guidelines. The following statistical values were derived if required:

- Maximum, minimum and mean.
- Coefficient of variation.
- Standard deviation.
- 95% upper confidence limit (UCL) of the arithmetic mean (95% UCL).

Where results were reported below the laboratory limit of reporting (<LOR), the LOR value was substituted as the concentration to apply a level of conservatism for statistical appraisal. The Waste Guidelines initially require analytical results for contaminants to be compared to the following contaminant threshold (CT) total concentrations for classification:

- value < CT1 = general solid waste (GSW).

- value > CT1, but below CT2 = restricted solid waste (RSW).
- value > CT2 = hazardous waste (HAZ).

If the total concentration for a contaminant exceeds the CT1 or CT2 threshold, the potential leachability of the contaminant (using the toxicity characteristic leaching procedure – TCLP) can be used in conjunction with the specific contaminant concentrations (SCC) to derive a waste classification with regard to potential leachate risk:

- value < SCC1 / TCLP1 = GSW.
- value > SCC1 / TCLP1 but below SCC2 / TCLP2 = RSW.
- value > SCC2 / TCLP2 = HAZ.

If the presence of asbestos is confirmed, the classification of 'Special Waste – Asbestos' is applied in addition to the classification derived from chemical analysis as explained above.

3.1.1 Composite sampling chemical criteria

Where composite sampling has been conducted, chemical criteria has been divided by the number of sub-samples making up the composite sample according to the most conservative method used for the use of composite sampling recommended in NSW EPA (1995) *Sampling Design Guidelines.*

3.2 Sample frequency requirements

The minimum sampling densities for chemical characterisation of soil material for waste classification purposes is summarised in the **Table 2**.

Table 2: Material volumes and required sample frequency

Soil volume (m^3)	No. of samples at (1:25 m^3)	Minimum sampling frequency utilising 95% UCL
25	3	-
50	3	-
75	3	-
100	4	-
125	5	-
150	6	-
175	7	-
200	8	-
>200 -2,500	-	10 **
>2,500	-	1 sample: 250 m3 **
Soil volume (m^3)	No. of samples at (1:25 m^3)	Minimum sampling frequency utilising 95% UCL

Notes: ** 10 samples is considered suitable for classifying up to 2,500 m^3 of material using statistical appraisal including the 95% Upper Confidence Limit of the data set for each analyte.

4 SCOPE OF WORKS

4.1 Fieldwork

The following intrusive investigations were undertaken across the site, with data collated in this letter to completely classify the material:

- 23 and 24 April 2018 (GeoEnviro) – Borehole assessment across the whole site.
- 8 January 2019 (GeoEnviro) – Test pit assessment across the whole site.
- 13 November 2020 (Environmental Earth Sciences) – 10 additional test pits advances in Area 4 only (ID: GTP 0 - GTP 10).

Additionally, a pre-demolition hazardous building assessment on 28 October 2020 by Greenplus Property Services (GPPS, 2020) conducted on the building structures in Areas 1 and 2 has been considered when classifying the underlaying *in-situ* material in these areas. Refer to **Figure 2** for all investigation locations.

4.1.1 GeoEnviro 2018

A total of nine boreholes were advanced across the site at depths ranging to maximum depths of 0.9 – 4.0 mBGL.

Discrete and composite samples were collected from surface and sub soil. Composite samples (ID: C4 and C5) were formed by combining surface samples collected in open space areas, with sub sample IDs identified in **Table 3**.

Table 3: Composite sample analytes and IDs

Composite sample IDs	Sub sample IDs
C4	BH 21 (0.0-0.1); BH 25 (0.0-0.1); BH 26 (0.0-0.1)
C5	BH 24 (0.0-0.1); BH 27 (0.0-0.1); BH 38 (0.0-0.1)

4.1.2 GeoEnviro 2019

A detailed investigation was conducted by advancing 24 test pits to a maximum depth of 2.3 mBGL across the site.

A total of 24 discrete soil samples and three material samples were collected from surface soils. Three soil samples and three material samples were collected at various depths from the backfilled region (Area 4).

4.1.3 Environmental Earth Sciences 2020

An additional 10 test pits were advanced within and around the backfilled depression (Area 4) to further delineate the lateral extent of fill material, and to collect more samples for the purpose of waste classification.

4.2 Laboratory analysis

Select samples were analysed at NATA accredited laboratories for the following analytes:

- Heavy metals (As, Cd, CrTOTAL, Cu, Hg, Ni, Pb and Zn).
- Total recoverable hydrocarbons (TRH) (Fractions C6-C36).
- Benzene, toluene, ethylbenzene and total xylenes (BTEX).
- Polycyclic aromatic hydrocarbons (PAH).
- Organochlorine pesticides (OC)
- Organophosphorus pesticides (OP)
- Polychlorinated Biphenyls (PCBs)
- Asbestos (presence/ absence in soil).

4.3 Volume calculations and assessment rationale

Approximate volumes of material in each subject area were calculated, utilising average depths from borehole and test pit logs recorded from each event. This is summarised in **Table 4** alongside the frequency of samples required for each volume in accordance with the Victorian EPA (Vic EPA) (2009) *Industrial Waste Resource Guidelines*.

Table 4: Estimated volume of material and sample frequency for each area

Location	Approximate Area	Depth BGL (m)	Approximate Volume	No. of samples required**	No. of samples
Area 1 – Building and shed area	890 m^2	0.2	178 m^3	7	7
Area 2 – Shed	420 m^2	0.2	84 m^3	4	5
Area 4 – Rubbish Backfilled depression	1,500 m^2	0.73*	1,090 m^3	10	11
Area 3 – Driveway	1,301 m^2	0.2	993 m^3	10	11
Area 5	2,327 m^2				
Area 6	1,337 m^2				

Notes: * Calculated average depth of fill.
** according to VIC EPA Industrial Waste Resource Guidelines 2009

5 RESULTS

5.1 Observations

Test pit logs from the Environmental Earth Sciences event have been provided in **Attachment 1**. Photo Plates of representative material from Area 4 are presented in **Attachment 2**. GeoEnviro (2019a) Stage 1 and 2 report includes photo plates and material logs.

5.1.1 Area 1

Building and shed structures at Area 1 are predominantly constructed of asbestos cement sheets identified in the HazMat investigation by GPPS (2020). The structures are regarded as being in poor condition with damaged and uncontrolled non-friable and friable asbestos material present. Lead paint was positively identified in the timber window frames. Large amounts of rubbish are littered inside and outside the buildings. Seven samples collected from the surface soil (0.0-0.1m BGL) by GeoEnviro around the structures (ID: BH19 and TP30 to TP 35) were used for classifying *in-situ* material. An asbestos pipe was discovered between 0.0-0.2 m BGL in test pit TP 31 immediately to the west of the main building. Hydrocarbon staining was observed around the main building during the GeoEnviro investigations. No other signs of visual and / or olfactory contamination was recorded.

5.1.2 Area 2

The building structure in Area 2 is in poor condition. No ACM was identified in any of the structures, but lead paint was positively identified in the timber window frames in the investigation by GPPS (2020). Five samples collected from the surface soil (0.0-0.1m BGL) by GeoEnviro around the structures (ID: BH 23 and TP 23 to TP 26) were used for classifying *in-situ* material. No signs of visual and / or olfactory contamination was observed.

5.1.3 Area 4

GeoEnviro investigations identified fill material in the backfilled depression area (BH 28, TP4 – TP10) to a maximum depth ranging between 0.3m to 2.3 m BGL. Environmental Earth Sciences also encountered fill material (GTP2, GTP6, GTP7, GTP8 and GTP10) with the lateral extent of this material presented on **Figure 2**. Foreign inclusions in fill material observed in Area 4 included concrete boulders, cobbles, bricks, tiles, scrap metal, fibrous material, bitumen, broken glass pieces and fragments of potential asbestos containing material (PACM).

5.1.4 Area 3, Area 5 and Area 6

Natural topsoil across the site consisted generally of soft brown clay loam to depths ranging from 0.1 to 0.3 mBGL. Natural subsoil across the site generally consisted of firm, brown / red clay becoming stiff, dry, light grey clay with red mottles with weathered shale cobbles from approximately 0.8 m BGL.

Fragments of potential asbestos containing material (PACM) were observed on the ground surface around the main entrance to the driveway within Area 3 (ID: PACM3). This area was scraped and segregated from remaining site soils, refer to **Figure 2** for scraped area. A consultant from Environmental Earth Sciences is considered a competent person to conduct

a surficial asbestos clearance in this area and this was undertaken during the test pit assessment to ensure no further PACM fragments were noted on the site surface.

Stockpiled material in Area 5 has been classified and reported in a separate letter, with this investigation focusing on the material below ground surface.

5.2 Laboratory results

Results of laboratory analyses against Waste Criteria are summarised in the following tables:

- Analytes compared to CT criteria (**Table A** in **Attachment 3**).
- Composite samples (ID:C1 to C7) have been compared revised CT criteria (**Table B** in **Attachment 3**).

Full laboratory transcripts and chain of custody documentation for the Environmental Earth Sciences assessment are presented in **Attachment 4**. GeoEnviro (2019a) Stage 1 and 2 report includes respective laboratory transcripts.

5.2.1 Chemical results

All laboratory results were reported below the laboratory limit of reporting (LOR) and/or the CT1 criteria, with the exception of exceedances reported in **Table 5** below.

Table 5: Exceedances of applicable threshold for General Solid Waste

Location	Sample ID	Analyte	Concentration (mg/kg)	Waste classification
Area 1	TP 30	Lead	110	GSW*
	TP 34		160	
Area 2	TP 23	Lead	110	GSW*
	TP 25		130	
Area 4	BH 28	Lead	120	RSW (100 - 400 mg/kg)
	TP 8 / GTP8	Nickel	170 / 10	HAZ (>160) / GSW
Area 3 Area 5 Area 6	TP 29	Nickel	70	RSW (40 - 160 mg/kg)

* Lead paint contamination associated with residential properties is classified as GSW under the NSW Waste Classification Guidelines

** Due to no leachate data for TP 8, a new test pit was excavated in the same location to reassess nickel concentrations recorded in the GeoEnviro investigation.

As TP8 reported nickel at hazardous concentrations from a previous investigation (GeoEnviro 2019), toxicity characteristic leaching procedure (TCLP) could not be undertaken.

An additional sample (GTP8-0.2) was then collected by Environmental Earth Sciences from this location to determine nickel concentrations. This result was reported at 10 mg/kg and considered suitable to validate this high level. Based upon the low nickel concentrations recorded across the site, the elevated nickel concentration is considered to be a localised result, likely associated with the presence of road base / aggregate, which are generally high in nickel.

5.2.2 Asbestos testing

Visual observations have confirmed an asbestos pipe TP 31 at Area 1. The residential building located in Area 1 has been confirmed as asbestos containing in all forms; bonded, friable and fibrous. This is presented in GPPS (2020) HazMat report.

Bonded asbestos fragments (ID: BH 28, TP 6, TP 8, TP 10) were observed and confirmed through laboratory testing in fill material located in Area 4.

No asbestos was detected in Area 2 soils or in the remaining site area, noting that any asbestos fragments on surficial soil has been segregated, and any above ground stockpiles have been classified in a separate report.

5.3 Statistical analysis

To chemically characterise the material, statistical assessment (including calculation of the 95% $UCL_{AVERAGE}$) was undertaken for the dataset for Lead and Nickel and as shown in **Table 6** below. Statistical results indicate that Area 4 (lead) and the remaining site soils (lead and nickel) are suitably within CT1 criteria.

Complete statistical output is located in **Attachment 5**.

Table 6: Statistical calculations summary

Analyte	Count	Min.	Max.	Mean	Standard Deviation	Coefficient of Variation	95% $UCL_{AVERAGE}$
Area 4							
Lead	10	13	120	50.6	33.95	0.671	70.28
Remaining Site							
Lead	11	11	57	28.18	13.6	0.483	35.61
Nickel	11	4	70	17.27	18.27	1.058	29.68

6 CONCLUSIONS AND RECOMMENDATIONS

6.1 Waste classification

6.1.1 Area 1

The material from Area 1 has been calculated as approximately 178 m^3 and has been identified as suitable for **General Solid Waste – Special Waste Asbestos**.

The lead in two samples (ID: TP30, TP 34) exceeding GSW criteria is likely due to confirmed lead paint on the residential buildings and therefore can be confirmed as non-leachable.

We recommend that post-demolition, the top 0.2 m of soil below the footprints of the building and surrounding sheds and structures should be removed and treated as Special Waste Asbestos due to the buildings in Area 1 being constructed from asbestos containing material in poor condition with damaged and uncontrolled non-friable and friable asbestos.

6.1.2 Area 2

The material from Area 2 has been calculated as approximately 84 m^3 and has been identified as suitable for **General Solid Waste**.

The lead in two samples (ID: TP23, TP 25) exceeding CT1 is likely due to confirmed lead paint on the residential buildings and therefore can be confirmed as non-leachable.

6.1.3 Area 4

The material from Area 4 has been calculated as approximately 1,090 m^3 and has been classified as **General Solid Waste – Special Waste Asbestos**.

6.1.4 Area 3, Area 5 and Area 6

The material from these three areas has been calculated as approximately 993 m^2 and has been identified as suitable for **General Solid Waste**. This excludes any above ground stockpiled material.

6.2 Offsite management

The following general information in-line with the POEO Act should be considered if offsite management is opted:

- Material must be transported to a facility that is licensed to accept the class of waste.
- Approval to accept the material must be provided by the receiving facility prior to shipment.
- Material must be weighed prior to dispatch at the receiving facility (as standard).
- This waste classification advice letter and any waste tracking documentation (including weighbridge dockets), must be kept by the generator and receiver of this waste for a minimum period of 7 years.

For further information on EPA NSW waste classification and waste regulations refer to https://www.epa.nsw.gov.au/your-environment/waste/classifying-waste/waste-classification-guidelines.

7 LIMITATIONS

This report has been prepared by Environmental Earth Sciences NSW ACN 109 404 006 in response to and subject to the following limitations:

1. The specific instructions received from Mackellar Excavations Pty Ltd;
2. The specific scope of works set out in PO120181_V1 (dated 28 August 2020) issued by Environmental Earth Sciences NSW via email for and on behalf of Mackellar Excavations Pty Ltd;
3. May not be relied upon by any third party not named in this report for any purpose except with the prior written consent of Environmental Earth Sciences NSW (which consent may or may not be given at the discretion of Environmental Earth Sciences NSW);
4. This report comprises the formal report, documentation sections, tables, figures and appendices as referred to in the index to this report and must not be released to any third party or copied in part without all the material included in this report for any reason;
5. The report only relates to the site referred to in the scope of works being located at 85 Byron Road and 63 Ingleburn Road, Leppington NSW ("the site");
6. The report relates to the site as at the date of the report as conditions may change thereafter due to natural processes and/or site activities;
7. No warranty or guarantee is made in regard to any other use than as specified in the scope of works and only applies to the depth tested and reported in this report;
8. Fill, soil, groundwater and rock to the depth tested on the site may be fit for the use specified in this report. Unless it is expressly stated in this report, the fill, soil and/or rock may not be suitable for classification as clean fill, excavated natural material (ENM) or virgin excavated natural material (VENM) if deposited off site;
9. This report is not a geotechnical or planning report suitable for planning or zoning purposes; and
10. Our General Limitations set out at the back of the body of this report.

Should you have any queries, please do not hesitate to contact us on (02) 9922 1777.

For and on behalf of
Environmental Earth Sciences NSW

Author
Karin Azzam
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James Barwood
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120110_WASTE No.2_V1

FIGURES
ATTACHMENT 1: Test pit logs
ATTACHMENT 2: Photo plates
ATTACHMENT 3: Results summary tables
ATTACHMENT 4: Complete laboratory transcripts
ATTACHMENT 5: Statistical output

8 REFERENCES

GeoEnviro Consultancy Pty Ltd (GeoEnviro) (May 2019a) – *Stage 1 and 2 Contamination Assessment Proposed New Amity College Campus Lot 1 DP 525996 No 85 Byron Rd and Lot 2 DP 525996 No 63 Ingleburn Road Leppington NSW* (ref: JC18322AB-rl(rev2), dated 30 May 2019).

GeoEnviro (May 2019b) – *Remediation Action Plan (RAP) Proposed New Amity College Campus Lot 1 DP 525996 No 85 Byron Rd and Lot 2 DP 525996 No 63 Ingleburn Road Leppington NSW* (ref: JC18322B-rl(rev2), dated 30 May 2019).

GreenPlus Property Services (GPPS) (November 2020) – Pre-Demolition Hazardous Building Materials Assessment, 85 Byron Road and 63 Ingleburn Road, Leppington NSW (ref: 820045.1, dated 5 November 2020).

NSW Environment Protection Authority (EPA) 1995, *Contaminated Sites: Sampling design guidelines*.

NSW EPA (2014) - *Waste classification guidelines: Part 1 – Classifying Waste.*

NSW Government - *Work Health and Safety Act* (2011)

SafeWork NSW (2014) – *Managing Asbestos in or on Soil* (March 2014).

SafeWork NSW (2019a) – *How to Safely Remove Asbestos* (August 2019).

SafeWork NSW (2019b) – *How to Manage and Control Asbestos in the Workplace* (August 2019).

Victoria Environment Protection Authority (VIC EPA) 2009, *Industrial Waste Resource Guidelines*.

ENVIRONMENTAL EARTH SCIENCES
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ENVIRONMENTAL EARTH SCIENCES GENERAL LIMITATIONS

Scope of services
The work presented in this report is Environmental Earth Sciences response to the specific scope of works requested by, planned with and approved by the client. It cannot be relied on by any other third party for any purpose except with our prior written consent. Client may distribute this report to other parties and in doing so warrants that the report is suitable for the purpose it was intended for. However, any party wishing to rely on this report should contact us to determine the suitability of this report for their specific purpose.

Data should not be separated from the report
A report is provided inclusive of all documentation sections, limitations, tables, figures and appendices and should not be provided or copied in part without all supporting documentation for any reason, because misinterpretation may occur.

Subsurface conditions change
Understanding an environmental study will reduce exposure to the risk of the presence of contaminated soil and or groundwater. However, contaminants may be present in areas that were not investigated, or may migrate to other areas. Analysis cannot cover every type of contaminant that could possibly be present. When combined with field observations, field measurements and professional judgement, this approach increases the probability of identifying contaminated soil and or groundwater. Under no circumstances can it be considered that these findings represent the actual condition of the site at all points.

Environmental studies identify actual sub-surface conditions only at those points where samples are taken, when they are taken. Actual conditions between sampling locations differ from those inferred because no professional, no matter how qualified, and no sub-surface exploration program, no matter how comprehensive, can reveal what is hidden below the ground surface. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from that predicted. Nothing can be done to prevent the unanticipated. However, steps can be taken to help minimize the impact. For this reason, site owners should retain our services.

Problems with interpretation by others
Advice and interpretation is provided on the basis that subsequent work will be undertaken by Environmental Earth Sciences NSW. This will identify variances, maintain consistency in how data is interpreted, conduct additional tests that may be necessary and recommend solutions to problems encountered on site. Other parties may misinterpret our work and we cannot be responsible for how the information in this report is used. If further data is collected or comes to light we reserve the right to alter their conclusions.

Obtain regulatory approval
The investigation and remediation of contaminated sites is a field in which legislation and interpretation of legislation is changing rapidly. Our interpretation of the investigation findings should not be taken to be that of any other party. When approval from a statutory authority is required for a project, that approval should be directly sought by the client.

Limit of liability
This study has been carried out to a particular scope of works at a specified site and should not be used for any other purpose. This report is provided on the condition that Environmental Earth Sciences NSW disclaims all liability to any person or entity other than the client in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by any such person in reliance, whether in whole or in part, on the contents of this report. Furthermore, Environmental Earth Sciences NSW disclaims all liability in respect of anything done or omitted to be done and of the consequence of anything done or omitted to be done by the client, or any such person in reliance, whether in whole or any part of the contents of this report of all matters not stated in the brief outlined in Environmental Earth Sciences NSW's proposal number and according to Environmental Earth Sciences general terms and conditions and special terms and conditions for contaminated sites.

To the maximum extent permitted by law, we exclude all liability of whatever nature, whether in contract, tort or otherwise, for the acts, omissions or default, whether negligent or otherwise for any loss or damage whatsoever that may arise in any way in connection with the supply of services. Under circumstances where liability cannot be excluded, such liability is limited to the value of the purchased service.

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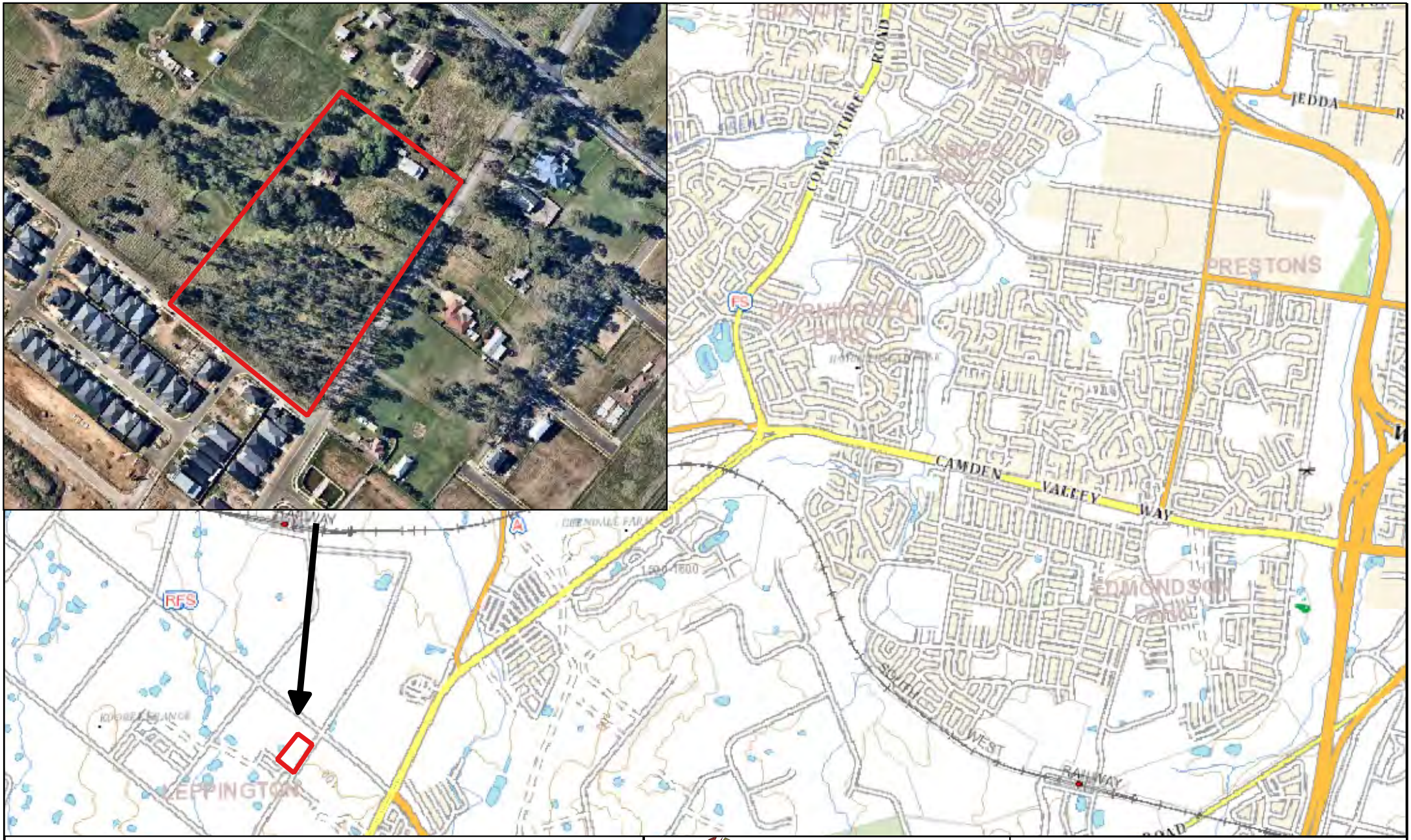
FIGURES



LEGEND

site boundary

0 0.5 1 1.5 2 km

Coordinate Reference System: GDA 94
Projection:Transverse Mercator (MGA zone 54)
Datum: GDA 94

ENVIRONMENTAL EARTH SCIENCES
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Client: **Mackellar Excavations Pty Ltd**		Job No: **120110**
Drawn By: **KA**	Scale: **as shown**	Source: **QGIS, Nearmap**
Project Manager: **NE**	Date: **Nov 2020**	**Figure 1**
Reviewed by: **JB**		

Title: **Site locality**

Location: **85 Byron Ave. Leppington**

Coordinate Reference System: GDA 94
Projection:Transverse Mercator (MGA zone 54)
Datum: GDA 94

ENVIRONMENTAL EARTH SCIENCES
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Client: **Mackellar Excavations Pty Ltd**		Job No: **120110**
Drawn By: **NP**	Scale: **as shown**	Source: **QGIS, Nearmap**
Project Manager: **NE**	Date: **Nov 2020**	**Figure 2**
Reviewed by: **JB**		

Title: **Site features and sampling locations**
Location: **85 Byron Ave. Leppington**

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ATTACHMENT 1: TEST PIT LOGS

Geological Borelog

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LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP0**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Soft, dark brown, loamy CLAY. Clear boundary to:		0.2			
NATURAL Firm, red CLAY with light beige mottles (10%) Gradual boundary to:		0.4 0.6			
NATURAL Stiff, dry, light grey CLAY with red/orange mottles (5%). Grey, weathered shale cobbles (trace).		0.8	■	GTP0_1.0	
EOH @ 1m BGL.		1.0 1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
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LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP1**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Soft, brown, loamy CLAY (topspoil). gradual boundary to:		0.2			Above ground: concrete boulders and metal sheets
NATURAL Firm, red CLAY with light beige mottles (10%). Gradual boundary to:		0.4 0.6 0.8			
NATURAL Stiff, dry, light grey CLAY with red mottled (5%). Grey, weathered shale cobbles (5%).		1.0	■	GTP1_1.2	
EOH @ 1.2m BGL.		1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
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LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP2**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
FILL soft, dark brown, loamy CLAY with 1 concrete boulder at surface, clinker (2%),bricks (trace), metal bar (trace), broken glass (2%), 1 glass bottle. Clear boundary to:		0.2	■	GTP2_0.2	
NATURAL Firm, red CLAY with light beige mottles (2%) Gradual boundary to:		0.4			
NATURAL V. stiff red/orange/beige CLAY. Trace inclusions of beige/dark grey shale cobbles. Clear boundary to:		0.6 0.8			
NATURAL Weathered grey shale cobbles with hard beige/orange CLAY.		1.0			
EOH @ 1.0m BGL. Hard shale layer.		1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
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LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP3**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Soft, brown, loamy CLAY.Tree roots (2%). Clear boundary to:					
NATURAL Firm, red CLAY with beige mottles (trace). Gradual boundary to:		0.2 0.4 0.6	■	GTP3_0.4	
NATURAL Stiff, red/light grey CLAY with red/orange mottles (5%).		0.8			
EOH @ 0.8m BGL.		1.0 1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP4**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Soft, brown, loamy CLAY. Gradual boundary to:					
NATURAL Firm, red CLAY with beige mottles (trace). Clear boundary to:		0.2			
NATURAL V. stiff, red/grey CLAY with red/orange mottles (5%).		0.4	■	GTP4_0.4	
EOH @ 0.6m BGL.		0.6			
		0.8			
		1.0			
		1.2			
		1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP5**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Soft, brown, loamy CLAY. Gradual boundary to:			■	GTP5_0.1	
NATURAL Firm, orange/light grey, CLAY. Grey mottles (10%)		0.2 0.4 0.6			
EOH @ 0.7m BGL.		0.8 1.0 1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP6**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
FILL Stiff, loamy, red/brown CLAY. Bricks, concrete boulders (10%).		0.2	■	GTP6_0.2	
		0.4			
Gradual boundary to:		0.6			
NATURAL Stiff red/brown CLAY.					
EOH @ 0.7m BGL.		0.8			
		1.0			
		1.2			
		1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP7**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
FILL Stiff, orange/brown CLAY with bricks (40%). Gradual boundary to:		0.2	■	GTP7_0.1	
NATURAL Stiff orange/brown CLAY.Grey mottling (trace)		0.4			
EOH @ 0.4m BGL.		0.6 0.8 1.0 1.2 1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP8**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
FILL V. stiff, orange/brown CLAY with concrete and bitumen boulders (10%).					
		0.2	■	GTP8_0.2	
Clear boundary to:					
NATURAL V. stiff orange/brown CLAY. Grey mottling (trace).					
		0.4			
EOH @ 0.4m BGL.					
		0.6			
		0.8			
		1.0			
		1.2			
		1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP9**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: mechanical excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
NATURAL Dark brown, loamy CLAY. Clear boundary to:					
NATURAL Soft, bleached grey CLAY: Gradual boundary to:		0.2			
NATURAL Firm orange/brown CLAY. Grey mottling (10%).		0.4		GTP9_0.3	
		0.6			
EOH @ 0.7m BGL.		0.8			
		1.0			
		1.2			
		1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

Geological Borelog

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

LOCATION: 85 Byron Ave. Leppington		**Borehole Log: GTP10**	**Logged by:** KA
SURFACE ELEVATION:	**JOB NUMBER:** 120110		
GROUNDWATER:	**DATUM:**	**PROJECT:** Mackellar Excavations	**Proj. Manager:** NE
DRILL METHOD: Mechanical Excavation	**DATE DRILLED:** 13/11/20		

STRATIGRAPHY	GRAPHIC LOG	Depth (metres)	Sample Depth	Sample ID	Comments
REWORKED NATURAL Soft, dark brow, loamy CLAY					
FILL Firm, brown CLAY intermixed with scrap metal (10%) and concrete boulders (5%)		0.2			
		0.4	■	GTP10_0.4	
EOH @ 0.45m BGL		0.6			
		0.8			
		1.0			
		1.2			
		1.4			

NOTE: This bore log is for environmental purposes only and is not intended to provide geotechnical information.

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

ATTACHMENT 2: PHOTO PLATES

Photo plate 1 – Central western portion of site facing west towards Area 4 (backfilled depression area, adjacent to dam).

Photo plate 2 – GTP7: Concrete fragments, bricks and other refuse encountered in the backfilled area (Area 4).

Photo plate 3 – GTP1: Concrete, metal and glass fragments encountered on ground surface. Soil profile below ground level indicates no visible signs of contamination.

Photo plate 4 – PACM located on ground surface within Area 4.

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

ATTACHMENT 3: RESULTS SUMMARY TABLES

TABLE A: Waste Classification Results againts CT1/CT2 Criteria

							AREA 1							AREA 2					AREA 4														
							GeoEnviro Consultancy							GeoEnviro Consultancy					GeoEnviro Consultancy						Environmental Earth Sciences								
							TP32	BH19	TP30	TP31	TP34	TP33	TP35	BH23	TP23	TP24	TP26	TP25	BH28	TP4	TP8	TP6	TP7	TP10	GTP0	GTP2	GTP6	GTP7	GRP8	GTP10	TP22	TP27	TP29
							Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil
						Depth (m BGL):	0.6	3	0.6	0.5	0.4	0.4	0.5	1.5	0.3	0.7	0.5	0.5	0.6	1.1	0.2	0.7	1.3	2.3	1	1	0.7	0.1	0.2	0.4	0.5	0.6	0.5
						Sample Depth (m):	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6	0.0-0.1	0.1-0.2	0.3-0.4	1.2-1.3	1	0.2	0.2	0.4	0.3	0.4	0.0-0.1	0.0-0.1	0.0-0.1
Analyte grouping/Analyte	**Units**	**LOR**	**GSW** < CT1	**RSW** > CT1	**HAZ** >CT2	**special waste asbestos**	1/01/2019	1/04/2018	1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/04/2018	1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/04/2018	1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/01/2019	13/11/2020	13/11/2020	13/11/2020	13/11/2020	13/11/2020	13/11/2020	1/01/2019	1/01/2019	1/01/2019
Asbestos																																	
Asbestos detected		YES / NO				Yes	no	no	no	no	no	no	no	no	no	no	no	no	chrysotile	no	chrysotile	chrysotile	no	chrysotile	no	no	no	no	no	no	no	no	no
Heavy Metals																																	
Arsenic	mg/kg	5	< 100	100 - 400	> 400	----	8	7	7	6	9	8	14	11	10	9	6	12	10	9	7		10	5	8	20	8	15	18	10	7	4	<4
Cadmium	mg/kg	1	< 20	20 - 80	> 80	----	0.8	<0.4	1	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	0.6	0.6	2	0.4		0.4	<0.4	<1	3	<1	<1	<1	<1	<0.4	<0.4	<0.4
Chromium (total)	mg/kg	2	< 100	100 - 400	> 400	----	19	17	22	9	18	15	18	13	16	19	14	33	17	19	24		18	14	21	25	19	23	12	20	15	15	72
Copper	mg/kg	5	----	----	----	----	25	15	40	33	27	16	34	19	16	21	19	46	90	45	170		26	36	31	67	20	38	25	30	9	20	34
Lead	mg/kg	5	< 100	100 - 400	> 400	----	32	27	110	52	160	32	59	26	110	42	39	130	120	59	89		51	13	19	89	35	21	34	65	15	16	11
Nickel	mg/kg	2	< 40	40 - 160	> 160	----	17	6	21	9	8	5	6	13	9	14	9	22	17	16	170		9	38	11	17	10	15	10	15	8	14	70
Zinc	mg/kg	5	----	----	----	----	50	52	250	360	110	56	240	150	150	120	98	280	550	800	2000		350	58	39	331	42	80	914	283	44	41	49
Mercury	mg/kg	0.1	< 4	4 - 16	> 16	----	0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	0.1	<0.1	0.2	0.1		0.2	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.1	0.2
Organochlorine pesticides (OC)																																	
alpha-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Chlordane (sum)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDT	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of DDD + DDE + DDT	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of Aldrin + Dieldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Organophosphorus pesticides (OP)																																	
Dichlorvos[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl[1]	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moderately harmful pesticides (total)[1]	mg/kg	-	<250	250 - 1,000	>1,000	----	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Polychlorinated Biphenyls (PCBs)																																	
Total PCB	mg/kg	0.5	<50	<50	<50	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1
Polycyclic Aromatic Hydrocarbons																																	
Naphthalene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	0.1
Phenanthrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.5
Pyrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.5
Benz(a)anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	<0.8	0.8 - 3.2	>3.2	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.06	0.1
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.2
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	<200	200 - 800	>800	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.36	0.5
BTEX																																	
Benzene	mg/kg	0.2	< 10	10 - 40	> 40	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	< 288	288 - 1,152	> 1,152	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	< 600	600 - 2,400	> 2,400	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	1	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	1	< 1,000	1,000 - 4,000	> 4,000	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons																																	
C6 - C9 Fraction	mg/kg	25	< 650	650 - 2,600	> 2,600	----	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction	mg/kg	25	---	---	---	----	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	50	---	---	---	----	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100	---	---	---	----	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	120	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	100	< 10,000	10,000 - 40,000	>40,000	----	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	120	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50

Notes:

LOR	Laboratory limit of reporting
SCC	Specific contaminant concentration
GSW	General Solid Waste classification
RSW	Restricted Solid Waste classification
HAZ	Hazardous Waste classification
HIL	Health Investigation Level
mg/kg	Milligrams per kilogram
mg/L	Milligrams per litre
1	Included in sum for moderately harmful pesticides

Guideline values from NSW EPA (2014) - *Waste classification guidelines*
Shaded results equal exceedance of particular criteria

TABLE A: Waste Classification Results againts CT1/CT2 Criteria

AREA 3, 5 & 6

GeoEnviro Consultancy

Analyte grouping/Analyte	Units	LOR	GSW < CT1	RSW > CT1	HAZ >CT2	special waste asbestos	TP15	TP17	TP18	TP19	TP21	TP38
							Soil	Soil	Soil	Soil	Soil	Soil
Depth (m BGL):							0.7	0.6	0.6	0.6	0.6	0.5
Sample Depth (m):							0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
							1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/01/2019	1/01/2019
Asbestos												
Asbestos detected		YES / NO				Yes	no	no	no	no	no	no
Heavy Metals												
Arsenic	mg/kg	5	< 100	100 - 400	> 400	----	**6**	**6**	**6**	**6**	**9**	**12**
Cadmium	mg/kg	1	< 20	20 - 80	> 80	----	<0.4	<0.4	<0.4	<0.4	**0.6**	<0.4
Chromium (total)	mg/kg	2	< 100	100 - 400	> 400	----	**16**	**19**	**20**	**18**	**14**	**19**
Copper	mg/kg	5	----	----	----	----	**24**	**40**	**26**	**19**	**14**	**21**
Lead	mg/kg	5	< 100	100 - 400	> 400	----	**27**	**57**	**28**	**24**	**34**	**32**
Nickel	mg/kg	2	< 40	40 - 160	> 160	----	**13**	**14**	**10**	**25**	**8**	**4**
Zinc	mg/kg	5	----	----	----	----	**43**	**160**	**40**	**90**	**68**	**19**
Mercury	mg/kg	0.1	< 4	4 - 16	> 16	----	**0.1**	**0.1**	**0.1**	<0.1	<0.1	<0.1
Organochlorine pesticides (OC)												
alpha-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Total Chlordane (sum)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4`-DDE	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4`-DDD	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
4,4`-DDT	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of DDD + DDE + DDT	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of Aldrin + Dieldrin	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Organophosphorus pesticides (OP)												
Dichlorvos[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl[1]	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	mg/kg	0.2	----	----	----	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion[1]	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	mg/kg	0.05	----	----	----	----	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Moderately harmful pesticides (total)[1]	mg/kg	-	<250	250 - 1,000	>1,000	----	0	0	0	0	0	0
Polychlorinated Biphenyls (PCBs)												
Total PCB	mg/kg	0.5	<50	<50	<50	----	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic Aromatic Hydrocarbons												
Naphthalene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b,j+k)fluoranthene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	<0.8	0.8 - 3.2	>3.2	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.)perylene	mg/kg	0.5	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	<200	200 - 800	>800	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
BTEX												
Benzene	mg/kg	0.2	< 10	10 - 40	> 40	----	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	< 288	288 - 1,152	> 1,152	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	1	< 600	600 - 2,400	> 2,400	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	2	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	1	----	----	----	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	1	< 1,000	,000 - 4,00	> 4,000	----	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Recoverable Hydrocarbons												
C6 - C9 Fraction	mg/kg	25	< 650	650 - 2,600	> 2,600	----	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction	mg/kg	25	---	---	---	----	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	50	---	---	---	----	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100	---	---	---	----	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	100	< 10,000	,000 - 40,0	>40,000	----	<50	<50	<50	<50	<50	<50

Notes:

LOR	Laboratory limit of reporting
SCC	Specific contaminant concentration
GSW	General Solid Waste classification
RSW	Restricted Solid Waste classification
HAZ	Hazardous Waste classification
HIL	Health Investigation Level
mg/kg	Milligrams per kilogram
mg/L	Milligrams per litre
1	Included in sum for moderately harmful pesticides

Guideline values from NSW EPA (2014) - Waste classification guidelines
Shaded results equal exceedance of particular criteria

TABLE B: Composite samples against adjusted CT1 / CT2 criteria

							Area 3, 5 & 6	
							C4	C5
						Sample Depth (m):	Soil 0.0-0.1	Soil 0.0-0.1
Analyte grouping/Analyte	**Units**	**LOR**	**GSW < CT1**	**RSW > CT1**	**HAZ >CT2**	**special waste asbestos**	43191	43191
Asbestos								
Asbestos detected		YES / NO				Yes	---	---
Heavy Metals								
Arsenic	mg/kg	5	<33.33	33.33-133.33	> 133.33	----	7	7
Cadmium	mg/kg	1	< 6.67	6.67-26.67	> 26.67	----	<0.4	<0.4
Chromium (total)	mg/kg	2	<33.33	33.33-133.33	> 133.33	----	17	15
Copper	mg/kg	5	----	----	----	----	25	16
Lead	mg/kg	5	<33.33	33.33-133.33	> 133.33	----	45	21
Nickel	mg/kg	2	< 13.33	13.33 - 53.33	> 53.33	----	11	13
Zinc	mg/kg	5	----	----	----	----	170	50
Mercury	mg/kg	0.1	< 1.33	1.33 - 5.33	> 5.33	----	<0.1	<0.1
Organochlorine pesticides (OC)								
alpha-BHC	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Hexachlorobenzene (HCB)	mg/kg	0.05	----	----	----	----	<0.1	<0.1
beta-BHC	mg/kg	0.05	----	----	----	----	<0.1	<0.1
gamma-BHC	mg/kg	0.05	45	----	----	----	<0.1	<0.1
delta-BHC	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Heptachlor	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Aldrin	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Heptachlor epoxide	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Total Chlordane (sum)	mg/kg	0.05	----	----	----	----	<0.1	<0.1
trans-Chlordane	mg/kg	0.05	----	----	----	----	<0.1	<0.1
alpha-Endosulfan	mg/kg	0.05	----	----	----	----	<0.1	<0.1
cis-Chlordane	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Dieldrin	mg/kg	0.05	----	----	----	----	<0.1	<0.1
4.4`-DDE	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Endrin	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Endosulfan (sum)	mg/kg	0.05	----	----	----	----	<0.1	<0.1
beta-Endosulfan	mg/kg	0.05	----	----	----	----	<0.1	<0.1
4.4`-DDD	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Endrin aldehyde	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Endosulfan sulfate	mg/kg	0.05	----	----	----	----	<0.1	<0.1
4.4`-DDT	mg/kg	0.2	----	----	----	----	<0.1	<0.1
Endrin ketone	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Methoxychlor	mg/kg	0.2	----	----	----	----	<0.1	<0.1
Sum of DDD + DDE + DDT	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Sum of Aldrin + Dieldrin	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Organophosphorus pesticides (OP)								
Dichlorvos[1]	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Demeton-S-methyl	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Monocrotophos	mg/kg	0.2	----	----	----	----	<0.1	<0.1
Dimethoate[1]	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Diazinon	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Parathion-methyl[1]	mg/kg	0.2	----	----	----	----	<0.1	<0.1
Malathion[1]	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Fenthion[1]	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Chlorpyrifos	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Parathion	mg/kg	0.2	----	----	----	----	<0.1	<0.1
Pirimphos-ethyl	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Chlorfenvinphos	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Bromophos-ethyl	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Fenamiphos	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Prothiofos	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Ethion[1]	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Carbophenothion	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Azinphos Methyl	mg/kg	0.05	----	----	----	----	<0.1	<0.1
Moderately harmful pesticides (total)[1]	mg/kg	-	<83.33	83.33 - 333.33	>333.33	----	<0.1	<0.1
Polychlorinated Biphenyls (PCBs)								
Total PCB	mg/kg	0.5	<16.67	<16.67	<16.67	----	<0.1	<0.1

Notes:

LOR	Laboratory limit of reporting
SCC	Specific contaminant concentration
GSW	General Solid Waste classification
RSW	Restricted Solid Waste classification
HAZ	Hazardous Waste classification
HIL	Health Investigation Level
mg/kg	Miligrams per kilogram
mg/L	Milligrams per litre
1	Included in sum for moderately harmful pesticides

Guideline values from NSW EPA (2014) - *Waste classification guidelines*

Shaded results equal exceedance of particular criteria

CT1/CT2 criteria adjusted for composite samples from EPA (2005) -
Composite soil sampling in site contamination assessment and management

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

ATTACHMENT 4: COMPELTE LABORATORY TRANSCRIPTS

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2040519**

Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: PO 380 North Sydney 2056	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: neldridge@eesigroup.com	E-mail	: Shane.Ellis@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 120110	Page	: 1 of 3
Order number	: ----	Quote number	: ES2020ENVEAR0009 (EN/010/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: LEPPINGTON		
Sampler	: KA, NP		

Dates

Date Samples Received	: 16-Nov-2020 16:00	Issue Date	: 17-Nov-2020
Client Requested Due Date	: 19-Nov-2020	Scheduled Reporting Date	: **19-Nov-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: 1	Temperature	: 6.4'C - Ice Bricks present
Receipt Detail	: ESKY	No. of samples received / analysed	: 11 / 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
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- **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.
- Analytical work for this work order will be conducted at ALS Sydney.
- 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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	(On Hold) SOIL No analysis requested	SOIL - EA055-103 Moisture Content	SOIL - S-16 TRH/BTEXN/PAH/OC/OP/PCB/8Metals
ES2040519-001	13-Nov-2020 00:00	GTP0_1.0		✓	✓
ES2040519-002	13-Nov-2020 00:00	GTP1_1.2	✓		
ES2040519-003	13-Nov-2020 00:00	GTP2_0.2		✓	✓
ES2040519-004	13-Nov-2020 00:00	GTP3_0.4	✓		
ES2040519-005	13-Nov-2020 00:00	GTP4_0.4	✓		
ES2040519-006	13-Nov-2020 00:00	GTP5_0.1	✓		
ES2040519-007	13-Nov-2020 00:00	GTP6_0.2		✓	✓
ES2040519-008	13-Nov-2020 00:00	GTP7_0.1		✓	✓
ES2040519-009	13-Nov-2020 00:00	GTP8_0.2	✓		
ES2040519-010	13-Nov-2020 00:00	GTP9_0.3	✓		
ES2040519-011	13-Nov-2020 00:00	GTP10_0.4		✓	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS EESI GROUP

- A4 - AU Tax Invoice (INV)	Email	accounts@eesigroup.com

KARIN AZZAM

- *AU Certificate of Analysis - NATA (COA)	Email	kazzam@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kazzam@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kazzam@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kazzam@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	kazzam@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	kazzam@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	kazzam@eesigroup.com

Natalie Eldridge

- *AU Certificate of Analysis - NATA (COA)	Email	neldridge@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	neldridge@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	neldridge@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	neldridge@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	neldridge@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	neldridge@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	neldridge@eesigroup.com

NEENA POTTS

- *AU Certificate of Analysis - NATA (COA)	Email	npotts@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	npotts@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	npotts@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	npotts@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	npotts@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	npotts@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	npotts@eesigroup.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2040519**	Page	: 1 of 7
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: PO 380 North Sydney 2056	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 16-Nov-2020 16:00
Order number	: ----	Date Analysis Commenced	: 18-Nov-2020
C-O-C number	: ----	Issue Date	: 19-Nov-2020 18:53
Sampler	: KA, NP		
Site	: LEPPINGTON		
Quote number	: EN/010/20		
No. of samples received	: 11		
No. of samples analysed	: 5		

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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	*Position*	*Accreditation Category*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, 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 Contact for details.

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GTP0_1.0	GTP2_0.2	GTP6_0.2	GTP7_0.1	GTP10_0.4
				Client sampling date / time	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2040519-001	ES2040519-003	ES2040519-007	ES2040519-008	ES2040519-011
					Result	Result	Result	Result	Result
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		16.6	17.1	19.3	16.2	24.3
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		8	20	8	15	10
Cadmium	7440-43-9	1	mg/kg		<1	3	<1	<1	<1
Chromium	7440-47-3	2	mg/kg		21	25	19	23	20
Copper	7440-50-8	5	mg/kg		31	67	20	38	30
Lead	7439-92-1	5	mg/kg		19	89	35	21	65
Nickel	7440-02-0	2	mg/kg		11	17	10	15	15
Zinc	7440-66-6	5	mg/kg		39	331	42	80	283
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GTP0_1.0	GTP2_0.2	GTP6_0.2	GTP7_0.1	GTP10_0.4
				Client sampling date / time	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2040519-001	ES2040519-003	ES2040519-007	ES2040519-008	ES2040519-011
					Result	Result	Result	Result	Result
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GTP0_1.0	GTP2_0.2	GTP6_0.2	GTP7_0.1	GTP10_0.4
				Client sampling date / time	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2040519-001	ES2040519-003	ES2040519-007	ES2040519-008	ES2040519-011
					Result	Result	Result	Result	Result
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	<10	<10	<10	<10
>C10 - C16 Fraction	----	50	mg/kg		<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg		<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	<50	<50	<50	<50
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	GTP0_1.0	GTP2_0.2	GTP6_0.2	GTP7_0.1	GTP10_0.4
				Client sampling date / time	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00	13-Nov-2020 00:00
Compound	CAS Number	LOR	Unit		ES2040519-001	ES2040519-003	ES2040519-007	ES2040519-008	ES2040519-011
					Result	Result	Result	Result	Result
EP080: BTEXN - Continued									
^ Sum of BTEX	----	0.2	mg/kg		<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	----	0.5	mg/kg		<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg		<1	<1	<1	<1	<1
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**92.1**	**88.5**	**86.7**	**106**	**88.0**
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**94.1**	**89.1**	**87.3**	**95.4**	**84.8**
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**100**	**101**	**96.2**	**107**	**94.0**
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**92.4**	**94.8**	**92.6**	**94.9**	**90.7**
2-Chlorophenol-D4	93951-73-6	0.5	%		**97.0**	**99.5**	**96.0**	**98.5**	**94.4**
2.4.6-Tribromophenol	118-79-6	0.5	%		**85.6**	**87.3**	**82.9**	**84.7**	**80.4**
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**114**	**116**	**113**	**115**	**112**
Anthracene-d10	1719-06-8	0.5	%		**112**	**111**	**109**	**111**	**107**
4-Terphenyl-d14	1718-51-0	0.5	%		**106**	**105**	**103**	**105**	**102**
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**101**	**107**	**99.2**	**102**	**105**
Toluene-D8	2037-26-5	0.2	%		**108**	**114**	**106**	**104**	**111**
4-Bromofluorobenzene	460-00-4	0.2	%		**110**	**127**	**115**	**114**	**120**

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2040519**	Page	: 1 of 10
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: PO 380 North Sydney 2056	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 16-Nov-2020
Order number	: ----	Date Analysis Commenced	: 18-Nov-2020
C-O-C number	: ----	Issue Date	: 19-Nov-2020
Sampler	: KA, NP		
Site	: LEPPINGTON		
Quote number	: EN/010/20		
No. of samples received	: 11		
No. of samples analysed	: 5		

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

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

This 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*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, 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

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3369409)									
ES2040519-001	GTP0_1.0	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	21	16	24.6	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	11	9	17.3	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	5	45.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	31	28	8.24	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	19	14	25.8	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	39	32	19.2	No Limit
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3369411)									
ES2040519-007	GTP6_0.2	EA055: Moisture Content	----	0.1	%	19.3	18.8	2.60	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3369410)									
ES2040519-001	GTP0_1.0	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3368971)									
ES2040519-001	GTP0_1.0	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3368970)									
ES2040519-001	GTP0_1.0	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3368970) - continued									
ES2040519-001	GTP0_1.0	EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3368970)									
ES2040519-001	GTP0_1.0	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3368969)									
ES2040519-001	GTP0_1.0	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3368969) - continued									
ES2040519-001	GTP0_1.0	EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3368968)									
ES2040717-010	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2040519-001	GTP0_1.0	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3369287)									
ES2040519-001	GTP0_1.0	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
ES2040717-006	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3368968)									
ES2040717-010	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
ES2040519-001	GTP0_1.0	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3369287)									
ES2040519-001	GTP0_1.0	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
ES2040717-006	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080: BTEXN (QC Lot: 3369287)									
ES2040519-001	GTP0_1.0	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3369287) - continued									
ES2040519-001	GTP0_1.0	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit
ES2040717-006	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3369409)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	87.2	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	87.0	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	92.0	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	----	----	----	----
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	83.1	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3369410)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	88.2	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3368971)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	115	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 3368970)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.4	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	94.5	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.4	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.5	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.7	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	97.3	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.2	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	98.7	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	88.8	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3368970)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3368970) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	88.1	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	81.1	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	99.6	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.2	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	90.4	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	77.0	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	71.4	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3368969)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	106	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	105	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	103	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	106	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	106	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	107	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	108	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	107	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	98.9	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	99.0	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	99.1	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	102	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	105	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	107	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	105	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	108	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3368968)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	109	75.0	129

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3368968) - continued								
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	109	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	99.4	71.0	129
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3369287)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	112	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3368968)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	110	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	106	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	87.4	63.0	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3369287)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	111	68.4	128
EP080: BTEXN (QCLot: 3369287)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	104	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	105	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	102	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	104	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	106	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	99.2	63.0	119

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: **SOIL**

Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3369409)							
ES2040519-001	GTP0_1.0	EG005T: Arsenic	7440-38-2	50 mg/kg	91.8	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	94.6	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	89.9	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	101	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	93.5	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	95.4	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	73.6	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3369410)							
ES2040519-001	GTP0_1.0	EG035T: Mercury	7439-97-6	5 mg/kg	82.2	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3368971)							

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3368971) - continued							
ES2040519-001	GTP0_1.0	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	99.8	70.0	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3368970)							
ES2040519-001	GTP0_1.0	EP068: gamma-BHC	58-89-9	0.5 mg/kg	80.2	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	96.9	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	96.2	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	95.1	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	82.3	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	97.6	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3368970)							
ES2040519-001	GTP0_1.0	EP068: Diazinon	333-41-5	0.5 mg/kg	99.5	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	94.0	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	87.3	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	81.6	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	96.7	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3368969)							
ES2040519-001	GTP0_1.0	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	102	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	107	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3368968)							
ES2040519-001	GTP0_1.0	EP071: C10 - C14 Fraction	----	523 mg/kg	108	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	117	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	111	52.0	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3369287)							
ES2040519-001	GTP0_1.0	EP080: C6 - C9 Fraction	----	32.5 mg/kg	117	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3368968)							
ES2040519-001	GTP0_1.0	EP071: >C10 - C16 Fraction	----	860 mg/kg	108	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	113	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	93.8	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3369287)							
ES2040519-001	GTP0_1.0	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	116	70.0	130
EP080: BTEXN (QCLot: 3369287)							
ES2040519-001	GTP0_1.0	EP080: Benzene	71-43-2	2.5 mg/kg	109	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	105	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	108	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	106	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	106	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	*Client sample ID*	*Method: Compound*	*CAS Number*	*Concentration*	*MS*	*Low*	*High*
EP080: BTEXN (QCLot: 3369287) - continued							
ES2040519-001	GTP0_1.0	EP080: Naphthalene	91-20-3	2.5 mg/kg	101	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2040519**	Page	: 1 of 5
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 16-Nov-2020
Site	: LEPPINGTON	Issue Date	: 19-Nov-2020
Sampler	: KA, NP	No. of samples received	: 11
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, NO surrogate recovery outliers occur.**

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**----**	----	----	**18-Nov-2020**	27-Nov-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	12-May-2021	✓	**19-Nov-2020**	12-May-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	11-Dec-2020	✓	**19-Nov-2020**	11-Dec-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	28-Dec-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	28-Dec-2020	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	28-Dec-2020	✓

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	28-Dec-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	27-Nov-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	27-Nov-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
GTP0_1.0, GTP2_0.2, GTP6_0.2, GTP7_0.1, GTP10_0.4	**13-Nov-2020**	**18-Nov-2020**	27-Nov-2020	✓	**18-Nov-2020**	27-Nov-2020	✓

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: **SOIL**

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)							
Moisture Content	EA055	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	2	10	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	2	15	**13.33**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	10	**10.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	15	**6.67**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 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).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 120110 19/11/20

Laboratory: ALS

Project Manager: NE

Sampler: NP KA

Site Location: LEPPINGTON

Sheet: 1 of 1

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Time sampled	Sample Matrix: Soil	Water	Sediment	Analysis Required: S-16	HOLD												Sample-specific instructions/ notes
1	GTP0_1.0		13/11/20		X			X													
2	GTP1_1.2		↓		↓				X												
3	GTP2_0.2							X													
4	GTP3_0.4								X												
5	GTP4_0.4								X												
6	GTP5_0.1								X												
7	GTP6_0.2							X													
8	GTP7_0.1							X													
9	GTP8_0.2								X												
10	GTP9_0.3								X												
11	GTP10_0.4		↓		↓			X													
	TOTAL																				

TAT

Environmental Division
Sydney
Work Order Reference
ES2040519

Telephone : + 61-2-8784 8555

Turn Around (circle): **NORMAL** (circled) / 3 DAYS / 48 HRS / 24 HRS *(confirm with lab in advance if quick turn-around is required)*

Comments/ Instructions:

Lab Quotation No. *(if applicable)*: neldridge@eesigroup.com

Send report to *(email address)*: kazzam@eesigroup.com

Cc: report to *(email address)*: npotts@eesigroup.com

Cc: invoice to *(email address)*: accounts@eesigroup.com

	Name	Signature	Date	Time
Sent off Site/Office by:	Nina Potts	[signature]	16/11/20	12:15pm
Receiving Lab:	[signature]	[signature]	16/11/20	1600 6.4
Receiving Lab:				

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED
Phone: (0x) xxxx xxxx
Fax: (0x) xxxxx xxxx
PO Box: PO Box xx City State Postcode
Email: eesXXX@eesigroup.com

SAMPLE RECEIPT NOTIFICATION (SRN)

Work Order : **ES2041256**

Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: 82-84 Dickson Avenue ARTARMON NSW, AUSTRALIA 2064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: neldridge@eesigroup.com	E-mail	: Shane.Ellis@ALSGlobal.com
Telephone	: ----	Telephone	: +61 2 8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: 120110	Page	: 1 of 2
Order number	: ----	Quote number	: ES2020ENVEAR0009 (EN/010/20)
C-O-C number	: ----	QC Level	: NEPM 2013 B3 & ALS QC Standard
Site	: ----		
Sampler	:		

Dates

Date Samples Received	: 20-Nov-2020 14:50	Issue Date	: 20-Nov-2020
Client Requested Due Date	: 23-Nov-2020	Scheduled Reporting Date	: **24-Nov-2020**

Delivery Details

Mode of Delivery	: Undefined	Security Seal	: Not Available
No. of coolers/boxes	: ----	Temperature	: 4.1'C
Receipt Detail	:	No. of samples received / analysed	: 1 / 1

General Comments

- This report contains the following information:
  - Sample Container(s)/Preservation Non-Compliances
  - Summary of Sample(s) and Requested Analysis
  - Proactive Holding Time Report
  - Requested Deliverables
- **This work order is a rebatch of ES2040519**
- **Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.**
- Please note that the scheduled reporting date has not been confirmed with laboratory management. If the scheduled reporting date is not achievable ALS will be in contact with you.
- **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.
- Analytical work for this work order will be conducted at ALS Sydney.
- 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: **SOIL**

Laboratory sample ID	Client sampling date / time	Client sample ID	SOIL - EA055-103 Moisture Content	SOIL - S-16 TRH/BTEXN/PAH/OC/OP/PCB/8Metals
ES2041256-001	13-Nov-2020 00:00	GTP8-0.2	✓	✓

Proactive Holding Time Report

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

Requested Deliverables

ACCOUNTS EESI GROUP		
- A4 - AU Tax Invoice (INV)	Email	accounts@eesigroup.com
ALL INVOICES MELB ADDRESS		
- A4 - AU Tax Invoice (INV)	Email	accounts@eesigroup.com
KARIN AZZAM		
- *AU Certificate of Analysis - NATA (COA)	Email	kazzam@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	kazzam@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	kazzam@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	kazzam@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	kazzam@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	kazzam@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	kazzam@eesigroup.com
Natalie Eldridge		
- *AU Certificate of Analysis - NATA (COA)	Email	neldridge@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	neldridge@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	neldridge@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	neldridge@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	neldridge@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	neldridge@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	neldridge@eesigroup.com
NEENA POTTS		
- *AU Certificate of Analysis - NATA (COA)	Email	npotts@eesigroup.com
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	npotts@eesigroup.com
- *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC)	Email	npotts@eesigroup.com
- A4 - AU Sample Receipt Notification - Environmental HT (SRN)	Email	npotts@eesigroup.com
- Chain of Custody (CoC) (COC)	Email	npotts@eesigroup.com
- EDI Format - ENMRG (ENMRG)	Email	npotts@eesigroup.com
- EDI Format - ESDAT (ESDAT)	Email	npotts@eesigroup.com

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2041256**	Page	: 1 of 7
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: 82-84 Dickson Avenue ARTARMON NSW, AUSTRALIA 2064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 20-Nov-2020 14:50
Order number	: ----	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 24-Nov-2020 15:46
Sampler	: ----		
Site	: ----		
Quote number	: EN/010/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, 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*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by 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 Contact for details.

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

- Benzo(a)pyrene Toxicity Equivalent Quotient (TEQ) per the NEPM (2013) is the sum total of the concentration of the eight carcinogenic PAHs multiplied by their Toxicity Equivalence Factor (TEF) relative to Benzo(a)pyrene. TEF values are provided in brackets as follows: Benz(a)anthracene (0.1), Chrysene (0.01), Benzo(b+j) & Benzo(k)fluoranthene (0.1), Benzo(a)pyrene (1.0), Indeno(1.2.3.cd)pyrene (0.1), Dibenz(a.h)anthracene (1.0), Benzo(g.h.i)perylene (0.01). Less than LOR results for 'TEQ Zero' are treated as zero, for 'TEQ 1/2LOR' are treated as half the reported LOR, and for 'TEQ LOR' are treated as being equal to the reported LOR. Note: TEQ 1/2LOR and TEQ LOR will calculate as 0.6mg/Kg and 1.2mg/Kg respectively for samples with non-detects for all of the eight TEQ PAHs.
- EP080: Where reported, Total Xylenes is the sum of the reported concentrations of m&p-Xylene and o-Xylene at or above the LOR.
- EP068: Where reported, Total Chlordane (sum) is the sum of the reported concentrations of cis-Chlordane and trans-Chlordane at or above the LOR.
- EP068: Where reported, Total OCP is the sum of the reported concentrations of all Organochlorine Pesticides at or above LOR.
- EP075(SIM): Where reported, Total Cresol is the sum of the reported concentrations of 2-Methylphenol and 3- & 4-Methylphenol at or above the LOR.

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GTP8-0.2	----	----	----	----
				Sampling date / time	13-Nov-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2041256-001	--------	--------	--------	--------
					Result	----	----	----	----
EA055: Moisture Content (Dried @ 105-110°C)									
Moisture Content	----	1.0	%		**17.6**	----	----	----	----
EG005(ED093)T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg		**18**	----	----	----	----
Cadmium	7440-43-9	1	mg/kg		<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg		**12**	----	----	----	----
Copper	7440-50-8	5	mg/kg		**25**	----	----	----	----
Lead	7439-92-1	5	mg/kg		**34**	----	----	----	----
Nickel	7440-02-0	2	mg/kg		**10**	----	----	----	----
Zinc	7440-66-6	5	mg/kg		**914**	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg		<0.1	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)									
Total Polychlorinated biphenyls	----	0.1	mg/kg		<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)									
alpha-BHC	319-84-6	0.05	mg/kg		<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg		<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg		<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg		<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg		<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05	----	----	----	----
^ **Total Chlordane (sum)**	----	0.05	mg/kg		<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg		<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05	----	----	----	----
^ **Endosulfan (sum)**	115-29-7	0.05	mg/kg		<0.05	----	----	----	----
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GTP8-0.2	----	----	----	----
				Sampling date / time	13-Nov-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2041256-001	--------	--------	--------	--------
					Result	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued									
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg		<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	72-54-8/72-55-9/50-2	0.05	mg/kg		<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)									
Dichlorvos	62-73-7	0.05	mg/kg		<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg		<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg		<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg		<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg		<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg		<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg		<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg		<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg		<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg		<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg		<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg		<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons									
Naphthalene	91-20-3	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg		<0.5	----	----	----	----
Fluorene	86-73-7	0.5	mg/kg		<0.5	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg		<0.5	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GTP8-0.2	----	----	----	----
				Sampling date / time	13-Nov-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2041256-001	--------	--------	--------	--------
					Result	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	----	----	----	----
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5	----	----	----	----
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg		<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg		**0.6**	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg		**1.2**	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg		<10	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg		<50	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg		<100	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg		<100	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions									
C6 - C10 Fraction	C6_C10	10	mg/kg		<10	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10	----	----	----	----
>C10 - C16 Fraction	----	50	mg/kg		<50	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg		<100	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg		<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg		<50	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg		<50	----	----	----	----
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg		<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg		<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5	----	----	----	----

Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Sample ID	GTP8-0.2	----	----	----	----
				Sampling date / time	13-Nov-2020 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES2041256-001	--------	--------	--------	--------
					Result	----	----	----	----
EP080: BTEXN - Continued									
^ **Sum of BTEX**	----	0.2	mg/kg		<0.2	----	----	----	----
^ **Total Xylenes**	----	0.5	mg/kg		<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg		<1	----	----	----	----
EP066S: PCB Surrogate									
Decachlorobiphenyl	2051-24-3	0.1	%		**82.5**	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.05	%		**88.6**	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.05	%		**63.5**	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.5	%		**93.0**	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.5	%		**91.5**	----	----	----	----
2.4.6-Tribromophenol	118-79-6	0.5	%		**71.8**	----	----	----	----
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.5	%		**103**	----	----	----	----
Anthracene-d10	1719-06-8	0.5	%		**101**	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.5	%		**93.8**	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.2	%		**102**	----	----	----	----
Toluene-D8	2037-26-5	0.2	%		**94.8**	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.2	%		**113**	----	----	----	----

Surrogate Control Limits

Sub-Matrix: **SOIL**

Compound	CAS Number	Recovery Limits (%) Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	39	149
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2.4.6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1.2-Dichloroethane-D4	17060-07-0	73	133
Toluene-D8	2037-26-5	74	132
4-Bromofluorobenzene	460-00-4	72	130

ALS Environmental

QUALITY CONTROL REPORT

Work Order	: **ES2041256**	Page	: 1 of 9
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Contact	: Shane Ellis
Address	: 82-84 Dickson Avenue ARTARMON NSW, AUSTRALIA 2064	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: ----	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 20-Nov-2020
Order number	: ----	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 24-Nov-2020
Sampler	: ----		
Site	: ----		
Quote number	: EN/010/20		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted, 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*
Edwandy Fadjar	Organic Coordinator	Sydney Inorganics, Smithfield, NSW
Edwandy Fadjar	Organic Coordinator	Sydney Organics, Smithfield, NSW
Ivan Taylor	Analyst	Sydney Inorganics, Smithfield, NSW

General Comments

The analytical procedures used by 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

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: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EG005(ED093)T: Total Metals by ICP-AES (QC Lot: 3377007)									
ES2041212-015	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	7	48.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.00	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	6	8	27.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.00	No Limit
ES2041256-001	GTP8-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.00	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	12	12	8.34	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.00	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	18	25	31.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	25	27	8.28	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	34	31	9.99	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	914	815	11.4	0% - 20%
EA055: Moisture Content (Dried @ 105-110°C) (QC Lot: 3377009)									
ES2041212-017	Anonymous	EA055: Moisture Content	----	0.1	%	17.6	17.9	1.99	0% - 50%
ES2041330-001	Anonymous	EA055: Moisture Content	----	0.1	%	8.0	8.0	0.00	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3377006)									
ES2041212-015	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
ES2041256-001	GTP8-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP066: Polychlorinated Biphenyls (PCB) (QC Lot: 3376750)									
ES2041212-021	Anonymous	EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	<0.1	0.00	No Limit
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3376752)									
ES2041212-021	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3376752) - continued									
ES2041212-021	Anonymous	EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3376752)									
ES2041212-021	Anonymous	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.00	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3376751)									
ES2041212-021	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3376656)									
ES2041212-021	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3376749)									
ES2041212-021	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3376656)									
ES2041212-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.00	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QC Lot: 3376749)									
ES2041212-021	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.00	No Limit
		EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	<50	0.00	No Limit
EP080: BTEXN (QC Lot: 3376656)									
ES2041212-021	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.00	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	0.00	No Limit
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.00	No Limit

Sub-Matrix: **SOIL**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	*Sample ID*	*Method: Compound*	*CAS Number*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD (%)*	*Recovery Limits (%)*
EP080: BTEXN (QC Lot: 3376656) - continued									
ES2041212-021	Anonymous	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.00	No Limit

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

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

Sub-Matrix: **SOIL**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3377007)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	121.1 mg/kg	104	88.0	113
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	0.74 mg/kg	116	70.0	130
EG005T: Chromium	7440-47-3	2	mg/kg	<2	20.2 mg/kg	108	68.0	132
EG005T: Copper	7440-50-8	5	mg/kg	<5	52.9 mg/kg	108	89.0	111
EG005T: Lead	7439-92-1	5	mg/kg	<5	62.1 mg/kg	99.5	82.0	119
EG005T: Nickel	7440-02-0	2	mg/kg	<2	15.4 mg/kg	102	80.0	120
EG005T: Zinc	7440-66-6	5	mg/kg	<5	162 mg/kg	85.2	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377006)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	0.073 mg/kg	109	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3376750)								
EP066: Total Polychlorinated biphenyls	----	0.1	mg/kg	<0.1	1 mg/kg	93.8	62.0	126
EP068A: Organochlorine Pesticides (OC) (QCLot: 3376752)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	69.0	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	98.4	65.0	117
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	67.0	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.4	68.0	116
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.2	65.0	117
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.6	67.0	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.1	69.0	115
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	98.9	62.0	118
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	99.6	63.0	117
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.7	66.0	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	101	64.0	116
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	66.0	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	107	67.0	115
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	67.0	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	115
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	69.0	121
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	56.0	120
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	62.0	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	100	66.0	120
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.9	64.0	122
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	97.9	54.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3376752)								

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery Limits (%)	
				Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3376752) - continued								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	59.0	119
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	102	62.0	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	91.9	54.0	126
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.2	67.0	119
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	70.0	120
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	92.2	72.0	120
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	98.4	68.0	120
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	68.0	122
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	99.0	69.0	117
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.9	76.0	118
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	93.3	64.0	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	70.0	116
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.1	69.0	121
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	66.0	118
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.2	68.0	124
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.7	62.0	112
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	97.1	68.0	120
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	102	65.0	127
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	81.5	41.0	123
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3376751)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	6 mg/kg	103	77.0	125
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	6 mg/kg	105	72.0	124
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	6 mg/kg	102	73.0	127
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	6 mg/kg	104	72.0	126
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	6 mg/kg	108	75.0	127
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	6 mg/kg	112	77.0	127
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	6 mg/kg	108	73.0	127
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	6 mg/kg	109	74.0	128
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	6 mg/kg	101	69.0	123
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	6 mg/kg	105	75.0	127
EP075(SIM): Benzo(b+j)fluoranthene	205-99-2 205-82-3	0.5	mg/kg	<0.5	6 mg/kg	99.7	68.0	116
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	6 mg/kg	104	74.0	126
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	6 mg/kg	99.0	70.0	126
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	6 mg/kg	99.2	61.0	121
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	6 mg/kg	100.0	62.0	118
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	6 mg/kg	99.7	63.0	121
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376656)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.5	68.4	128

Sub-Matrix: **SOIL**

Method: Compound	CAS Number	LOR	Unit	Method Blank (MB) Report: Result	Laboratory Control Spike (LCS) Report: Spike Concentration	Spike Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376749)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	300 mg/kg	105	75.0	129
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	450 mg/kg	105	77.0	131
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	300 mg/kg	112	71.0	129
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3376656)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	90.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3376749)								
EP071: >C10 - C16 Fraction	----	50	mg/kg	<50	375 mg/kg	102	77.0	125
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	525 mg/kg	109	74.0	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	225 mg/kg	104	63.0	131
EP080: BTEXN (QCLot: 3376656)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	89.7	62.0	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	87.7	67.0	121
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	90.3	65.0	117
EP080: meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	2 mg/kg	87.9	66.0	118
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	98.4	68.0	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	90.6	63.0	119

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: **SOIL**

Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Matrix Spike (MS) Report: Spike Concentration	SpikeRecovery(%): MS	Recovery Limits (%): Low	Recovery Limits (%): High
EG005(ED093)T: Total Metals by ICP-AES (QCLot: 3377007)							
ES2041212-015	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	96.3	70.0	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	100	70.0	130
		EG005T: Chromium	7440-47-3	50 mg/kg	107	68.0	132
		EG005T: Copper	7440-50-8	250 mg/kg	99.8	70.0	130
		EG005T: Lead	7439-92-1	250 mg/kg	101	70.0	130
		EG005T: Nickel	7440-02-0	50 mg/kg	100	70.0	130
		EG005T: Zinc	7440-66-6	250 mg/kg	103	66.0	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3377006)							
ES2041212-015	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	86.6	70.0	130
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3376750)							
ES2041212-021	Anonymous	EP066: Total Polychlorinated biphenyls	----	1 mg/kg	94.6	70.0	130

Sub-Matrix: **SOIL**

				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3376752)							
ES2041212-021	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	87.2	70.0	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	90.1	70.0	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	88.8	70.0	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	83.8	70.0	130
		EP068: Endrin	72-20-8	2 mg/kg	89.4	70.0	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	85.7	70.0	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3376752)							
ES2041212-021	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	86.3	70.0	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	83.3	70.0	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	91.3	70.0	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	76.0	70.0	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	87.0	70.0	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3376751)							
ES2041212-021	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	103	70.0	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	108	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376656)							
ES2041212-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	94.9	70.0	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3376749)							
ES2041212-021	Anonymous	EP071: C10 - C14 Fraction	----	523 mg/kg	106	73.0	137
		EP071: C15 - C28 Fraction	----	2319 mg/kg	117	53.0	131
		EP071: C29 - C36 Fraction	----	1714 mg/kg	132	52.0	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3376656)							
ES2041212-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	92.9	70.0	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions (QCLot: 3376749)							
ES2041212-021	Anonymous	EP071: >C10 - C16 Fraction	----	860 mg/kg	104	73.0	137
		EP071: >C16 - C34 Fraction	----	3223 mg/kg	124	53.0	131
		EP071: >C34 - C40 Fraction	----	1058 mg/kg	118	52.0	132
EP080: BTEXN (QCLot: 3376656)							
ES2041212-021	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	74.8	70.0	130
		EP080: Toluene	108-88-3	2.5 mg/kg	78.4	70.0	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	82.5	70.0	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	80.7	70.0	130
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	85.0	70.0	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	86.7	70.0	130

ALS Environmental

QA/QC Compliance Assessment to assist with Quality Review

Work Order	: **ES2041256**	Page	: 1 of 4
Client	: **ENVIRONMENTAL EARTH SCIENCES**	Laboratory	: Environmental Division Sydney
Contact	: Natalie Eldridge	Telephone	: +61 2 8784 8555
Project	: 120110	Date Samples Received	: 20-Nov-2020
Site	: ----	Issue Date	: 24-Nov-2020
Sampler	: ----	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1

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

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

Summary of Outliers

Outliers : Quality Control Samples

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

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

Outliers : Analysis Holding Time Compliance

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

Outliers : Frequency of Quality Control Samples

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

Analysis Holding Time Compliance

If samples are identified below as having been analysed or extracted outside of recommended holding times, this should be taken into consideration when interpreting results.

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

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

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

Matrix: **SOIL**

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

Method / Container / Client Sample ID(s)	Sample Date	Extraction / Preparation			Analysis		
		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content (Dried @ 105-110°C)							
Soil Glass Jar - Unpreserved (EA055)							
GTP8-0.2	**13-Nov-2020**	**----**	----	----	**21-Nov-2020**	27-Nov-2020	✓
EG005(ED093)T: Total Metals by ICP-AES							
Soil Glass Jar - Unpreserved (EG005T)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	12-May-2021	✓	**23-Nov-2020**	12-May-2021	✓
EG035T: Total Recoverable Mercury by FIMS							
Soil Glass Jar - Unpreserved (EG035T)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	11-Dec-2020	✓	**23-Nov-2020**	11-Dec-2020	✓
EP066: Polychlorinated Biphenyls (PCB)							
Soil Glass Jar - Unpreserved (EP066)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**23-Nov-2020**	31-Dec-2020	✓
EP068A: Organochlorine Pesticides (OC)							
Soil Glass Jar - Unpreserved (EP068)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**23-Nov-2020**	31-Dec-2020	✓
EP068B: Organophosphorus Pesticides (OP)							
Soil Glass Jar - Unpreserved (EP068)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**23-Nov-2020**	31-Dec-2020	✓
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Soil Glass Jar - Unpreserved (EP075(SIM))							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**22-Nov-2020**	31-Dec-2020	✓
EP080/071: Total Petroleum Hydrocarbons							
Soil Glass Jar - Unpreserved (EP080)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**21-Nov-2020**	27-Nov-2020	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 Fractions							
Soil Glass Jar - Unpreserved (EP080)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**21-Nov-2020**	27-Nov-2020	✓
EP080: BTEXN							
Soil Glass Jar - Unpreserved (EP080)							
GTP8-0.2	**13-Nov-2020**	**21-Nov-2020**	27-Nov-2020	✓	**21-Nov-2020**	27-Nov-2020	✓

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: **SOIL**

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)							
Moisture Content	EA055	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	2	12	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	2	14	**14.29**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**10.00**	✓	NEPM 2013 B3 & ALS QC Standard
Laboratory Control Samples (LCS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Method Blanks (MB)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Matrix Spikes (MS)							
PAH/Phenols (SIM)	EP075(SIM)	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Pesticides by GCMS	EP068	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Polychlorinated Biphenyls (PCB)	EP066	1	5	**20.00**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Mercury by FIMS	EG035T	1	12	**8.33**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
Total Metals by ICP-AES	EG005T	1	14	**7.14**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH - Semivolatile Fraction	EP071	1	6	**16.67**	**5.00**	✓	NEPM 2013 B3 & ALS QC Standard
TRH Volatiles/BTEX	EP080	1	5	**20.00**	**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
Moisture Content	EA055	SOIL	In house: A gravimetric procedure based on weight loss over a 12 hour drying period at 105-110 degrees C. This method is compliant with NEPM Schedule B(3).
Total Metals by ICP-AES	EG005T	SOIL	In house: Referenced to APHA 3120; USEPA SW 846 - 6010. Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	In house: Referenced to AS 3550, APHA 3112 Hg - B (Flow-injection (SnCl2) (Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl2 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)
Polychlorinated Biphenyls (PCB)	EP066	SOIL	In house: Referenced to USEPA SW 846 - 8270 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).
Pesticides by GCMS	EP068	SOIL	In house: Referenced to USEPA SW 846 - 8270 Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM Schedule B(3).
TRH - Semivolatile Fraction	EP071	SOIL	In house: Referenced to USEPA SW 846 - 8015 Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C40. Compliant with NEPM Schedule B(3).
PAH/Phenols (SIM)	EP075(SIM)	SOIL	In house: Referenced to USEPA SW 846 - 8270. Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM Schedule B(3)
TRH Volatiles/BTEX	EP080	SOIL	In house: Referenced to USEPA SW 846 - 8260. Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. Compliant with NEPM Schedule B(3) amended.

Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	In house: Referenced to USEPA 200.2. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM Schedule B(3).
Methanolic Extraction of Soils for Purge and Trap	ORG16	SOIL	In house: Referenced to USEPA SW 846 - 5030A. 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids	ORG17	SOIL	In house: Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 30mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.

S129, 132

Fadi Soro

Fadi [signature]
20/11/20
2:59pm

From:	Shane Ellis
Sent:	Friday, 20 November 2020 2:29 PM
To:	Wael Saleh; Fadi Soro
Cc:	Samples Sydney
Subject:	ES2040519 - Rebatch Fast TAT

Hi Wael,

(1)

Can you please organise for sample #9 of ES2040519 to be rebatched for S16 analysis on a fast TAT (reporting Monday)?

Regards,

Shane Ellis
Client Services Officer, Environmental

ALS

T +61 2 8784 8555 F +61 2 8784 8500
D +61 2 8784 8509
shane.ellis@alsglobal.com
277-289 Woodpark Road
Smithfield NSW 2164 AUSTRALIA

1. GTP8-0.2 13/11/20

TAT

Environmental Division
Sydney
Work Order Reference
ES2041256

Telephone : + 61-2-8784 8555

From: Natalie Eldridge [mailto:neldridge@eesigroup.com]
Sent: Friday, 20 November 2020 2:00 PM
To: Shane Ellis <shane.ellis@ALSGlobal.com>
Cc: Nina Potts <npotts@eesigroup.com>; Karin Azzam <kazzam@eesigroup.com>
Subject: [EXTERNAL] - FW: RESULTS & EDD for ALS Workorder : ES2040519 | Your Reference: 120110

Hi Shane,

Can we please have one of our samples which is on hold (GTP8_0.2) analysed for S-16.
Monday reporting would be ideal if possible. Otherwise Tuesday is good!

Happy Friday, thanks
Nat

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

Natalie Eldridge – Environmental Scientist
82-84 Dickson Ave Artarmon NSW 2064
P: +61 2 9922 1777
M: +61 418 133 761
neldridge@eesigroup.com
www.eesigroup.com

From: angel-no-reply@alsglobal.com
Sent: Thursday, 19 November 2020 6:55 PM
To: Natalie Eldridge <neldridge@eesigroup.com>
Subject: RESULTS & EDD for ALS Workorder : ES2040519 | Your Reference: 120110

Deliverables for ALS Workorder ES2040519

Project: 120110

Dear Natalie Eldridge,

Please find enclosed the following deliverables for **ES2040519**:

- ES2040519_0_COA.pdf
- ES2040519_0_ENMRG.CSV
- 120110.ESDAT_ES2040519_0.Chemistry2e.CSV
- 120110.ESDAT_ES2040519_0.Header.XML
- 120110.ESDAT_ES2040519_0.Sample2e.CSV
- ES2040519_0_QC.pdf
- ES2040519_0_QCI.pdf
- ES2040519_COC.pdf

Report Recipients

- Natalie Eldridge
  - ES2040519_0_COA.pdf (Email)
  - ES2040519_0_ENMRG.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Chemistry2e.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Header.XML (Email)
  - 120110.ESDAT_ES2040519_0.Sample2e.CSV (Email)
  - ES2040519_0_QC.pdf (Email)
  - ES2040519_0_QCI.pdf (Email)
  - ES2040519_COC.pdf (Email)
- KARIN AZZAM
  - ES2040519_0_COA.pdf (Email)
  - ES2040519_0_ENMRG.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Chemistry2e.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Header.XML (Email)
  - 120110.ESDAT_ES2040519_0.Sample2e.CSV (Email)
  - ES2040519_0_QC.pdf (Email)
  - ES2040519_0_QCI.pdf (Email)
  - ES2040519_COC.pdf (Email)
- NEENA POTTS
  - ES2040519_0_COA.pdf (Email)
  - ES2040519_0_ENMRG.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Chemistry2e.CSV (Email)
  - 120110.ESDAT_ES2040519_0.Header.XML (Email)
  - 120110.ESDAT_ES2040519_0.Sample2e.CSV (Email)
  - ES2040519_0_QC.pdf (Email)
  - ES2040519_0_QCI.pdf (Email)
  - ES2040519_COC.pdf (Email)

AUSTRALIAN SAFER ENVIRONMENT & TECHNOLOGY PTY LTD

ABN 36 088 095 112

Our ref : ASET89624 / 92804 / 1 - 5
Your ref : 120110 – Leppington
NATA Accreditation No: 14484

17 November 2020

Environmental & Earth Sciences
PO Box 380
North Sydney NSW 2059

Accredited for compliance with ISO/IEC 17025 - Testing.

Attn: Ms Nathalie Eldridge

Dear Natalie

Asbestos Identification
This report presents the results of five samples, forwarded by Environmental & Earth Sciences on 16 November 2020, for analysis for asbestos.

1.Introduction: Five samples forwarded were examined and analysed for the presence of asbestos.

2. Methods : The samples were examined under a Stereo Microscope and selected fibres were analysed by Polarized Light Microscopy in conjunction with Dispersion Staining method **(Australian Standard AS 4964 - 2004 and Safer Environment Method 1 as the supplementary work instruction) (Qualitative Analysis only).**

3. Results :

Sample No. 1. ASET89624 / 92804 / 1. GTP0_1.0.
Approx dimensions 8.0 cm x 8.0 cm x 2.0 cm
The sample consisted of a mixture of clayish sandy soil, char, sandstone, stones and plant matter.
No asbestos detected.

Sample No. 2. ASET89624 / 92804 / 2. GTP2_0.2.
Approx dimensions 8.0 cm x 8.0 cm x 2.2 cm
The sample consisted of a mixture of clayish sandy soil, stones, char, wood chips, pieces of glass, sandstone and plant matter.
No asbestos detected.

Sample No. 3. ASET89624 / 92804 / 3. GTP6_0.2.
Approx dimensions 8.0 cm x 8.0 cm x 2.1 cm
The sample consisted of a mixture of clayish sandy soil, char, wood chips, sandstone, stones and plant matter.
No asbestos detected.

Sample No. 4. ASET89624 / 92804 / 4. GTP7_0.1.
Approx dimensions 8.0 cm x 8.0 cm x 2.0 cm
The sample consisted of a mixture of clayish sandy soil, char, wood chips, sandstone, stones and plant matter.
No asbestos detected.

Sample No. 5. ASET89624 / 92804 / 5. GTP10_0.4.
Approx dimensions 8.0 cm x 8.0 cm x 2.2 cm
The sample consisted of a mixture of clayish sandy soil, char, wood chips, sandstone, stones and plant matter.
No asbestos detected.

Reported by,

Mahen De Silva. BSc, MSc, Grad Dip (Occ Hyg)
Occupational Hygienist / Approved Identifier.
Approved Signatory

Accredited for compliance with ISO/IEC 17025 - Testing.

The results contained in this report relate only to the sample/s submitted for testing. Australian Safer Environment & Technology accepts no responsibility for whether or not the submitted sample/s is/are representative. Results indicating "No asbestos detected" indicates a reporting limit specified in AS4964 -2004 which is 0.1g/ Kg (0.01%). Any amounts detected at assumed lower level than that would be reported, however those assumed lower levels may be treated as "No asbestos detected" as specified and recommended by A4964-2004. Trace / respirable level asbestos will be reported only when detected and trace analysis have been performed on each sample as required by AS4964-2004. When loose asbestos fibres/ fibre bundles are detected and reported that means they are larger handpicked fibres/ fibre bundles, and they do not represent respirable fibres. Dust/soil samples are always subjected to trace analysis except where the amounts involved are extremely minute and trace analysis is not possible to be carried out. When trace analysis is not performed on dust samples it will be indicated in the report that trace analysis has not been carried out due to the volume of the sample being extremely minute.

CHAIN OF CUSTODY - ANALYSIS REQUEST FORM

Job No: 120110 Laboratory: ASET

Project Manager: NE Sampler: NP KA Site Location: LEPPINGTON. Sheet: 1 of 1

No. of samples	Sample ID/ Depth	Anticipated Result (PID)/EC reading	Date sampled	Time sampled	Sample Matrix: Soil	Water	Sediment	Analysis Required: Asbestos +/-												Sample-specific instructions/ notes
																				ASET89624/92804/1-5
1	GTP0_1.0		13/11/20		X			X												
2	GTP2_0.2		↓		X			X												
3	GTP6_0.2				X			X												
4	GTP7_0.1				X			X												
5	GTP10_0.4				X			X												
	TOTAL																			

RECEIVED
16 NOV 2020
BY:

Turn Around *(circle)*: **NORMAL** / 3 DAYS / 48 HRS / 24 HRS *(confirm with lab in advance if quick turn-around is required)*

Comments/ Instructions:

Lab Quotation No. *(if applicable)*: neldridge@eesigroup.com

Send report to *(email address)*: npotts@eesigroup.com.

Cc: report to *(email address)*:

Cc: invoice to *(email address)*: accounts@eesigroup.com

	Name	Signature	Date	Time
Sent off Site/Office by:	Nina Potts		16/11/20	12:15pm
Receiving Lab:				
Receiving Lab:	ASET - Kmart		16/11/20	2.30pm

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED
Phone: (0x) xxxx xxxx
Fax: (0x) xxxxx xxxx
PO Box: PO Box xx City State Postcode
Email: eesXXX@eesigroup.com

ENVIRONMENTAL EARTH SCIENCES
CONTAMINATION RESOLVED

ATTACHMENT 5: STATISTICAL OUTPUT

UCL Statistics for lead - Area 4

User Selected Options

Date/Time of Computation	ProUCL 5.124/11/2020 4:01:20 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	13	Mean	50.6
Maximum	120	Median	43
SD	33.95	Std. Error of Mean	10.74
Coefficient of Variation	0.671	Skewness	0.977

Normal GOF Test

Shapiro Wilk Test Statistic	0.917	Shapiro Wilk GOF Test
5% Shapiro Wilk Critical Value	0.842	Data appear Normal at 5% Significance Level
Lilliefors Test Statistic	0.177	Lilliefors GOF Test
5% Lilliefors Critical Value	0.262	Data appear Normal at 5% Significance Level

Data appear Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	70.28	95% Adjusted-CLT UCL (Chen-1995)	71.81
		95% Modified-t UCL (Johnson-1978)	70.84

Gamma GOF Test

A-D Test Statistic	0.183	Anderson-Darling Gamma GOF Test
5% A-D Critical Value	0.734	Detected data appear Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.138	Kolmogorov-Smirnov Gamma GOF Test
5% K-S Critical Value	0.269	Detected data appear Gamma Distributed at 5% Significance Level

Detected data appear Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	2.486	k star (bias corrected MLE)	1.807
Theta hat (MLE)	20.35	Theta star (bias corrected MLE)	28
nu hat (MLE)	49.72	nu star (bias corrected)	36.14
MLE Mean (bias corrected)	50.6	MLE Sd (bias corrected)	37.64
		Approximate Chi Square Value (0.05)	23.38
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	21.61

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	78.21	95% Adjusted Gamma UCL (use when n<50)	84.61

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.974	Shapiro Wilk Lognormal GOF Test
5% Shapiro Wilk Critical Value	0.842	Data appear Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.125	Lilliefors Lognormal GOF Test
5% Lilliefors Critical Value	0.262	Data appear Lognormal at 5% Significance Level

Data appear Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	2.565	Mean of logged Data	3.71
Maximum of Logged Data	4.787	SD of logged Data	0.712

Assuming Lognormal Distribution

95% H-UCL	96.47	90% Chebyshev (MVUE) UCL	86.68
95% Chebyshev (MVUE) UCL	102.8	97.5% Chebyshev (MVUE) UCL	125.2
99% Chebyshev (MVUE) UCL	169.2		

Nonparametric Distribution Free UCL Statistics

Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	68.26	95% Jackknife UCL	70.28
95% Standard Bootstrap UCL	66.96	95% Bootstrap-t UCL	75.77
95% Hall's Bootstrap UCL	80.67	95% Percentile Bootstrap UCL	68.3
95% BCA Bootstrap UCL	69.8		
90% Chebyshev(Mean, Sd) UCL	82.81	95% Chebyshev(Mean, Sd) UCL	97.4
97.5% Chebyshev(Mean, Sd) UCL	117.7	99% Chebyshev(Mean, Sd) UCL	157.4

Suggested UCL to Use

95% Student's-t UCL **70.28**

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Lead in Areas 3, 5 and 6

User Selected Options	
Date/Time of Computation	ProUCL 5.126/11/2020 2:28:30 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C0

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	11
		Number of Missing Observations	0
Minimum	11	Mean	28.18
Maximum	57	Median	27
SD	13.6	Std. Error of Mean	4.101
Coefficient of Variation	0.483	Skewness	0.939

Normal GOF Test			
Shapiro Wilk Test Statistic	0.937	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Data appear Normal at 5% Significance Level	
Lilliefors Test Statistic	0.153	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Data appear Normal at 5% Significance Level	
Data appear Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	35.61	95% Adjusted-CLT UCL (Chen-1995)	36.17
		95% Modified-t UCL (Johnson-1978)	35.81

Gamma GOF Test			
A-D Test Statistic	0.147	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.732	Detected data appear Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.112	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.256	Detected data appear Gamma Distributed at 5% Significance Level	
Detected data appear Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	4.925	k star (bias corrected MLE)	3.642
Theta hat (MLE)	5.723	Theta star (bias corrected MLE)	7.738
nu hat (MLE)	108.3	nu star (bias corrected)	80.13
MLE Mean (bias corrected)	28.18	MLE Sd (bias corrected)	14.77
		Approximate Chi Square Value (0.05)	60.5
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	57.73

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	37.32	95% Adjusted Gamma UCL (use when n<50)	39.12

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.987	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.101	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.251	Data appear Lognormal at 5% Significance Level	
Data appear Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	2.398	Mean of logged Data	3.234
Maximum of Logged Data	4.043	SD of logged Data	0.486

Assuming Lognormal Distribution

95% H-UCL	39.79	90% Chebyshev (MVUE) UCL	40.88
95% Chebyshev (MVUE) UCL	46.62	97.5% Chebyshev (MVUE) UCL	54.57
99% Chebyshev (MVUE) UCL	70.2		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	34.93	95% Jackknife UCL	35.61
95% Standard Bootstrap UCL	34.78	95% Bootstrap-t UCL	37.59
95% Hall's Bootstrap UCL	41.55	95% Percentile Bootstrap UCL	35.09
95% BCA Bootstrap UCL	35.73		
90% Chebyshev(Mean, Sd) UCL	40.48	95% Chebyshev(Mean, Sd) UCL	46.06
97.5% Chebyshev(Mean, Sd) UCL	53.79	99% Chebyshev(Mean, Sd) UCL	68.98

Suggested UCL to Use
95% Student's-t UCL 35.61

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

UCL Statistics for Nickel in area 3 ,5 and 6

User Selected Options	
Date/Time of Computation	ProUCL 5.126/11/2020 2:33:23 PM
From File	WorkSheet.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

C1

General Statistics			
Total Number of Observations	11	Number of Distinct Observations	8
		Number of Missing Observations	0
Minimum	4	Mean	17.27
Maximum	70	Median	13
SD	18.27	Std. Error of Mean	5.509
Coefficient of Variation	1.058	Skewness	2.851

Normal GOF Test			
Shapiro Wilk Test Statistic	0.598	Shapiro Wilk GOF Test	
5% Shapiro Wilk Critical Value	0.85	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.389	Lilliefors GOF Test	
5% Lilliefors Critical Value	0.251	Data Not Normal at 5% Significance Level	
Data Not Normal at 5% Significance Level			

Assuming Normal Distribution			
95% Normal UCL		95% UCLs (Adjusted for Skewness)	
95% Student's-t UCL	27.26	95% Adjusted-CLT UCL (Chen-1995)	31.39
		95% Modified-t UCL (Johnson-1978)	28.05

Gamma GOF Test			
A-D Test Statistic	0.956	Anderson-Darling Gamma GOF Test	
5% A-D Critical Value	0.74	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.329	Kolmogorov-Smirnov Gamma GOF Test	
5% K-S Critical Value	0.259	Data Not Gamma Distributed at 5% Significance Level	
Data Not Gamma Distributed at 5% Significance Level			

Gamma Statistics			
k hat (MLE)	1.858	k star (bias corrected MLE)	1.412
Theta hat (MLE)	9.298	Theta star (bias corrected MLE)	12.24
nu hat (MLE)	40.87	nu star (bias corrected)	31.06
MLE Mean (bias corrected)	17.27	MLE Sd (bias corrected)	14.54
		Approximate Chi Square Value (0.05)	19.33
Adjusted Level of Significance	0.0278	Adjusted Chi Square Value	17.83

Assuming Gamma Distribution			
95% Approximate Gamma UCL (use when n>=50))	27.76	95% Adjusted Gamma UCL (use when n<50)	30.09

Lognormal GOF Test			
Shapiro Wilk Test Statistic	0.898	Shapiro Wilk Lognormal GOF Test	
5% Shapiro Wilk Critical Value	0.85	Data appear Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.273	Lilliefors Lognormal GOF Test	
5% Lilliefors Critical Value	0.251	Data Not Lognormal at 5% Significance Level	
Data appear Approximate Lognormal at 5% Significance Level			

Lognormal Statistics			
Minimum of Logged Data	1.386	Mean of logged Data	2.556
Maximum of Logged Data	4.248	SD of logged Data	0.723

Assuming Lognormal Distribution

95% H-UCL	29.68	90% Chebyshev (MVUE) UCL	27.33
95% Chebyshev (MVUE) UCL	32.34	97.5% Chebyshev (MVUE) UCL	39.29
99% Chebyshev (MVUE) UCL	52.95		

Nonparametric Distribution Free UCL Statistics
Data appear to follow a Discernible Distribution at 5% Significance Level

Nonparametric Distribution Free UCLs

95% CLT UCL	26.33	95% Jackknife UCL	27.26
95% Standard Bootstrap UCL	25.87	95% Bootstrap-t UCL	57.13
95% Hall's Bootstrap UCL	75.89	95% Percentile Bootstrap UCL	27.45
95% BCA Bootstrap UCL	31.55		
90% Chebyshev(Mean, Sd) UCL	33.8	95% Chebyshev(Mean, Sd) UCL	41.29
97.5% Chebyshev(Mean, Sd) UCL	51.68	99% Chebyshev(Mean, Sd) UCL	72.08

Suggested UCL to Use

95% H-UCL	29.68

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.
Recommendations are based upon data size, data distribution, and skewness.
These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).
However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

ProUCL computes and outputs H-statistic based UCLs for historical reasons only.
H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.
It is therefore recommended to avoid the use of H-statistic based 95% UCLs.
Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.