# DETAILED SITE INVESTIGATION REPORT

600 Macleay Valley Way South Kempsey, NSW 2400

Spectrum Retail Group Pty Ltd– April 2018





# **DOCUMENT CONTROL**

### **DETAILED SITE INVESTIGATION REPORT**

600 Macleay Valley Way, South Kempsey, NSW, 2400

#### **PREPARED FOR**

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# **EXECUTIVE SUMMARY**

Geo-Logix Pty Ltd (Geo-Logix) was engaged by Spectrum Retail Group Pty Ltd (Spectrum) to conduct a Detailed Site Investigation of the property located at 600 Macleay Valley Way, South Kempsey NSW. The objective of the DSI was to conduct an investigation to assess the presence or otherwise of contamination and determine the suitability of the site for redevelopment as a service station.

The site, located on the corner of Macleay Valley Way and West End Road, occupies an approximate area of 3.9 ha and currently operates as a metal scrap yard. The southern portion of the site is accessed via Macleay Valley Way and was used as the primary work area for the scrap yard. Numerous stockpiles of scrap metal, plastic, car bodies, ceramics and general waste including an electrical transformer were observed stored in this area. A number of small surficial oil stains were noted across the work area. A single sheet of corrugated asbestos cement sheeting was noted partially buried with leaf litter adjacent to the south-eastern boundary.

A number of structures were also located in the southeast portion of the site which included a large timber frame and metal clad shed which was used for the storage of machinery, car parts and other miscellaneous items. Other structures included vacant dilapidated dwellings constructed of brick or timber with metal cladding along the south-eastern site boundary. The dwellings appeared to be used to store various items and general waste.

A shipping container and small timber frame structures were observed to the north of the dwellings and were used to store machinery, car parts and other miscellaneous items. An asbestos cement sheeting fence runs along the eastern site boundary from the dwelling to the northeast corner of the site.

The central and north western portion of the site was largely cleared of undergrowth and was used to storage a number of car and truck bodies as well as for scrap metal and miscellaneous waste storage. A large area in the central western portion of the site was accessed via West End Road and was used to stockpile car and truck bodies, car parts, scrap metal, plastic wastes and white goods.

The northern portion of the site was vegetated with mature trees and undergrowth. Sporadic stockpiles of car bodies, batteries, machinery, metal and plastic waste stockpiles were observed throughout the area. In general, the site is unsealed with glass fragments, surficial oil staining, plastic and metal waste scattered across the ground surface.

To assess for potential soil contamination the site, the following systematic grid-based sampling plan was undertaken:

- Sampling at 50 locations (SS1 to SS50) on a 27 m spaced sampling grid. The sample frequency was sufficient to detect a circular contamination hotspot with a diameter of 31.86 m or greater at a 95 % statistical degree of certainty. The sampling grid met the minimum sampling standards for the site area (38,280 m<sup>2</sup>) as per NSW EPA (1995);
- At each location, shallow native soil samples (0-0.1 mbg) were collected for analysis of Total Recoverable Hydrocarbons (TRH); benzene, toluene, ethylbenzene and xylenes (BTEX), Polycyclic Aromatic Hydrocarbons (PAHs); and heavy metals. A deeper sample 0.2-0.3 mbg was also collected and placed on hold at the laboratory;
- Samples collected adjacent to existing site structures (A1 to A6) were analysed for asbestos concentrations; and
- Three surface soil samples (SS44, SS48 and SS50) in areas of oil staining were analysed for Polychlorinated Biphenyls (PCBs).



For the site to be considered suitable for the proposed service station development the following project decision rules were adopted:

- The 95% Upper Confidence Limit of COPC concentration data does not exceed the soil assessment criteria;
- No single sample result exceeds 250% of the soil COPC assessment criteria;
- The standard deviation of COPC analytical results is less than 50% of the soil assessment criteria; and
- No visible identification of asbestos containing material (ACM) in soil samples; and
- Friable Asbestos (FA) and Asbestos Fines (AF) do not exist in soil at concentrations in excess of the assessment criteria in soil samples analysed.

Results of the assessment identified the following non-conformances with the project decision rules:

- A number of surficial oil stains impacted by petroleum at concentrations that exceed commercial / industrial management limits and are considered an aesthetic issue. Remediation would comprise a simple surface scrape of visible staining and off-site disposal to licensed landfill; and
- A sheet of corrugated asbestos cement sheeting was observed partially buried in leaf litter near the southeast boundary. The asbestos cement sheet requires removal in accordance with appropriate asbestos regulations and controls.

Geo-Logix opinion is that the site can be made suitable for the proposed service station development subject to the following:

- Preparation of a Remedial Action Plan (RAP) detailing the remedial methodology and validation requirements for petroleum and asbestos impacted soils (Stage 3); and
- Remediation and validation of petroleum and asbestos impacted soils (Stage 4).



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# **1. INTRODUCTION**

Geo-Logix Pty Ltd (Geo-Logix) was engaged by Spectrum Retail Group Pty Ltd (Spectrum) to conduct a Detailed Site Investigation of the property located at 600 Macleay Valley Way, South Kempsey NSW (Figure 1). A Phase 1 Environmental Site Assessment (ESA) for the site, completed in January 2018 (Geo-Logix, 2018) identified a number of contaminating activities have occurred or are currently occurring onsite including:

- Operation of a metal recycling / salvage yard; and
- Hazardous building materials from on-site structures.

The objective of the DSI was to conduct an investigation to assess the presence or otherwise of contamination and determine the suitability of the site for redevelopment as a service station. The proposed development layout is presented in Attachment A.

# **2. SITE INFORMATION**

### 2.1 Site Identification

The investigation area comprises the following properties:

Street Address	Lot and Deposited Plan (DP)	Approximate Area (m <sup>2</sup> )
600 Macleay Valley Way	Lot 200 DP 1177619	38,280

### 2.2 Site Zoning

The site is zoned RU2 Rural Landscape.

### 2.3 Site Description

The following observations were made during fieldworks conducted by Geo-Logix on 27 and 28 March 2018. A photographic log is presented in Attachment B.

The site, located on the corner of Macleay Valley Way and West End Road, occupies an approximate area of 3.9 ha and currently operates as a metal scrap yard. The southern portion of the site is accessed via Macleay Valley Way and was used as the primary work area for the scrap yard. Numerous stockpiles of scrap metal, plastic, car bodies, ceramics and general waste including an electrical transformer were observed stored in this area. A number of small surficial oil stains were noted across the work area. A single sheet of corrugated ACM was noted partially buried with leaf litter adjacent to the south-eastern boundary.

A number of structures were also located in the southeast portion of the site which included a large timber frame and metal clad shed which was used for the storage of machinery, car parts and other miscellaneous items. Other structures included vacant dilapidated dwellings constructed of brick or timber with metal cladding along the southeastern site boundary. The dwellings appeared to be historically used to store various items and general waste.



A shipping container and small timber frame structures were observed to the north of the dwellings and were used to store machinery, car parts and other miscellaneous items. An asbestos cement sheet fence runs along the eastern site boundary from the dwelling to the northeast corner of the site.

The central and north western portion of the site was largely cleared of undergrowth and was used to storage a number of car and truck bodies as well as for scrap metal and miscellaneous waste storage. A large area in the central western portion of the site was accessed via West End Road and was used to stockpile car and truck bodies, car parts, scrap metal, plastic wastes and white goods.

The northern portion of the site was vegetated with mature trees and undergrowth. Sporadic stockpiles of car bodies, batteries, machinery, metal and plastic waste stockpiles were observed throughout the area. In general the site is unsealed with glass fragments, surficial oil staining, plastic and metal waste scattered across the ground surface. Notable site features observed during the inspection are provided in the table below and presented on Figure 2.

Site Feature	Description
1	Wooden frame shed with corrugated iron roof used to store maintenance equipment, scrap metal, car parts and other miscellaneous items
2	Brick masonry / corrugated iron dwelling with carport / garage
3	Corrugated iron demountable building with anthropogenic waste stored below consisting of plastic waste, scrap metal, maintenance parts timber and drums
4	Asbestos Containing Material (ACM) Fence
5	Wooden dwelling used to store plastic waste, scrap metal and machinery parts
6	Stockpile of scrap metal car and truck bodies / parts
7	Stockpile of plastic bags and hard plastic waste
8	Stockpile of Bromochlorodifluoromethane (BCF) fire extinguishers
9	Stockpiles of household whitegoods (washing machines, electric ovens and cooktops)
10	Stockpile of broken terracotta pipes
11	Large metal tanks, drums
12	Timber stockpile
13	Vegetation stockpile
14	Brick stockpile
15	Shipping container (unknown contents)
16	Concrete pipes
17	Garbage / recycling bins
18	Batteries
19	Electrical transformer
20	Scrap metal stockpile



### 2.4 Surrounding Land Use

At the time of the investigation, the surrounding land use comprised the following:

- North Rural residential properties;
- South Pacific Highway exit / Macleay Valley Way roundabout;
- East Macleay Valley Way with Pacific Highway beyond; and
- West West End Road with undeveloped bushland beyond.

### 2.5 Topography

The site slopes generally down to the central northern portion of the property towards an unnamed creek from an approximate elevation 52 m Australian Height Datum (AHD) to 37 m AHD.

#### 2.6 Surface Water

The nearest surface water is an unnamed creek in the northern portion of the site that drains towards a series of farm dams to the north.

### 2.7 Geology

Review of the NSW 1:250,000 Hastings Geological Map (Geological Survey of NSW, 1966) indicates the site is situated on Lower Permian Kempsey Beds characterised by mudstone, sandstone as well as conglomerate and pebbly sandstone.

### 2.8 Hydrogeology

It is expected that groundwater would follow the natural regional topography and generally flow north towards the Macleay River. Reference to the NSW Water Groundwater Works Report (NSW Government, 2018) indicates there are no registered groundwater bores within a 500 m radius of the site. The groundwater bore map is presented in Attachment C.

### **3. PREVIOUS ENVIRONMENTAL INVESTIGATIONS**

In January 2018, Geo-Logix completed a Phase 1 Environmental Site Assessment for the site (Geo-Logix, 2018). Review of historical information indicated the site has previously been used for a car wreckers / salvage yard, earthmoving and truck storage yard, metal recyclers and waste sorting and transfer station.

Potential sources of contamination included:

- Operation of a metal recycling / salvage yard; and
- Hazardous building materials from on-site structures.

It was concluded there is potential for land contamination at the site with further investigation required to assess the presence or otherwise of such contamination.



# **4. POTENTIAL SITE CONTAMINATION**

Based on the results of the Phase I ESA the following potential contamination issues were identified.

#### **Hazardous Building Materials**

Historical aerial imagery indicates numerous sheds exist on the site. Given the age of buildings, there is potential for land contamination arising from hazardous building materials including lead-based paint and asbestos from degradation of the structures.

#### Metal Recycling / Salvage Yard Operation

The site has operated as a car wreckers / scrap metal yard since the 1970s. Other uses including storage of plant and equipment. Potential exists for land contamination from heavy metals and fuels, oils and greases from metal recycling equipment and from recyclable material such as car and truck bodies. Contaminants of potential concern include:

- Total Recoverable Hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene and xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Heavy metals; and
- Polychlorinated Biphenyls (PCBs).

# **5. DATA QUALITY OBJECTIVES**

The objective of the investigation was to assess the site for contamination that may have originated from historical site activities to determine the suitability of the site for development as a service station.

To achieve the objective, Geo-Logix has adopted the seven step Data Quality Objective (DQO) process as described in AS 4482.1-2005 and NEPC (2013).

#### Step 1: State the problem.

The subject site may be contaminated as a result of previous and current land use.

#### Step 2: Identify the decision.

Contamination has not been identified in soil at concentrations above commercial / industrial land use standards and the site is considered suitable for the proposed service station development.

#### Step 3: Identify inputs into the decision.

- Identification of issues of potential environmental concern;
- Appropriate identification of COPCs;
- Systematic sampling of shallow soils across the site at a frequency consistent with the NSW EPA (1995) minimum sampling requirements;
- Visual inspection of systematic shallow soil samples for the presence of ACM;
- Appropriate quality assurance / control to enable an evaluation of the reliability of the analytical data; and



• Screening sample analytical results against appropriate assessment criteria for the intended land use (commercial / industrial).

#### Step 4: Define the boundaries of the site.

The project boundary is defined as the area within the site boundary (600 Macleay Valley Way, South Kempsey, NSW) to a vertical depth of 0.3 metres below grade (mbg).

#### Step 5: Develop a decision rule.

The results of the systematic soil sampling assessment must comply with the following decision rules:

- The 95% Upper Confidence Limit of COPC concentration data does not exceed the soil assessment criteria;
- No single sample exceeds 250% of the soil COPC assessment criteria; and
- The standard deviation of COPC analytical results is less than 50% of the soil assessment criteria.

Results must comply with the following decision rule regarding asbestos:

- ACM is not visually observed on the site surface or in the subsurface at soil sampling locations; and
- Friable Asbestos (FA) and Asbestos Fines (AF) do not exist in soil at concentrations in excess of the assessment criteria in soil samples analysed.

#### Step 6: Specify acceptable limits on decision errors.

The field sampling methodology, sample preservation techniques, and laboratory analytical procedures must be appropriate to provide confidence in data quality so any comparison against assessment criteria can be considered reliable. This is achieved by defining and comparing results against the Data Quality Indicators (DQIs).

#### Step 7: Optimise the design for obtaining data.

This is achieved by sampling plan design in consideration of the available site history information, area of investigation, contaminant behaviour in the environment, and likely spatial distribution of contamination.

# 6. INVESTIGATION METHODOLOGY

Geo-Logix conducted environmental investigation works at the site on 27 to 28 March 2018. The investigation methodology is detailed below.

#### 6.1 Sampling Analysis Plan

To assess for potential soil contamination the site, the following systematic grid based sampling plan was undertaken:

Sampling at 50 locations (SS1 to SS50) on a 27 m spaced sampling grid (Figure 3). The sample frequency was sufficient to detect a circular contamination hotspot with a diameter of 31.86 m or greater at a 95 % statistical degree of certainty. The sampling grid met the minimum sampling requirements for the site area (38,280 m<sup>2</sup>) as per NSW EPA (1995);



- At each location, shallow soil samples (0-0.1 mbg) were collected for analysis of TRH, BTEX, PAHs and heavy metals. A deeper sample 0.2-0.3 mbg was also collected and placed on hold at the laboratory;
- Samples collected adjacent to existing site structures (A1 to A6) were analysed for asbestos concentrations; and
- Three surface soil samples (SS44, SS48 and SS50) in areas of oil staining were analysed for Polychlorinated Biphenyls (PCBs).

### 6.2 Soil Sampling Methodology

Shallow soil samples SS1 to SS50 were collected using either a mattock or hand auger. Care was taken to ensure soil samples had not come into contact with the auger or mattock.

A shallow soil sample could only be retrieved from SS27 and SS28 due to refusal on hard ground, sample locations were moved and resampled as SS27A and SS28A.

Soil samples were placed in laboratory prepared containers, labelled and placed on ice in an esky for transport under chain of custody to a NATA accredited laboratory (Eurofins) for the analysis of the COPC.

Quality assurance procedures included the decontamination of the mattock / auger between sample locations in a Decon 90 / water solution and double rinsing in deionised water. Disposable nitrile gloves were used during sampling and changed between each sample location.

### 6.3 Quality Assurance / Quality Control

Quality control (QC) sampling was undertaken in general accordance with specifications outlined in AS4482.1, *Guide to Sampling and Investigation of Potentially Contaminated Soil.* Field QC samples were collected and included the following:

Sample Identification	Sample Type	Sample Matrix	Rate of Collection
DS1	Field duplicate of SS1/0.0-0.1	Soil	
TS1	Field triplicate of SS1/0.0-0.1	Soil	
DS2	Field duplicate of SS10/0.0-0.1	Soil	
TS2	Field triplicate of SS10/0.0-0.1	Soil	
DS3	Field duplicate of SS20/0.0-0.1	Soil	1 in 20 samples
TS3	Field triplicate of SS20/0.0-0.1	Soil	
DS4	Field duplicate of SS30/0.0-0.1	Soil	
TS4	Field triplicate of SS30/0.0-0.1	Soil	
DS5	Field duplicate of SS40/0.0-0.1	Soil	
TS5	Field triplicate of SS40/0.0-0.1	Soil	
R1	Field Rinsate	Soil	1 per day of sampling
R2	Field Rinsate	Soil	

Note – Rate of QC sample collection specified as 1 in 20 samples in AS4482.1



The laboratory internal QC procedures are consistent with NEPM policy on laboratory analysis of contaminated soils.

# **7. ASSESSMENT CRITERIA**

The primary reference for environmental site assessment in Australia is the Amended Assessment of Site Contamination (ASC) National Environmental Protection Measure (NEPM) 1999 (NEPC, 2013). This document includes soil and groundwater criteria for use in evaluating potential contamination risk to human health and the environment.

The application of these investigation levels and screening levels is subject to a range of limitations and their selection and use must be in the context of the conceptual site model (CSM) relating to the nature and distribution of impacts and potential exposure pathways. Each relevant guideline is discussed further below and the adopted screening criteria are presented in summary sample analytical tables attached to this report.

### 7.1 Soil Assessment Criteria

#### NEPM Health Investigation Levels (HILs) - Commercial / industrial D

HILs are risk based generic assessment criteria used for the assessment of potential risks to human health from chronic exposure to contaminants in soil. They are intentionally conservative and based on a reasonable worst-case scenario for generic land use settings including Residential (HILs A/B), Open Space/Recreational (HILs C) and commercial / industrial (HILs D).

HILs D are adopted as the primary screening criteria due to the proposed commercial development.

#### NEPM Health Screening Levels (HSLs) – Commercial / industrial D

HSLs are risk based generic assessment criteria used for the assessment of potential risks to human health from chronic inhalation exposure of petroleum vapours from petroleum contaminated soils (Vapour Risk). They are intentionally conservative and based on a reasonable worst-case scenario for generic soil types, contamination depth and land use settings including Residential (HSLs A/B), Open Space / Recreational (HSLs C) and Commercial / industrial (HSLs D).

HSLs D for sand geology and depths 0-<1 m are adopted based on the proposed land use and geology encountered.

#### **NEPM Management Limits – Commercial**

Management Limits for petroleum have been developed for prevention of explosive vapour accumulation, prevention of the formation of observable Light Non-aqueous Phase Liquids (LNAPL) and protection against effects on buried infrastructure.

Commercial management limits were adopted based on the proposed commercial development.

#### **NEPM Asbestos Criteria**

Asbestos assessment criteria are included in NEPM (1999) amendment. Those criteria apply to the assessment of known and suspected asbestos contamination in soil and address friable and non-friable forms of asbestos.

Commercial / Industrial D health screening levels were adopted on the basis of the proposed commercial development and comprise the following:



- 0.05% w/w for ACM;
- 0.001% w/w for FA/AF; and
- No visible asbestos in the top 0.1 m.

#### **Ecological Assessment**

Section 3 of Schedule B1 (NEPC, 2013) recommends a pragmatic, risk based approach to the application of Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) in commercial/industrial land use settings. In consideration of the above, ecological assessment of the site is not considered warranted as:

- There are no sensitive ecological receptors on or near the site e.g. watercourses, estuaries, National Parks; and
- Stressed vegetation was not observed across the site;
- The site is proposed to be developed as a service station with limited intrinsic ecological value. The majority of the site (>85%) will be concrete paved sealed.

# **8. INVESTIGATION RESULTS**

### 8.1 Site Geology

Shallow soils across the northern portion of the site generally comprised of clayey Sand. Shallow soils across the southern portion of site generally comprised of sandy Clay with a thin veneer of gravel. A lean clay was encountered from 0.2 mbg.

Anthropogenic material including plastic, metal, glass and sandstone gravels were encountered to a maximum depth of 0.3 mbg. Soil logs are presented in Attachment D

#### 8.2 Shallow Soil Analytical Results

Soil analytical results are summarised in Table 1 to Table 5. Laboratory reports are presented in Attachment E.

#### **TRH and BTEX**

TRH  $>C_{10}-C_{16}$  and  $>C_{16}-C_{34}$  fractions were detected at concentrations above management limits in shallow soil at sample locations SS34, SS44 and SS50 (Table 1).

TRH and BTEX were not detected at concentrations greater than laboratory reporting limits or the assessment criteria in all remaining soil samples analysed.

#### PAHs

Various PAHs were detected at concentrations above laboratory reporting limits but below the assessment criteria in shallow soil at sample locations SS17, SS26, SS34, SS47, SS48, SS50 and DS3.

PAHs were not detected at concentrations above laboratory reporting limits in all remaining samples analysed (Table 2).

#### Metals

Lead was detected at concentrations above HILs in shallow soil at sample location SS48.



Remaining heavy metals were variously detected at concentrations above the laboratory reporting limits and typical background concentrations but below the assessment criteria in all other soil samples analysed (Table 3).

#### PCBs

PCBs were not detected at concentrations above the assessment criteria in all soil samples analysed (Table 4).

#### Asbestos

Friable forms of asbestos were not detected in soil at concentrations above laboratory reporting limits in all samples analysed (Table 5).

### 8.3 QA/QC Results

Soil duplicate/triplicate results are within the adopted acceptance criteria of 30-50% (AS4482.1) relative percent difference (RPD) with the exception of the following:

- TRH >C<sub>16</sub>-C<sub>34</sub> in primary and duplicate / triplicate pair SS1/0.0-0.1 and DS1 / TS1;
- Arsenic in primary and triplicate pair SS1/0.0-0.1 and TS1;
- Cadmium, lead and zinc in primary and duplicate pair SS10/0.0-0.1 and DS2;
- Arsenic and cadmium in primary and triplicate pair SS10/0.0-0.1 and TS2;
- Nickel in primary and duplicate pair SS20/0.0-0.1 and DS3; and
- Arsenic, chromium, lead and nickel in primary and triplicate pair SS20/0.0-0.1.

RPD outliers are attributed to heterogeneity of the soils sampled.

COPC were not detected at concentrations above laboratory reporting limits in the rinsate samples collected from the hand auger / mattock indicating decontamination procedures were adequate to prevent cross contamination (Table 6 to Table 9).

Report #	Analysis Within Holding Time	Surrog Recove	ate ery	te Lab. Duplicate Lab Matrix ry RPD % Recovery		Lab. Control Sample	Lab Method Blank		
592301-S	$\checkmark$	Х		Х	Х	~	$\checkmark$		
592301-W	$\checkmark$	$\checkmark$		$\checkmark$		$\checkmark$	$\checkmark$	~	$\checkmark$
592301-AID	n/a	n/a		n/a	n/a	n/a	n/a		
592314-S	$\checkmark$	Х		~	~	~	~		
			$\checkmark$	= Pass X = Fail					
Quality Assurance Cri	teria		Qualit	Quality Control Criteria					
Holding Times			Accura	асу					
VOCs 14 days soil / wa	ater		Surrog	ate, matrix spike, cont	rol sample 70-130% a	and 30-130% for Phe	nols.		
SVOCs 7 days water, 1	4 days soil		Surrog	ate recovery 50-150%	and 20-130% for Phe	nols.			
Pesticides 7 days wate	er, 14 days soil		Precision						
Metals 6 months, Mer	cury 28 days		Method Blank Not detected						
			Duplic	ate - No limit (<10xLOF	R), 0-50% (10-20xLOR	), 0-200% (>20xLOR)			

A summary of Laboratory QA/QC data is presented on the following table.



#### 592301-S

Laboratory spike matrix recoveries exceeded the acceptance criteria of 70 - 130% for heavy metals chromium and nickel, however were accepted under internal laboratory criteria as an acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Laboratory duplicate RPD% exceeded the acceptance criteria of 70 – 130% for arsenic and acenaphthalene, however were accepted under the laboratory acceptance criteria.

Laboratory surrogate RPD% exceeded the acceptance criteria of 70 – 130% for PAH surrogate 2-Fluorobiphenyl and P-terphenyl-d14, BTEX surrogate 4-Bromoflourobenzene and PCB surrogate Dibutylchorendate. These surrogate non-conformances do not influence the outcome of the report as surrogate recoveries were detected at concentrations slightly outside of the adopted acceptance criteria.

#### 592314-S

Laboratory surrogate RPD % exceeded the acceptance criteria of 70 – 130% for BTEX surrogate 4bromoflourobenzene. This surrogate non-conformance does not influence the outcome of the report as surrogate recoveries were detected at concentrations slightly outside of the adopted acceptance criteria and BTEX were not detected.

Geo-Logix accepts the integrity of the analytical data.

### 9. DISCUSSION

#### 9.1 Petroleum in Soil

Petroleum hydrocarbons in the diesel and oil / grease range were detected at significantly elevated concentrations in three soil samples collected from the southern portion of the site (SS34, SS44 and SS50). The petroleum detections are associated with oil stains and are likely sourced from leaks from stored scrap vehicles and equipment. The oil stains are minor in extent and surficial.

Whilst these oil stains do not present a human health risk under the proposed development, they present an aesthetic issue and potential impact on structures and buried services. Removal of the oils stains would comprise a surface scrape of visually stained soil and offsite disposal of the material to licensed landfill.

#### 9.2 Heavy Metals in Soil

Lead was detected at concentrations above human health protection criteria (HILs D) in shallow soil sample location SS48. When considering potential for adverse health effects, concentrations of lead across the whole site need to be considered. The average concentrations of all heavy metals analysed were calculated in accordance with NEPM methodology using ProUCL statistical software. Results of statistical analysis are presented in the table below. Statistical output sheets are included in Attachment F.

Analyte	# Sample	# Sample Detections	HIL (mg/kg)	Min (mg/kg)	Max (mg/kg)	Mean	95% UCL	Standard Deviation
Arsenic	49	48	3000	2.5	36	10.41	12.1	6.605
Cadmium	49	23	900	0.5	7.3	2.052	1.385	1.815
Chromium (VI)	49	48	3600	5.4	88	22.84	28.05	19.07
Copper	49	39	240,000	5.2	190	49.9	54.81	46.84



Analyte	# Sample	# Sample Detections	HIL (mg/kg)	Min (mg/kg)	Max (mg/kg)	Mean	95% UCL	Standard Deviation
Lead	49	49	1500	5.6	1400	149.1	236.7	271.4
Mercury	49	2	730	0.1	0.3	0.2	0.129	0.141
Nickel	49	35	6000	5	120	23.19	25.97	27.41
Zinc	49	49	400,000	7.5	1400	299.2	633.6	365.4

The average lead concentration across the site was calculated at 149.1 mg/kg with a 95% UCL of 236.7 mg/kg and standard deviation of 365.4 mg/kg. As such the average site concentration meets the HIL for lead under commercial / industrial land use. The lead impact at sample location SS48 does not require remediation or management for the site to be considered suitable for the proposed commercial development.

### 9.3 Asbestos in Soil

Bonded asbestos was not observed at the site with the exception of the following:

- An asbestos fence along the eastern site boundary adjacent to Macleay Valley Way. The fence appeared to be in good condition; and
- A large sheet of corrugated ACM partially buried with leaf litter in the southeast portion of the site. The sheet appeared to be in moderate condition.

Analytical results did not detect FA / AF at concentrations in excess of laboratory reporting limits in the locations sampled.

# **10. CONCLUSIONS**

Results of the assessment identified the following non-conformances with the project decision rules:

- A number of surficial oil stains impacted by petroleum at concentrations that exceed management limits and are considered an aesthetic issue. Remediation would comprise a simple surface scrape of visible staining and off-site disposal; and
- A sheet of corrugated asbestos cement sheeting was observed partially buried in leaf litter to the north east of sample location SS34. The ACM requires removal in accordance with appropriate asbestos regulations and controls.

Geo-Logix opinion is that the site can be made suitable for the proposed service station development subject to the following:

- Preparation of a Remedial Action Plan (RAP) detailing the remedial methodology and validation requirements for petroleum and asbestos impacted soils (Stage 3); and
- Remediation and validation of petroleum and asbestos impacted soils (Stage 4).



### **11. LIMITATIONS**

This report should be read in full, and no executive summary, conclusion or other section of the report may be used or relied on in isolation, or taken as representative of the report as a whole. No responsibility is accepted by Geo-Logix, and any duty of care that may arise but for this statement is excluded, in relation to any use of any part of this report other than on this basis.

This report has been prepared for the sole benefit of and use by the Client. No other person may rely on the report for any purpose whatsoever except with Geo-Logix's express written consent. Any duty of care to third parties that would or may arise in respect of persons other than the Client, but for this statement, is excluded.

Geo-Logix owns the copyright in this report. No copies of this report are to be made or distributed by any person without express written consent to do so from Geo-Logix. If the Client provides a copy of this report to a third party, without Geo-Logix's consent, the Client indemnifies Geo-Logix against all loss, including without limitation consequential loss, damage and/or liability, howsoever arising, in connection with any use or reliance by a Third Party.

The works undertaken by Geo-Logix are based solely on the scope of works, as agreed by the Client (Scope of Works). No other investigations, sampling, monitoring works or reporting will be carried out other than as expressly provided in the Scope of Works. **A COPY OF THE SCOPE OF WORKS IS AVAILABLE ON REQUEST.** 

To the extent permitted by law, Geo-Logix makes no warranties or representations as to the:

- a. suitability of the Site for any specific use, or category of use, or
- b. potential statutory requirements for remediation, if any, of the Site,
- c. approvals, if any, that may be needed in respect of any use or category of use, or
- d. level of remediation, if any, that is warranted to render the Site suitable for any specific use, or category of use, or
- e. level of ongoing monitoring of Site conditions, if any, that is required in respect of any specific use, or category of use, or
- f. presence, extent or absence of any substance in, on or under the Site, other than as expressly stated in this report.

The conclusions stated in this report are based solely on the information, Scope of Works, analysis and data that are stated or expressly referred to in this report.

To the extent that the information and data relied upon to prepare this report has been conveyed to Geo-Logix by the Client or third parties orally or in the form of documents, Geo-Logix has assumed that the information and data are completely accurate and has not sought independently to verify the accuracy of the information or data. Geo-Logix assumes no responsibility or duty of care in respect of any errors or omissions in the information or data provided to it.

Without limiting the paragraph above, where laboratory tests have been carried out by others on Geo-Logix's behalf, the tests are reproduced in this report on the assumption that the tests are accurate. Geo-Logix has not sought independently to verify the accuracy of those tests and assumes no responsibility in respect of them.



Geo-Logix assumes no responsibility in respect of any changes in the condition of the Site which have occurred since the time when Geo-Logix gathered data and/or took samples from the Site on its site inspections dated **26 to 27 March 2018**.

Given the nature of asbestos, and the difficulties involved in identifying asbestos fibres, despite the exercise of all reasonable due care and diligence, thorough investigations may not always reveal its presence in either buildings or fill. Even if asbestos has been tested for and those tests' results do not reveal the presence of asbestos at those specific points of sampling, asbestos or asbestos containing materials may still be present at the Site, particularly if fill has been imported at any time, buildings constructed prior to 1980 have been demolished on the Site or materials from such buildings have been disposed of on the Site.

Where the Scope of Works does not include offsite investigations, Geo-Logix provides no warranty as to offsite conditions, including the extent if any to which substances in the Site may be emanating off site, and if so whether any adjoining sites have been or may be impacted by contamination originating from the Site.

Where the Scope of Works does not include the investigation, sampling, monitoring or other testing of groundwater in, on or under the Site, Geo-Logix provides no warranty or representation as to the quality of groundwater on the Site or the actual or potential migration of contamination in groundwater across or off the Site.

Subsurface site conditions are typically heterogeneous, and may change with time. Samples taken from different points on the Site may not enable inferences to be drawn about the condition of areas of the Site significantly removed from the sample points, or about the condition of any part of the Site whatsoever, in particular where the proposed inferences are to be drawn a long time after the date of the report.

Geo-Logix has prepared this report with the diligence, care and skill which a reasonable person would expect from a reputable environmental consultancy and in accordance with environmental regulatory authority and industry standards, guidelines and assessment criteria applicable as at the date of this report. Industry standards and environmental criteria change frequently, and may change at any time after the date of this report.



### **12. REFERENCES**

Australian Standard (2005) AS 4482.1-2005 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 1: Volatile and Semi-volatile compounds. Standards Australia.

Australian Standard (2005) AS 4482.2-1999 Guide to the investigation and sampling of sites with potentially contaminated soil. Part 2: Volatile substances. Standards Australia.

Geo-Logix (2018) Phase 1 Environmental Site Assessment 600 Macleay Valley Way, Kempsey NSW, Geo-Logix Pty Ltd Report Ref 1701138Rpt01FinalV01\_18Jan18.

Geological Survey of New South Wales (1966) Hastings 1:250,000 Geological Series, NSW Department of Mineral Resources, Sydney.

NEPC (1999) *Amended National Environmental Protection Measure (2013)*, National Environmental Protection Council.

NSW EPA (1995) *Contaminated Sites Sampling Design Guidelines*, NSW Environmental Protection Authority.

**FIGURES** 



#### Site Detail

- 1 Wooden frame shed with corrugated iron roof used to store maintenance equipment scrap metal, car parts and other miscellaneous items 2 Brick masonry / corrugated iron dwelling with carport / garage 3 Corrugated iron demountable building with anthropogenic waste stored below consisting of plastic waste, scrap metal, maintenance parts timber and drums Asbestos Containing Material (ACM) Fence 4 Wooden dwelling used to store plastic waste, scrap metal and machinery parts  $% \left( {{{\boldsymbol{x}}_{i}}} \right)$ 5 6 Stockpile of scrap metal car and truck bodies / parts Stockpile of plastic bags and hard plastic waste 7 Stockpile of Bromochlorodifluoromethane (BCF) fire extinguishers 8 9 Stockpiles of household whitegoods (washing machines, electric ovens and cooktops) 10 Stockpile of broken terracotta pipes 11 Large metal tanks, drums 12 Timber stockpile Vegetation stockpile 13 14 Brick stockpile Shipping container (unknown contents) 15 Concrete pipes 16 17 Garbage / recycling bins 18 Batteries
- 19 Electrical transformer20 Scrap metal stockpile

Contraction (6)

Fenceline

Site boundary



Key

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ACM Sheeting

Macleay Valley Way







**TABLES** 



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS1/0.0-0.1	DS1	RPD_DS1	TS1	RPD_TS1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	-	0.0-0.1	-
	Limits	Sand	Туре	Sand	Sand	-	Sand	-
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	-	27-Mar-18	-
TRH C6-C10	700	-		< 20	< 20	пс	< 20	nc
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	пс	< 20	nc
TRH >C10-C16	1,000	-		< 50	< 50	пс	84	nc
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	пс	84	nc
TRH >C16-C34	3,500	-		320	700	75%	580	58%
TRH >C34-C40	10,000	-		< 100	170	пс	180	nc
Benzene	-	3		< 0.1	< 0.1	пс	< 0.1	nc
Toluene	-	NL		< 0.1	< 0.1	пс	< 0.1	nc
Ethylbenzene	-	NL		< 0.1	< 0.1	пс	< 0.1	nc
m&p-Xylenes	-	-		< 0.2	< 0.2	пс	< 0.2	nc
o-Xylene	-	-		< 0.1	< 0.1	пс	< 0.1	NC
Xylenes - Total	-	230		< 0.3	< 0.3	пс	< 0.3	nc
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	пс	< 0.5	nc

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS2/0.0-0.1	SS3/0.0-0.1	SS4/0.0-0.1	SS5/0.0-0.1	SS6/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Sand	Sand	Sand	Sand	Sand
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
TRH C <b>6-C</b> 10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		170	200	< 50	87	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		170	200	< 50	87	< 50
TRH >C16-C34	3,500	-		770	1,300	230	610	100
TRH >C34-C40	10,000			300	500	< 100	290	< 100
Denzone		0		0.1	0.1	0.1	0.1	0.1
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
loluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)		NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS7/0.0-0.1	SS8/0.0-0.1	SS9/0.0-0.1	SS10/0.0-0.1	DS2
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Sand	Sand	Sand	Sand	Sand
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
TRH C6-C10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		< 50	< 50	< 50	61	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	< 50	61	< 50
TRH >C16-C34	3,500	-		190	< 100	< 100	340	500
TRH >C34-C40	10,000	-		< 100	< 100	< 100	120	170
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	TS2	RPD_TS2	SS11/0.0-0.1	SS12/0.0-0.1
	Management	HSLs - D	Depth (m)	-	0.0-0.1	-	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	-	Sand	-	Sand	Sand
	Comm/Ind	0 to <1 m	Date	-	27-Mar-18	-	27-Mar-18	27-Mar-18
TRH C <b>6-C</b> 10	700	-		пс	< 20	пс	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		ПС	< 20	nc	< 20	< 20
TRH >C10-C16	1,000	-		пс	83	31%	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		пс	83	31%	< 50	< 50
TRH >C16-C34	3,500	-		38%	440	26%	< 100	130
TRH >C34-C40	10,000	-		34%	160	29%	< 100	< 100
Benzene	-	3		ПС	< 0.1	NC	< 0.1	< 0.1
Toluene	-	NL		пс	< 0.1	nc	< 0.1	< 0.1
Ethylbenzene	-	NL		пс	< 0.1	nc	< 0.1	< 0.1
m&p-Xylenes	-	-		пс	< 0.2	NC	< 0.2	< 0.2
o-Xylene	-	-		ПС	< 0.1	NC	< 0.1	< 0.1
Xylenes - Total	-	230		ПС	< 0.3	NC	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		пс	< 0.5	nc	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS13/0.0-0.1	SS14/0.0-0.1	SS15/0.0-0.1	SS16/0.0-0.1	SS17/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Sand	Sand	Sand	Sand	Sand
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
TRH C <b>6-C</b> 10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		86	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		86	< 50	< 50	< 50	< 50
TRH >C16-C34	3,500	-		1,200	< 100	260	< 100	320
TRH >C34-C40	10,000	-		430	< 100	< 100	< 100	< 100
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	_	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS18/0.0-0.1	SS19/0.0-0.1	SS20/0.0-0.1	DS3	RPD_DS3
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	-
	Limits	Sand	Туре	Sand	Sand	Sand	Sand	-
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	-
TRH C <b>6-C</b> 10	700	-		< 20	< 20	< 20	< 20	nc
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	nc
TRH >C10-C16	1,000	-		65	< 50	130	90	36%
TRH >C10-C16 less Naphthalene (F2)	-	NL		65	< 50	130	90	36%
TRH >C16-C34	3,500	-		300	< 100	1,300	970	29%
TRH >C34-C40	10,000	-		110	< 100	530	410	26%
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	пс
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	nc
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	nc
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	nc
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	nc
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	nc
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	nc

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

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-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	TS3	RPD_TS3	SS21/0.0-0.1	SS22/0.0-0.1	SS23/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	-	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Sand	-	Sand	Sand	Fill
	Comm/Ind	0 to <1 m	Date	27-Mar-18	-	27-Mar-18	27-Mar-18	27-Mar-18
TRH C <b>6-C</b> 10	700	-		< 20	NC	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	nc	< 20	< 20	< 20
TRH >C10-C16	1,000	-		140	7%	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		140	7%	< 50	< 50	< 50
TRH >C16-C34	3,500	-		800	48%	250	160	130
TRH >C <sub>34</sub> -C <sub>40</sub>	10,000	-		400	28%	140	< 100	< 100
Benzene	-	3		< 0.1	пс	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	пс	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	пс	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	nc	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	NC	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	NC	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	пс	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS24/0.0-0.1	SS25/0.0-0.1	SS26/0.0-0.1	SS27/0.0-0.1	SS27A/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Fill	Fill	Fill	Fill	Fill
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
TRH C <b>6-C</b> 10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		< 50	< 50	64	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	64	< 50	< 50
TRH >C16-C34	3,500	-		< 100	< 100	430	1,000	120
TRH >C34-C40	10,000	-		< 100	< 100	< 100	280	< 100
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS28/0.0-0.1	SS28A/0.0-0.1	SS29/0.0-0.1	SS30/0.0-0.1	SS31/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Fill	Fill	Sand	Fill	Sand
	Comm/Ind	0 to <1 m	Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
TRH C <b>6-C</b> 10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		< 50	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	< 50	< 50	< 50
TRH >C16-C34	3,500	-		820	< 100	< 100	< 100	210
TRH >C34-C40	10,000	-		340	< 100	< 100	< 100	< 100
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS32/0.0-0.1	SS33/0.0-0.1	SS34/0.0-0.1	SS35/0.0-0.1	SS36/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Sand	Fill	Fill	Fill	Fill
	Comm/Ind	0 to <1 m	Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
TRH C6-C10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		< 50	52	2,700	190	100
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	52	2,700	190	100
TRH >C16-C34	3,500	-		320	450	6,800	1,900	570
TRH >C34-C40	10,000	-		180	120	210	520	140
Ponzono		2		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluopo	-	S NI		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylhonzono	-			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	-	INL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
o-Xylene		-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Xvlenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS37/0.0-0.1	SS38/0.0-0.1	SS39/0.0-0.1	SS40/0.0-0.1	SS41/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Fill	Fill	Fill	Fill	Fill
	Comm/Ind	0 to <1 m	Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
TRH C6-C10	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		82	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		82	< 50	< 50	< 50	< 50
TRH >C16-C34	3,500	-		630	130	130	400	370
TRH >C34-C40	10,000	-		230	< 100	< 100	160	270
Danzana		2		0.1	0.1	0.1	0.1	0.1
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
loluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed


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	Criteria 1	Criteria 2	Sample ID	SS42/0.0-0.1	SS43/0.0-0.1	SS44/0.0-0.1	SS45/0.0-0.1	SS46/0.0-0.1
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Limits	Sand	Туре	Fill	Fill	Fill	Fill	Fill
	Comm/Ind	0 to <1 m	Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
TRH C <b>6-C10</b>	700	-		< 20	< 20	< 20	< 20	< 20
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	1,000	-		< 50	< 50	8,300	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	8,300	< 50	< 50
TRH >C16-C34	3,500	-		880	230	110,000	280	760
TRH >C34-C40	10,000	-		140	< 100	340	< 100	170
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1 RPD = relative percent difference of duplicate/triplicate nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS47/0.0-0.1	SS48/0.0-0.1	SS49/0.0-0.1	SS50/0.0-0.1	
	Management	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	
	Limits	Sand	Туре	Fill	Fill	Fill	Fill	
	Comm/Ind	0 to <1 m	Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	
TRH C <sub>6</sub> -C <sub>10</sub>	700	-		< 20	< 20	< 20	< 20	
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	
TRH >C10-C16	1,000	-		< 50	< 50	< 50	1,500	
TRH >C10-C16 less Naphthalene (F2)	-	NL		< 50	< 50	< 50	1,500	
TRH >C16-C34	3,500	-		430	3,000	470	51,000	
TRH >C34-C40	10,000	-		120	510	< 100	1,500	
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	-	NL		< 0.1	< 0.1	< 0.1	< 0.1	
m&p-Xylenes	-	-		< 0.2	< 0.2	< 0.2	< 0.2	
o-Xylene	-	-		< 0.1	< 0.1	< 0.1	< 0.1	
Xylenes - Total	-	230		< 0.3	< 0.3	< 0.3	< 0.3	
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	< 0.5	< 0.5	

#### Notes:

Criteria 1 = NEPC (1999) Amended, Commercial/Industrial Management Limits for TPH fractions in soil, coarse material. Criteria 2 = NEPC (1999) Amended, 'D' Commercial/Industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1 RPD = relative percent difference of duplicate/triplicate nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS1/0.0-0.1	DS1	RPD_DS1	TS1	RPD_TS1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	-	0.0-0.1	-
	Sand	HILs - D	Туре	Sand	Sand	-	Sand	-
	0 to <1 m		Date	27-Mar-18	27-Mar-18	-	27-Mar-18	-
Acenaphthene	-	-		< 0.5	< 0.5	пс	< 0.5	NC
Acenaphthylene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Anthracene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Benz(a)anthracene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Benzo(a)pyrene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	nc	< 0.5	nc
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	пс	< 1	nc
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Chrysene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	пс	< 1	nc
Fluoranthene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Fluorene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	пс	< 1	nc
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	пс	< 0.5	nc
Phenanthrene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Pyrene	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0%	0.9	40%
Total PAH	-	4,000		< 0.5	< 0.5	пс	< 1	пс

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS2/0.0-0.1	SS3/0.0-0.1	SS4/0.0-0.1	SS5/0.0-0.1	SS6/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
	0 to <1 m		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS7/0.0-0.1	SS8/0.0-0.1	SS9/0.0-0.1	SS10/0.0-0.1	DS2
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
	0 to <1 m		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	RPD_DS2	TS2	RPD_TS2	SS11/0.0-0.1	SS12/0.0-0.1
	HSLs - D		Depth (m)	-	0.0-0.1	-	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	-	Sand	-	Sand	Sand
	0 to <1 m		Date	-	27-Mar-18	-	27-Mar-18	27-Mar-18
Acenaphthene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Acenaphthylene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Anthracene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Benz(a)anthracene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Benzo(a)pyrene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		пс	< 1	nc	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Chrysene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		пс	< 1	nc	< 0.5	< 0.5
Fluoranthene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Fluorene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		пс	< 1	nc	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		пс	< 0.5	nc	< 0.5	< 0.5
Phenanthrene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Pyrene	-	-		пс	< 0.5	nc	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0%	0.9	40%	0.6	0.6
Total PAH	-	4,000		пс	< 1	пс	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS13/0.0-0.1	SS14/0.0-0.1	SS15/0.0-0.1	SS16/0.0-0.1	SS17/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
	0 to <1 m		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.9
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.9
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.9
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	2.8

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS18/0.0-0.1	SS19/0.0-0.1	SS20/0.0-0.1	DS3	RPD_DS3
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	-
	Sand	HILs - D	Туре	Sand	Sand	Sand	Sand	-
	0 to <1 m		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	-
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	NC
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	NC
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	NC
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	0.5	nc
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	nc
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0%
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	0.5	пс

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	TS3	RPD_TS3	SS21/0.0-0.1	SS22/0.0-0.1	SS23/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	-	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Sand	-	Sand	Sand	Fill
	0 to <1 m		Date	27-Mar-18	-	27-Mar-18	27-Mar-18	27-Mar-18
Acenaphthene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 1	nc	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 1	nc	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 1	nc	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	nc	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.9	40%	0.6	0.6	0.6
Total PAH	-	4,000		< 1	пс	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS24/0.0-0.1	SS25/0.0-0.1	SS26/0.0-0.1	SS27/0.0-0.1	SS27A/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Fill	Fill	Fill	Fill	Fill
	0 to <1 m		Date	27-Mar-18	27-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	3.3	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	4.1	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	3.2	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	2.9	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	2.4	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	3.8	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	0.9	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	8	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	2.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	2.3	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	5.9	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	6.2	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	39.8	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS28/0.0-0.1	SS28A/0.0-0.1	SS29/0.0-0.1	SS30/0.0-0.1	SS31/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Fill	Fill	Sand	Fill	Sand
	0 to <1 m		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1 TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Criteria 2	Sample ID	SS32/0.0-0.1	SS33/0.0-0.1	SS34/0.0-0.1	SS35/0.0-0.1	SS36/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Sand	Fill	Fill	Fill	Fill
	0 to <1 m		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	1	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	1	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS37/0.0-0.1	SS38/0.0-0.1	SS39/0.0-0.1	SS40/0.0-0.1	SS41/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Fill	Fill	Fill	Fill	Fill
	0 to <1 m		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS42/0.0-0.1	SS43/0.0-0.1	SS44/0.0-0.1	SS45/0.0-0.1	SS46/0.0-0.1
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Sand	HILs - D	Туре	Fill	Fill	Fill	Fill	Fill
	0 to <1 m		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		0.6	0.6	0.6	0.6	0.6
Total PAH	-	4,000		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Criteria 2	Sample ID	SS47/0.0-0.1	SS48/0.0-0.1	SS49/0.0-0.1	SS50/0.0-0.1	
	HSLs - D		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	
	Sand	HILs - D	Туре	Fill	Fill	Fill	Fill	
	0 to <1 m		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	
Acenaphthene	-	-		< 0.5	< 0.5	< 0.5	< 0.5	
Acenaphthylene	-	-		< 0.5	1.8	< 0.5	< 0.5	
Anthracene	-	-		0.9	3.7	< 0.5	< 0.5	
Benz(a)anthracene	-	-		0.6	32	< 0.5	< 0.5	
Benzo(a)pyrene	-	-		< 0.5	16	< 0.5	< 0.5	
Benzo(b&j)fluoranthene	-	-		< 0.5	32	< 0.5	< 0.5	
Benzo(g.h.i)perylene	-	-		< 0.5	10	< 0.5	< 0.5	
Benzo(k)fluoranthene	-	-		< 0.5	25	< 0.5	< 0.5	
Chrysene	-	-		0.6	60	< 0.5	< 0.5	
Dibenz(a.h)anthracene	-	-		< 0.5	5.1	< 0.5	< 0.5	
Fluoranthene	-	-		0.8	40	< 0.5	< 0.5	
Fluorene	-	-		< 0.5	0.7	< 0.5	< 0.5	
Indeno(1.2.3-cd)pyrene	-	-		< 0.5	12	< 0.5	< 0.5	
Naphthalene (PAH method)	NL	-		< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	-	-		0.9	5.4	< 0.5	< 0.5	
Pyrene	-	-		0.7	49	< 0.5	0.9	
Benzo(a)pyrene TEQ	-	40		0.6	32	0.6	0.6	
Total PAH	-	4,000		4.5	292.7	< 0.5	0.9	

#### Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m. nc = RPD not calculated, one or both samples below laboratory reporting limit Criteria 2 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Sample ID	SS1/0.0-0.1	DS1	RPD_DS1	TS1	RPD_TS1
		Depth (m)	0.0-0.1	0.0-0.1	-	0.0-0.1	-
	HILS - D	Туре	Sand	Sand	-	Sand	-
		Date	27-Mar-18	27-Mar-18	-	27-Mar-18	-
Arsenic	3,000		5.2	4.7	10%	2.3	77%
Cadmium	900		< 0.4	< 0.4	nc	< 0.4	nc
Chromium	3,6001		5.8	< 5	nc	< 5	nc
Copper	240,000		< 5	< 5	пс	< 5	пс
Lead	1,500		9.1	7.7	17%	< 5	nc
Mercury	730		< 0.1	< 0.1	nc	< 0.1	пс
Nickel	6,000		< 5	< 5	nc	< 5	nc
Zinc	400,000		8.6	7.5	14%	< 5	nc

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1
- DS2 = duplicate of SS10/0.0-0.1
- TS2 = triplicate of SS10/0.0-0.1
- DS3 = duplicate of SS20/0.0-0.1
- TS3 = triplicate of SS20/0.0-0.1
- RPD = relative percent difference of duplicate/triplicate
- nc = RPD not calculated, one or both samples below laboratory reporting limit

- -- = sample not analysed
- Bold/red indicates exceedance of assessment criteria



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		1					
	Criteria 1	Sample ID	SS2/0.0-0.1	SS3/0.0-0.1	SS4/0.0-0.1	SS5/0.0-0.1	SS6/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Arsenic	3,000		< 2	2.5	7.5	7.6	7.6
Cadmium	900		< 0.4	< 0.4	< 0.4	0.7	< 0.4
Chromium	3,6001		< 5	5.9	10	9.2	8.3
Copper	240,000		< 5	< 5	< 5	14	< 5
Lead	1,500		5.6	9.8	15	33	15
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		< 5	< 5	5.2	6.3	< 5
Zinc	400,000		7.5	13	20	63	23

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1
- DS2 = duplicate of SS10/0.0-0.1
- TS2 = triplicate of SS10/0.0-0.1
- DS3 = duplicate of SS20/0.0-0.1
- TS3 = triplicate of SS20/0.0-0.1
- RPD = relative percent difference of duplicate/triplicate
- nc = RPD not calculated, one or both samples below laboratory reporting limit

- -- = sample not analysed
- Bold/red indicates exceedance of assessment criteria



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	Criteria 1	Sample ID	SS7/0.0-0.1	SS8/0.0-0.1	SS9/0.0-0.1	SS10/0.0-0.1	DS2
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Arsenic	3,000		10	7.4	21	13	12
Cadmium	900		< 0.4	< 0.4	< 0.4	4.4	2.5
Chromium	3,6001		11	11	24	27	43
Copper	240,000		7.8	8.8	< 5	48	73
Lead	1,500		200	120	24	290	1,000
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		6.3	6.2	6.7	33	33
Zinc	400,000		170	85	20	650	1,500

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1
- DS2 = duplicate of SS10/0.0-0.1
- TS2 = triplicate of SS10/0.0-0.1
- DS3 = duplicate of SS20/0.0-0.1
- TS3 = triplicate of SS20/0.0-0.1
- RPD = relative percent difference of duplicate/triplicate
- nc = RPD not calculated, one or both samples below laboratory reporting limit

- -- = sample not analysed
- Bold/red indicates exceedance of assessment criteria



## Table 3 : Summary of Soil Analytical Data - Heavy Metals Detailed Site Investigation

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	Criteria 1	Sample ID	RPD_DS2	TS2	RPD_TS2	SS11/0.0-0.1	SS12/0.0-0.1
		Depth (m)	-	0.0-0.1	-	0.0-0.1	0.0-0.1
	HILS - D	Туре	-	Sand	-	Sand	Sand
		Date	-	27-Mar-18	-	27-Mar-18	27-Mar-18
Arsenic	3,000		8%	7.4	55%	2.8	3
Cadmium	900		55%	0.9	132%	< 0.4	< 0.4
Chromium	3,6001		46%	27	0%	6.4	5.6
Copper	240,000		41%	65	30%	< 5	6.1
Lead	1,500		110%	180	47%	14	23
Mercury	730		пс	< 0.1	пс	< 0.1	< 0.1
Nickel	6,000		0%	26	24%	< 5	< 5
Zinc	400,000		79%	550	17%	39	74

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Sample ID	SS13/0.0-0.1	SS14/0.0-0.1	SS15/0.0-0.1	SS16/0.0-0.1	SS17/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Sand	Sand	Sand	Sand	Sand
		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18
Arsenic	3,000		3.2	5.2	6.8	8	36
Cadmium	900		< 0.4	0.8	< 0.4	< 0.4	1.4
Chromium	3,6001		5.4	7.5	7.4	8	30
Copper	240,000		< 5	5.2	< 5	5.8	83
Lead	1,500		9.5	15	15	17	150
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		< 5	7.4	< 5	< 5	18
Zinc	400,000		14	78	36	27	620

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1
- DS2 = duplicate of SS10/0.0-0.1
- TS2 = triplicate of SS10/0.0-0.1
- DS3 = duplicate of SS20/0.0-0.1
- TS3 = triplicate of SS20/0.0-0.1
- RPD = relative percent difference of duplicate/triplicate
- nc = RPD not calculated, one or both samples below laboratory reporting limit

- -- = sample not analysed
- Bold/red indicates exceedance of assessment criteria



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	Criteria 1	Sample ID	SS18/0.0-0.1	SS19/0.0-0.1	SS20/0.0-0.1	DS3	RPD_DS3
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	-
	HILS - D	Туре	Sand	Sand	Sand	Sand	-
		Date	27-Mar-18	27-Mar-18	27-Mar-18	27-Mar-18	-
Arsenic	3,000		8	9.3	7.6	7.7	1%
Cadmium	900		0.9	< 0.4	3.7	4.4	17%
Chromium	3,6001		25	14	24	25	4%
Copper	240,000		44	7.2	45	55	20%
Lead	1,500		59	18	120	76	45%
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	nc
Nickel	6,000		24	< 5	120	39	102%
Zinc	400,000		170	100	150	160	6%

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Sample ID	TS3	RPD_TS3	SS21/0.0-0.1	SS22/0.0-0.1	SS23/0.0-0.1
		Depth (m)	0.0-0.1	-	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Sand	-	Sand	Sand	Fill
		Date	27-Mar-18	-	27-Mar-18	27-Mar-18	27-Mar-18
Arsenic	3,000		3.3	79%	9	6.7	19
Cadmium	900		3.2	14%	< 0.4	< 0.4	0.7
Chromium	3,6001		10	82%	21	11	30
Copper	240,000		39	14%	8.5	39	48
Lead	1,500		31	118%	21	58	66
Mercury	730		0.1	nc	< 0.1	< 0.1	< 0.1
Nickel	6,000		27	127%	8.3	11	15
Zinc	400,000		110	31%	190	110	190

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



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	Criteria 1	Sample ID	SS24/0.0-0.1	SS25/0.0-0.1	SS26/0.0-0.1	SS27/0.0-0.1	SS27A/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Fill	Fill	Fill	Fill	Fill
		Date	27-Mar-18	27-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Arsenic	3,000		13	17	21	23	8.6
Cadmium	900		3.3	< 0.4	1.2	1	< 0.4
Chromium	3,6001		30	14	84	28	13
Copper	240,000		62	< 5	48	72	16
Lead	1,500		1,200	20	420	94	27
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		22	5	39	30	7.7
Zinc	400,000		1,300	31	1,200	370	75

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS28/0.0-0.1	SS28A/0.0-0.1	SS29/0.0-0.1	SS30/0.0-0.1	SS31/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Fill	Fill	Sand	Fill	Sand
		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Arsenic	3,000		13	10	20	8.4	8
Cadmium	900		2	< 0.4	< 0.4	< 0.4	0.9
Chromium	3,6001		70	18	28	32	15
Copper	240,000		140	5.9	6.7	8.2	58
Lead	1,500		410	19	57	25	41
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		120	< 5	< 5	5	6.5
Zinc	400,000		1,400	76	45	56	120

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS32/0.0-0.1	SS33/0.0-0.1	SS34/0.0-0.1	SS35/0.0-0.1	SS36/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Sand	Fill	Fill	Fill	Fill
		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Arsenic	3,000		4.6	6.1	8.3	6.6	13
Cadmium	900		< 0.4	0.5	0.8	1.3	1
Chromium	3,6001		22	19	16	14	53
Copper	240,000		13	77	47	71	57
Lead	1,500		48	46	560	97	200
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		13	27	11	14	22
Zinc	400,000		150	320	690	750	530

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

 $\ensuremath{^1\mbox{Guideline}}$  for Cromium (VI) used conservatively.

- DS1 = duplicate of SS1/0.0-0.1
- TS1 = triplicate of SS1/0.0-0.1
- DS2 = duplicate of SS10/0.0-0.1
- TS2 = triplicate of SS10/0.0-0.1
- DS3 = duplicate of SS20/0.0-0.1
- TS3 = triplicate of SS20/0.0-0.1
- RPD = relative percent difference of duplicate/triplicate
- nc = RPD not calculated, one or both samples below laboratory reporting limit

- -- = sample not analysed
- Bold/red indicates exceedance of assessment criteria



600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS37/0.0-0.1	SS38/0.0-0.1	SS39/0.0-0.1	SS40/0.0-0.1	SS41/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILs - D	Туре	Fill	Fill	Fill	Fill	Fill
		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Arsenic	3,000		6.5	12	19	8.8	4.5
Cadmium	900		1.5	0.5	< 0.4	1.4	< 0.4
Chromium	3,600 <sup>1</sup>		62	18	20	20	16
Copper	240,000		51	25	13	260	42
Lead	1,500		380	48	25	230	25
Mercury	730		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	6,000		22	8.7	< 5	11	6.7
Zinc	400,000		490	140	70	2,200	160

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

 $\ensuremath{^1\mbox{Guideline}}$  for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS42/0.0-0.1	SS43/0.0-0.1	SS44/0.0-0.1	SS45/0.0-0.1	SS46/0.0-0.1
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	HILS - D	Туре	Fill	Fill	Fill	Fill	Fill
		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18
Arsenic	3,000		5.6	19	11	6.6	5.3
Cadmium	900		< 0.4	9.5	5.8	7.3	1.5
Chromium	3,6001		15	210	36	19	13
Copper	240,000		62	510	120	120	70
Lead	1,500		61	1,200	140	190	230
Mercury	730		< 0.1	< 0.1	0.1	0.3	< 0.1
Nickel	6,000		8.8	240	45	28	15
Zinc	400,000		260	6,300	650	500	480

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

<sup>1</sup>Guideline for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS47/0.0-0.1	SS48/0.0-0.1	SS49/0.0-0.1	SS50/0.0-0.1	
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	
	HILs - D	Туре	Fill	Fill	Fill	Fill	
		Date	28-Mar-18	28-Mar-18	28-Mar-18	28-Mar-18	
Arsenic	3,000		11	14	22	9	
Cadmium	900		2.5	9.7	3.5	< 0.4	
Chromium	3,6001		30	76	88	16	
Copper	240,000		180	5,500	190	21	
Lead	1,500		210	2,000	1,400	24	
Mercury	730		< 0.1	0.4	< 0.1	< 0.1	
Nickel	6,000		27	70	61	< 5	
Zinc	400,000		780	1,300	1,100	61	

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants. Total concentrations in mg/kg - = assessment criteria not available

 $\ensuremath{^1\mbox{Guideline}}$  for Cromium (VI) used conservatively.

DS1 = duplicate of SS1/0.0-0.1

TS1 = triplicate of SS1/0.0-0.1

DS2 = duplicate of SS10/0.0-0.1

TS2 = triplicate of SS10/0.0-0.1

DS3 = duplicate of SS20/0.0-0.1

TS3 = triplicate of SS20/0.0-0.1

RPD = relative percent difference of duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls Detailed Site Investigation Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1	Sample ID	SS44/0.0-0.1	SS48/0.0-0.1	SS50/0.0-0.1	
		Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	
	HILs - D	Туре	FIII	Fill	Fill	
		Date	28-Mar-18	28-Mar-18	28-Mar-18	
Aroclor 1016	-		< 0.1	< 0.1	< 0.1	
Aroclor 1221			< 0.1	< 0.1	< 0.1	
Aroclor 1232			< 0.1	< 0.1	< 0.1	
Aroclor 1242			< 0.1	< 0.1	< 0.1	
Aroclor 1248	-		< 0.1	< 0.1	< 0.1	
Aroclor 1254	-		< 0.1	< 0.1	< 0.1	
Aroclor 1260	-		< 0.1	< 0.1	< 0.1	
Total PCBs	7		< 0.1	< 0.1	< 0.1	

#### Notes:

Criteria 1 = NEPC (1999) Amended, Health-based Investigation Levels for soil contaminants.

Total concentrations in mg/kg

- = assessment criteria not available

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Table 5 : Summary of Soil Analytical Data - Asbestos

Detailed Site Inspection Project No.: 1801031

600 Macleay Valley Way South Kempsey, NSW

	Criteria 1	Sample ID	A1/0.0-0.1	A2/0.0-0.1	A3/0.0-0.1	A4/0.0-0.1	A5/0.0-0.1
	HSLs - D	Depth (m)	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1
	Asbestos	Туре	Fill	Fill	Fill	Fill	Fill
	in Soil	Date	28-03-18	28-03-18	28-03-18	28-03-18	28-03-18
Approximate Sample Mass (g)			438	415	421	244	474
Mass ACM (a)			ND	ND	ND	ND	ND
Mass Ashestos in ACM (g)			ND	ND	ND	ND	ND
Ashestos from ACM in Soil (%w/w)	- 0.05		ND	ND	ND	ND	ND
	0.00		ND	ND	ND	ND	ND
Mass FA (g)	-		ND	ND	ND	ND	ND
Mass Asbestos in FA (g)	-		ND	ND	ND	ND	ND
Mass AF (g)	-		ND	ND	ND	ND	ND
Mass Asbestos in AF (g)	-		ND	ND	ND	ND	ND
Mass Asbestos in FA & AF (g)	-		ND	ND	ND	ND	ND
Asbestos from FA&AF in Soil (%w/w)	0.001 (ND for 0-0.1 mbg)		ND	ND	ND	ND	ND

#### Notes:

Criteria 1 = NEPM (1999) Amended 'D' Commercial/industrial Health Screening Levels for asbestos contamination in soil.

Total concentrations in %w/w

- = assessment criteria not available

D1 = field duplicate of S1

RPD = relative percent difference of field duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

ND = no asbestos detected

-- = sample not analysed

Bold/red indicates exceedance of assessment criteria

\* A soil bulk density of 1.5 kg/L has been assumed

\*\*An ACM asbestos content of 15 % by weight has been assumed



### Table 5 : Summary of Soil Analytical Data - Asbestos

Detailed Site Inspection Project No.: 1801031

600 Macleay Valley Way South Kempsey, NSW

	Criteria 1	Sample ID A6/0 0-0 1
	HSI s - D	Denth (m) $0.0-0.1$
	Ashestos	Type Fill
	in Soil	Date 28-03-18
Approximate Sample Mass (g)		516
	-	
Mass ACM (g)	-	ND
Mass Asbestos in ACM (g)	-	ND
Asbestos from ACM in Soil (%w/w)	0.05	ND
Mass FA (g)	-	ND
Mass Asbestos in FA (g)	-	ND
Mass AF (g)	-	ND
Mass Asbestos in AF (g)	-	ND
Mass Asbestos in FA & AF (g)	-	ND
Asbestos from FA&AF in Soil (%w/w)	0.001 (ND for 0-0.1 mbg)	ND

Notes:

Criteria 1 = NEPM (1999) Amended 'D' Commercial/industrial Health Screening Levels for asbestos contamination in soil.

Total concentrations in %w/w

- = assessment criteria not available

D1 = field duplicate of S1

RPD = relative percent difference of field duplicate/triplicate

nc = RPD not calculated, one or both samples below laboratory reporting limit

ND = no asbestos detected

-- = sample not analysed

Bold/red indicates exceedance of assessment criteria

\* A soil bulk density of 1.5 kg/L has been assumed

\*\*An ACM asbestos content of 15 % by weight has been assumed



### Table 6 : Summary of QA/QC Analytical Data - Petroleum Hydrocarbons Detailed Site Investigation Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1				
		Sample ID	R1	R2	
		Туре	Water	Water	
		Date	27/03/2018	28/03/2018	
TRH C <b>6-C10</b>	-		< 20	< 20	
TRH C <sub>6</sub> -C <sub>10</sub> less BTEX (F1)	-		< 20	< 20	
TRH >C10-C16	-		< 50	< 50	
TRH >C10-C16 less Naphthalene (F2)	-		< 50	< 50	
TRH >C16-C34	-		< 100	< 100	
TRH >C34-C40	-		< 100	< 100	
Benzene	-		< 1	< 1	
Toluene	-		< 1	< 1	
Ethylbenzene	-		< 1	< 1	
m&p-Xylenes	-		< 2	< 2	
o-Xylene	-		< 1	< 1	
Xylenes - Total	-		< 3	< 3	
Naphthalene (MAH method)	-		< 10	< 10	

#### Notes:

Total concentrations in µg/L

- = assessment criteria not available

R1 = rinsate sample

R2 = rinsate sample

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



### Table 7 : Summary of QA/QC Analytical Data - Polyaromatic Hydrocarbons Detailed Site Investigation Project No.: 1801031

600 Macleay Valley Way South Kempsey NSW

	Criteria 1				
		Sample ID	R1	R2	
		Туре	Water	Water	
		Date	27/03/2018	28/03/2018	
Acenaphthene	-		< 1	< 1	
Acenaphthylene	-		< 1	< 1	
Anthracene	-		< 1	< 1	
Benz(a)anthracene	-		< 1	< 1	
Benzo(a)pyrene	-		< 1	< 1	
Benzo(b&j)fluoranthene	-		< 1	< 1	
Benzo(g.h.i)perylene	-		< 1	< 1	
Benzo(k)fluoranthene	-		< 1	< 1	
Chrysene	-		< 1	< 1	
Dibenz(a.h)anthracene	-		< 1	< 1	
Fluoranthene	-		< 1	< 1	
Fluorene	-		< 1	< 1	
Indeno(1.2.3-cd)pyrene	-		< 1	< 1	
Naphthalene (PAH method)	-		< 1	< 1	
Phenanthrene	-		< 1	< 1	
Pyrene	-		< 1	< 1	
Benzo(a)pyrene TEQ	-				
Total PAH	-		< 1	< 1	

#### Notes:

Total concentrations in µg/L

- = assessment criteria not available

R1 = rinsate sample

R2 = rinsate sample

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed



600 Macleay Valley Way South Kempsey NSW

	Criteria 1					
		Sample ID	R1	R2		
		Туре	Water	Water		
		Date	27/03/2018	28/03/2018		
Arsenic	-		< 1	< 1		
Cadmium	-		< 0.2	< 0.2		
Chromium	-		< 1	< 1		
Copper	-		< 1	< 1		
Lead	-		< 1	< 1		
Mercury	-		< 0.1	< 0.1		
Nickel	-		< 1	< 1		
Zinc	-		< 5	< 5		

#### Notes:

Total concentrations in µg/L

- = assessment criteria not available

R1 = rinsate sample

R2 = rinsate sample

< # or ND = analyte(s) not detected in excess of laboratory reporting limit

-- = sample not analysed

**ATTACHMENT A** 



# CLIENT SPECTRUM RETAIL GROUP

DATE	SCALE @ A1	NORTH	
OCT '17	1:500	L +	<u> </u>
DRAWN	CHECKED		
HJS	AB		
	NARY		F
PROJECT No.	DRAWING No.	REVISION No.	SHEET
17223	SK03	A	01 of 01

CONCEPT SITE PLAN

DRAWING TITLE

PROJECT PROPOSED HIGHWAY SERVICE CENTRE

2440

www.trg-aus.com The Retail Group Pty Ltd ABN 85 050 134 686 RBP No. DP-AD1689

Level 3, Suite 37, 799 Springvale Road, Mulgrave, Victoria 3170 Australia T: +61 3 9542 9300 F: +61 3 9542 9310

### concept + design + interiors + project management





REV	AMENDMENT DETAILS	BY	DATE
P1	PRELIMINARY ISSUE	тс	19-10-17
А	PRELIMINART ISSUE	IC.	23-10-17
**ATTACHMENT B** 

#### **DETAILED SITE INVESTIGATION REPORT**

600 Macleay Valley Way, South Kempsey NSW



Plate 1: Entrance to site, looking west towards dwellings.



Plate 3: Garage adjacent to the dwellings in the eastern portion of the site.



Plate 5: Oil staining within the large timber-frame shed



Plate 2: Stockpiles of waste adjacent to the ACM fence in the eastern portion of the site.



Plate 4: Large timber-frame shed located in the southern portion of the site.



Plate 6: Driveway and waste stockpile area in the southern portion of the site.



Plate 7: Stockpiles of scrap metal in the southern portion of the site.



Plate 9: Broken glass on the ground surface in the southern portion of site



Plate 11: Dilapidated dwellings in the southeast portion of the site.



Plate 8: Stockpiles of scrap metal in the southern portion of the site.



Plate 10: Oil staining on surface at sample location SS44.



Plate 12: Dilapidated dwellings in the southeast portion of the site.



Plate 13: View north adjacent to the dwellings.



Plate 15: Metal clad shed north of the dwellings.



Plate 17: Stockpiles of scrap metal, drums, plastic and other waste on the northern side of the dwellings demountable dwelling.



Plate 14: Stockpiles of waste materials to the west of the dwellings



Plate 16: Waste stockpiles to the north of the dwelling.



Plate 18: ACM along the eastern boundary of the site.



Plate 19: Car bodies / parts and other scrap metal scattered across the north eastern portion of site.



Plate 21: Maintenance shed on the central eastern boundary of site looking south east.



Plate 23: Scrap metal and car parts located in the eastern portion of the site.



Plate 20: Stockpiles of scrap metal and other waste in the central eastern boundary of site looking east.



Plate 22: Stockpiles of plastic, car parts and scrap metal in the central portion of the site.



Plate 24: Stockpile timber and anthropogenic waste in front on the eastern boundary of site.



Plate 25: Car bodies and car parts scattered across the north-western portion.



Plate 27: Waste material and oil staining at sample location SS26.





Plate 26: Cleared area of vegetation for soil sample collection.



Plate 28: View east from the central portion of the site.



Plate 29: Stockpile of fire extinguishers south of sample location SS3.



Plate 30: Looking towards the hardstand area from the eastern side of site



Plate 31: Stockpile of waste materials in the western portion of the site adjacent to West End Road.



Plate 33: Stockpiles of scrap metal and car parts in the north-western portion of site.



Plate 35: Car battery and scrap metal scattered in the north western portion of site.



Plate 32: Example of surface soil sampling.



Plate 34: Plastic stockpile in the north-eastern portion of site.



Plate 35: Corrugated ACM sheet partially buried in leaf litter to the north of sample location SS41.

**ATTACHMENT C** 

03/04/2018

Groundwater data



**ATTACHMENT D** 



Location	Depth	Description
551	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.
331	0.2-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 35% clay, 60% sand, 5% gravel, moist, loose, no odour.
SS2	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 30% clay, 65% sand, 10% gravel, damp, loose, no odour.
SS3	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 30% clay, 65% sand, 10% gravel, damp, loose, no odour.
SS4	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 30% clay, 65% sand, 10% gravel, damp, loose, no odour.
SS5	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR3/4), 40% clay, 60% sand, damp, loose, no odour.
SS6	0.0-0.35	Clayey Sand (SC) - greyish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour.
SS7	0.0-0.3	Clayey Sand (SC) - greyish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour.
SS8	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR3/4), 35% clay, 60% sand, 5% gravel, damp, loose, no odour.
022	0.0-0.15	Fill - moderate reddish orange (10R6/6), 20% clay, 70% sand, 10% gravel, damp, loose, no odour.
228	0.15-0.3	Sandy Clay (CL) - moderate brown (5YR4/4), 60% clay, 20% sand, 20% gravel, damp, soft, no odour.
SS10	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR4/4), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
SS11	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR4/4), 35% clay, 65% sand, 5% gravel, wet, loose, no odour.
6642	0.0-0.02	Fill - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.
5512	0.02-0.3	Sandy Clay (CL) - moderate brown (5YR4/4), 60% clay, 25% sand, 15% gravel, moist, soft, no odour.
664.9	0.0-0.1	Fill - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.SS13
5513	0.1-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 60% clay, 20% sand, 20% gravel, moist, soft, no odour.
	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour.
5514	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 20% sand, 20% gravel, moist, soft, no odour.
	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour.
\$\$15	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 40% sand, damp, soft, no odour.
SS16	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 20% clay, 60% sand, 20% gravel, wet, loose, no odour.
SS17	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 20% clay, 60% sand, 20% gravel, wet, loose, no odour.
SS18	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR4/4), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
SS19	0.0-0.3	Clayey Sand (SC) - greyish brown (5YR3/2), 30% clay, 60% sand, 10% gravel, damp, loose, no odour.
	0.0-0.15	Clayey Sand (SC) - moderate brown (5YR4/4), 80% clay, 60% sand, damp, loose, no odour.
5520	0.15-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 30% clay, 60% sand, 10% gravel, damp, soft, no odour.
SS21	0.0-0.3	Sandy Clay (CL) - moderate reddish brown (10R4/6), 60% clay, 30% sand, 10% gravel, damp, soft, no odour.
SS22	0.0-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 30% clay, 60% sand, 10% gravel, damp, loose, no odour.
SS23	0.0-0.3	Fill - pale brown (5YR5/2), 60% clay, 20% sand, 20% gravel, damp, soft, medium plasticity, no odour.
SS24	0.0-0.3	Fill - pale red (10R6/2), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
SS25	0.0-0.3	Fill - pale red (10R6/2), 60% clay, 20% sand, 20% gravel, damp, soft, low plasticity, no odour.
SS26	0.0-0.3	Fill - pale red (10R6/2), 60% clay, 20% sand, 20% gravel, damp, soft, low plasticity, no odour.
SS27	0.0-0.1	Fill - greyish orange pink (5YR7/2), 60% clay, 10% silt, 10% sand, 20% gravel, damp, firm, low plasticity, no odour.
SS27A	0.0-0.3	Fill - pale yellowish brown (10YR6/2), 50% clay, 30% sand, 20% gravel, damp, firm, low plasticity, no odour.
SS28	0.0-0.1	Fill - moderate brown (5YR4/4), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
	0.0-0.25	Fill - moderate brown (5YR4/4), 10% clay, 60% sand, 40% gravel, damp, loose, no odour.
SS28A	0.25-0.35	Sandy Clay (CL) - moderate brown (5YR3/4), 60% clay, 30% sand, 10% gravel, damp, soft, no odour.
SS29	0.0-0.3	Fill - moderate brown (5YR4/4), 30% clay, 50% sand, 20% gravel, damp, loose, no odour.
SS30	0.0-0.3	Fill - light brown (5YR5/6), 30% clay, 50% sand, 20% gravel, damp, loose, no odour.
SS31	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR4/4), 30% clay, 60% sand, 10% gravel, damp, loose, no odour.
SS32	0.0-0.3	Clayey Sand (SC) - moderate brown (5YR4/4), 30% clay, 60% sand, 10% gravel, damp, loose, no odour.
SS33	0.0-0.3	Fill - moderate brown (5YR3/4), 40% clay, 60% sand, damp, loose, no odour.



Location Depth Description 0.0-0.2 Fill - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour. SS34 0.2-0.35 Sandy Clay (CL) - moderate reddish brown (10R4/6), 55% clay, 45% sand, damp, soft, low plasticity, no odour. 0.0-0.3 SS35 Fill - greyish brown (5YR3/2), 10% clay, 10% sand, 80% gravel, damp, loose, no odour. Fill - greyish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour. 0.0-0.1 \$\$36 Sandy Clay (CL) - pale brown (5YR5/2), 70% clay, 30% sand, damp, soft, low plasticity, no odour. 0.1-0.3 0 0-0 1 Fill - grevish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour. SS37 0.1-0.3 Sandy Clay (CL) - pale brown (5YR5/2), 70% clay, 30% sand, damp, soft, low plasticity, no odour. 0.0-0.1 Fill - pale yellowish brown (10YR6/2), 40% clay, 60% gravel, damp, dense, medium plasticity, no odour. SS38 0.1-0.3 Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 40% sand, damp, soft, low plasticity, no odour. 0.0-0.15 Fill - pale yellowish brown (10YR6/2), 40% clay, 60% gravel, damp, dense, medium plasticity, no odour. SS39 0.15-0.3 Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 40% sand, damp, soft, low plasticity, no odour. 0 0-0 2 Fill - moderate brown (5YR3/4), 20% clay, 60% sand, 20% gravel, damp, loose, no odour. SS40 0.2-0.35 Sandy Clay (CL) - modrate yellowish brown (10YR5/4), 60% clay, 40% sand, damp, soft, medium plasticity, no odour. 0.0-0.1 Fill - moderate brown (5YR4/4), 20% sand, 80% gravel, damp, loose, no odour.SS41 SS41 0.1-0.3 Fill - moderate brown (5YR3/4), 10% clay, 10% sand, 80% gravel, damp, loose, no odour. 0.0-0.25 Fill - moderate brown (5YR4/4), 20% clay, 55% sand, 25% gravel, damp, loose, no odour. \$\$42 Lean Clav (CL) - light brown (5YR5/6), 80% clav, 20% sand, damp, firm, medium plasticity, no odour, 0.25-0.3 0.0-0.2 Fill - moderate brown (5YR3/4), 20% clay, 60% silt, 20% sand, 20% gravel, damp, loose, no odour. SS43 0.2-0.35 Sandy Clay (CL) - modrate yellowish brown (10YR5/4), 60% clay, 40% sand, damp, soft, low plasticity, no odour. SS44 Fill - dusky brown (5YR2/2), 60% clay, 30% sand, 10% gravel, damp, soft, medium plasticity, slight odour. 0.0-0.3 Fill - light brown (5YR5/6), 60% clay, 20% sand, 20% gravel, damp, soft, low plasticity, no odour. SS45 0.0-0.35 0.0-0.1 Fill - moderate brown (5YR4/4), 40% clay, 60% sand, moist, loose, no odour. SS46 Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, stiff, medium plasticity, no odour. 0 1-0 4 SS47 0.0-0.35 Fill - moderate brown (5YR4/4), 60% clay, 20% sand, 20% gravel, damp, soft, medium plasticity, no odour. 0.0-0.25 Fill - dusky brown (5YR2/2), 30% silt, 50% sand, 20% gravel, damp, loose, no odour. SS48 0.25-0.35 Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, firm, medium plasticity, no odour. Fill - dusky brown (5YR2/2), 20% clay, 60% sand, 20% gravel, damp, loose, no odour. 0.0-0.2 SS49 0.2-0.3 Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, soft, low plasticity, no odour. Fill - dusky brown (5YR2/2), 20% clay, 60% sand, 20% gravel, damp, loose, no odour. 0.0-0.2 SS50 0.2-0.3 Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, soft, low plasticity, no odour.

ATTACHMENT E





#### Certificate of Analysis

Geo-Logix P/L Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102





NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention:
Report
Project name
Project ID

**Received Date** 

**592301-S-V2** KEMPSEY 1801031 Mar 29, 2018

**Ben Pearce** 

Client Sample ID			SS1/0 0-0 1	SS2/0 0-0 1	SS3/0 0-0 1	SS4/0 0-0 1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofine I mat Sample No			M19 Ap02702	M19 Ap02702	M18 Ap02704	M19 Ap02705
Euronnis   mgt Sample No.			WITO-AP02702	W10-Ap02703	W	W10-Ap02705
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	98	180	31
TRH C15-C28	50	mg/kg	140	660	1000	170
TRH C29-C36	50	mg/kg	220	490	850	150
TRH C10-36 (Total)	50	mg/kg	360	1248	2030	351
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	74	89	80	72
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	170	200	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	170	200	< 50
TRH >C16-C34	100	mg/kg	320	770	1300	230
TRH >C34-C40	100	mg/kg	< 100	300	500	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID Sample Matrix			SS1/0.0-0.1 Soil	SS2/0.0-0.1 Soil	SS3/0.0-0.1 Soil	SS4/0.0-0.1 Soil
Eurofins   mgt Sample No.			M18-Ap02702	M18-Ap02703	M18-Ap02704	M18-Ap02705
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons		-1				
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	83	51	65	63
p-Terphenyl-d14 (surr.)	1	%	91	94	69	69
% Clay	1	%	7.3	-	-	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	33	-	-	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	6.7	-	-	-
% Moisture	1	%	35	38	33	29
Heavy Metals						
Arsenic	2	mg/kg	5.2	< 2	2.5	7.5
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.8	< 5	5.9	10
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	9.1	5.6	9.8	15
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5	< 5	5.2
Zinc	5	mg/kg	8.6	7.5	13	20
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	9.2	-	-	-

Client Sample ID Sample Matrix			SS5/0.0-0.1 Soil	SS6/0.0-0.1 Soil	SS7/0.0-0.1 Soil	SS8/0.0-0.1 Soil
Eurofins   mgt Sample No.			M18-Ap02706	M18-Ap02707	M18-Ap02708	M18-Ap02709
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	77	< 20	23	< 20
TRH C15-C28	50	mg/kg	410	71	140	62
TRH C29-C36	50	mg/kg	460	75	130	57
TRH C10-36 (Total)	50	mg/kg	947	146	293	119
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	68	75	83	63



Client Sample ID Sample Matrix			SS5/0.0-0.1 Soil	SS6/0.0-0.1 Soil	SS7/0.0-0.1 Soil	SS8/0.0-0.1 Soil
Furofins I mot Sample No.			M18-Ap02706	M18-Ap02707	M18-Ap02708	M18-Ap02709
Date Sampled			Mar 27 2018	Mar 27 2018	Mar 27 2018	Mar 27 2018
		Lloit	indi 27, 2010	indi 27, 2010	11111 27, 2010	indi 27, 2010
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions	Offic				
Nanhthalene <sup>N02</sup>	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	ma/ka	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (E1) <sup>N04</sup>	20	ma/ka	< 20	< 20	< 20	< 20
TRH >C10-C16	50	ma/ka	87	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	ma/ka	87	< 50	< 50	< 50
TRH >C16-C34	100	ma/ka	610	100	190	< 100
TRH >C34-C40	100	ma/ka	290	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	ma/ka	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	ma/ka	1.2	1.2	1.2	1.2
Acenaphthene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	82	65	72	103
p-Terphenyl-d14 (surr.)	1	%	85	65	80	119
		1				
% Moisture	1	%	25	14	22	24
Heavy Metals						
Arsenic	2	mg/kg	7.6	7.6	10	7.4
Cadmium	0.4	mg/kg	0.7	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	9.2	8.3	11	11
Copper	5	mg/kg	14	< 5	7.8	8.8
Lead	5	mg/kg	33	15	200	120
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.3	< 5	6.3	6.2
Zinc	5	mg/kg	63	23	170	85



Client Sample ID			SS9/0.0-0.1	SS10/0.0-0.1	SS11/0.0-0.1	SS12/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02710	M18-Ap02711	M18-Ap02712	M18-Ap02713
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27. 2018	Mar 27. 2018
	LOR	Unit	,	,	,	
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions	Offic				
TRH C6-C9	20	ma/ka	< 20	< 20	< 20	< 20
TRH C10-C14	20	ma/ka	< 20	62	< 20	< 20
TRH C15-C28	50	ma/ka	< 50	300	< 50	79
TRH C29-C36	50	ma/ka	< 50	200	< 50	77
TRH C10-36 (Total)	50	mg/kg	< 50	562	< 50	156
BTEX	1					
Benzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	65	66	74	68
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	61	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	61	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	340	< 100	130
TRH >C34-C40	100	mg/kg	< 100	120	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	80	68	61	73
p-Terphenyl-d14 (surr.)	1	%	83	74	68	84
% Moisture	1	%	15	26	27	33



Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SS9/0.0-0.1 Soil M18-Ap02710 Mar 27, 2018	SS10/0.0-0.1 Soil M18-Ap02711 Mar 27, 2018	SS11/0.0-0.1 Soil M18-Ap02712 Mar 27, 2018	SS12/0.0-0.1 Soil M18-Ap02713 Mar 27, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	21	13	2.8	3.0
Cadmium	0.4	mg/kg	< 0.4	4.4	< 0.4	< 0.4
Chromium	5	mg/kg	24	27	6.4	5.6
Copper	5	mg/kg	< 5	48	< 5	6.1
Lead	5	mg/kg	24	290	14	23
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	6.7	33	< 5	< 5
Zinc	5	mg/kg	20	650	39	74

Client Sample ID			SS13/0.0-0.1	SS14/0.0-0.1	SS15/0.0-0.1	SS16/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02714	M18-Ap02715	M18-Ap02716	M18-Ap02717
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	51	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	660	< 50	130	< 50
TRH C29-C36	50	mg/kg	760	< 50	180	< 50
TRH C10-36 (Total)	50	mg/kg	1471	< 50	310	< 50
втех						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	67	56	59	53
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	86	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	86	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	1200	< 100	260	< 100
TRH >C34-C40	100	mg/kg	430	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID Sample Matrix			SS13/0.0-0.1 Soil	SS14/0.0-0.1 Soil	SS15/0.0-0.1 Soil	SS16/0.0-0.1 Soil
Eurofins   mgt Sample No.			M18-Ap02714	M18-Ap02715	M18-Ap02716	M18-Ap02717
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	110	84	95	85
p-Terphenyl-d14 (surr.)	1	%	122	90	93	89
% Moisture	1	%	40	19	26	17
Heavy Metals						
Arsenic	2	mg/kg	3.2	5.2	6.8	8.0
Cadmium	0.4	mg/kg	< 0.4	0.8	< 0.4	< 0.4
Chromium	5	mg/kg	5.4	7.5	7.4	8.0
Copper	5	mg/kg	< 5	5.2	< 5	5.8
Lead	5	mg/kg	9.5	15	15	17
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	7.4	< 5	< 5
Zinc	5	mg/kg	14	78	36	27

Client Sample ID			SS17/0.0-0.1	SS18/0.0-0.1	SS19/0.0-0.1	SS20/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02718	M18-Ap02719	M18-Ap02720	M18-Ap02721
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	36	< 20	110
TRH C15-C28	50	mg/kg	200	240	< 50	930
TRH C29-C36	50	mg/kg	210	170	55	740
TRH C10-36 (Total)	50	mg/kg	410	446	55	1780
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	54	57	75	54
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	65	< 50	130
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	65	< 50	130



Client Sample ID			SS17/0.0-0.1	SS18/0.0-0.1	SS19/0.0-0.1	SS20/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02718	M18-Ap02719	M18-Ap02720	M18-Ap02721
Date Sampled			Mar 27, 2018	Mar 27. 2018	Mar 27. 2018	Mar 27. 2018
Test/Reference	LOR	Unit	,	,	,	,
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions	0				
TRH >C16-C34	100	ma/ka	320	300	< 100	1300
TRH >C34-C40	100	ma/ka	< 100	110	< 100	530
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.9	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.9	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	2.8	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	101	94	90	94
p-Terphenyl-d14 (surr.)	1	%	98	97	86	91
% Moisture	1	%	33	12	15	30
Heavy Metals						
Arsenic	2	mg/kg	36	8.0	9.3	7.6
Cadmium	0.4	mg/kg	1.4	0.9	< 0.4	3.7
Chromium	5	mg/kg	30	25	14	24
Copper	5	mg/kg	83	44	7.2	45
Lead	5	mg/kg	150	59	18	120
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	18	24	< 5	120
Zinc	5	mg/kg	620	170	100	150

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SS21/0.0-0.1 Soil M18-Ap02722 Mar 27, 2018	SS22/0.0-0.1 Soil M18-Ap02723 Mar 27, 2018	SS23/0.0-0.1 Soil M18-Ap02724 Mar 27, 2018	SS24/0.0-0.1 Soil M18-Ap02725 Mar 27, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions	<b>C</b> int				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	130	79	93	< 50
TRH C29-C36	50	mg/kg	190	110	99	< 50
TRH C10-36 (Total)	50	mg/kg	320	189	192	< 50



Client Sample ID			SS21/0.0-0.1	SS22/0.0-0.1	SS23/0.0-0.1	SS24/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02722	M18-Ap02723	M18-Ap02724	M18-Ap02725
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit		,	,	
BTEX	2011	0				
Benzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	56	54	62	61
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	250	160	130	< 100
TRH >C34-C40	100	mg/kg	140	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluorantnene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.n.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysone	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a b)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	96	96	99	95
p-Terphenyl-d14 (surr.)	1	%	87	102	94	89
% Moisture	1	%	23	28	16	25
Heavy Metals						
Arsenic	2	mg/kg	9.0	6.7	19	13
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.7	3.3
Chromium	5	mg/kg	21	11	30	30
Copper	5	mg/kg	8.5	39	48	62
Lead	5	mg/kg	21	58	66	1200
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	8.3	11	15	22
Zinc	5	mg/kg	190	110	190	1300



Client Sample ID			SS25/0.0-0.1	SS26/0.0-0.1	SS27/0.0-0.1	SS28/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02726	M18-Ap02727	M18-Ap02728	M18-Ap02729
Date Sampled			Mar 27, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
	LOR	Unit	,			
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions	Offic				
TRH C6-C9	20	ma/ka	< 20	< 20	< 20	< 20
TRH C10-C14	20	ma/ka	< 20	59	< 20	31
TRH C15-C28	50	ma/ka	< 50	390	780	490
TRH C29-C36	50	ma/ka	< 50	200	610	620
TRH C10-36 (Total)	50	ma/ka	< 50	649	1390	1141
BTEX	1					
Benzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	65	71	79	61
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	ma/ka	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	64	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	64	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	430	1000	820
TRH >C34-C40	100	mg/kg	< 100	< 100	280	340
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	6.2	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	6.2	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	6.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	3.3	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	4.1	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	3.2	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	2.9	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	2.4	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	3.8	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	8.0	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	2.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	2.3	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	5.9	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	39.8	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	91	93	102	97
p-Terphenyl-d14 (surr.)	1	%	83	82	88	87
% Moisture	1	%	11	14	4.4	18



Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SS25/0.0-0.1 Soil M18-Ap02726 Mar 27, 2018	SS26/0.0-0.1 Soil M18-Ap02727 Mar 28, 2018	SS27/0.0-0.1 Soil M18-Ap02728 Mar 28, 2018	SS28/0.0-0.1 Soil M18-Ap02729 Mar 28, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	17	21	23	13
Cadmium	0.4	mg/kg	< 0.4	1.2	1.0	2.0
Chromium	5	mg/kg	14	84	28	70
Copper	5	mg/kg	< 5	48	72	140
Lead	5	mg/kg	20	420	94	410
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	5.0	39	30	120
Zinc	5	mg/kg	31	1200	370	1400

Client Sample ID			SS29/0.0-0.1	SS30/0.0-0.1	SS31/0.0-0.1	SS32/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02730	M18-Ap02731	M18-Ap02732	M18-Ap02733
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	27	34
TRH C15-C28	50	mg/kg	< 50	57	140	230
TRH C29-C36	50	mg/kg	< 50	61	160	240
TRH C10-36 (Total)	50	mg/kg	< 50	118	327	504
втех						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	71	69	63	64
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	210	320
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	180
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			SS29/0.0-0.1	SS30/0.0-0.1	SS31/0.0-0.1	SS32/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02730	M18-Ap02731	M18-Ap02732	M18-Ap02733
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	102	87	103
p-Terphenyl-d14 (surr.)	1	%	84	91	76	83
% Clay	1	%	-	-	14	-
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	-	-	23	-
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	-	-	6.1	-
% Moisture	1	%	15	18	20	18
Heavy Metals						
Arsenic	2	mg/kg	20	8.4	8.0	4.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	0.9	< 0.4
Chromium	5	mg/kg	28	32	15	22
Copper	5	mg/kg	6.7	8.2	58	13
Lead	5	mg/kg	57	25	41	48
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	5.0	6.5	13
Zinc	5	mg/kg	45	56	120	150
Cation Exchange Capacity						
Cation Exchange Capacity	0.05	meq/100g	-	-	4.0	-

Client Sample ID			SS33/0.0-0.1	SS34/0.0-0.1	SS35/0.0-0.1	SS36/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02734	M18-Ap02735	M18-Ap02736	M18-Ap02737
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	36	660	160	83
TRH C15-C28	50	mg/kg	360	12000	1300	520
TRH C29-C36	50	mg/kg	220	400	1100	250
TRH C10-36 (Total)	50	mg/kg	616	13060	2560	853
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	65	74	63	50



Client Sample ID Sample Matrix			SS33/0.0-0.1	SS34/0.0-0.1	SS35/0.0-0.1	SS36/0.0-0.1
Eurofine I mat Sample No			M19 Ap02724	M19 Ap02725	M19 Ap02726	M19 Ap02727
Euronnis   mgt Sample No.			W16-Ap02734	W16-Ap02735	W16-Ap02736	Mar 00, 0010
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
IRH >C10-C16	50	mg/kg	52	2700	190	100
TRH >C10-C16 less Naphthalene (F2)	50	mg/kg	52	2700	190	100
TRH >C16-C34	100	mg/kg	450	6800	1900	570
1RH >C34-C40	100	mg/kg	120	210	520	140
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>NU</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
	0.5	mg/kg	< 0.5	1	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	//	100	96
p-lerphenyl-d14 (surr.)	1	%	87	89	113	100
% Moisture	1	%	19	28	45	29
Heavy Metals						
Arsenic	2	mg/kg	6.1	8.3	6.6	13
Cadmium	0.4	mg/kg	0.5	0.8	1.3	1.0
Chromium	5	mg/kg	19	16	14	53
Copper	5	mg/kg	77	47	71	57
Lead	5	mg/kg	46	560	97	200
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	27	11	14	22
Zinc	5	mg/kg	320	690	750	530



Client Sample ID			SS37/0.0-0.1	SS38/0.0-0.1	SS39/0.0-0.1	SS40/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02738	M18-Ap02739	M18-Ap02740	M18-Ap02741
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions	Offic				
TRH C6-C9	20	ma/ka	< 20	< 20	< 20	< 20
TRH C10-C14	20	ma/ka	39	< 20	< 20	30
TRH C15-C28	50	ma/ka	490	< 50	< 50	290
TRH C29-C36	50	ma/ka	350	100	100	260
TRH C10-36 (Total)	50	mg/kg	879	100	100	580
BTEX	1					
Benzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	54	63	64	51
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	82	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	82	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	630	130	130	400
TRH >C34-C40	100	mg/kg	230	< 100	< 100	160
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	102	93	102	86
p-Terphenyl-d14 (surr.)	1	%	91	88	87	72
% Moisture	1	%	28	18	21	26



Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SS37/0.0-0.1 Soil M18-Ap02738 Mar 28, 2018	SS38/0.0-0.1 Soil M18-Ap02739 Mar 28, 2018	SS39/0.0-0.1 Soil M18-Ap02740 Mar 28, 2018	SS40/0.0-0.1 Soil M18-Ap02741 Mar 28, 2018
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	6.5	12	19	8.8
Cadmium	0.4	mg/kg	1.5	0.5	< 0.4	1.4
Chromium	5	mg/kg	62	18	20	20
Copper	5	mg/kg	51	25	13	260
Lead	5	mg/kg	380	48	25	230
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	22	8.7	< 5	11
Zinc	5	mg/kg	490	140	70	2200

Client Sample ID			SS41/0.0-0.1	SS42/0.0-0.1	SS43/0.0-0.1	SS44/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02742	M18-Ap02743	M18-Ap02744	M18-Ap02745
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	230
TRH C15-C28	50	mg/kg	210	790	130	120000
TRH C29-C36	50	mg/kg	310	360	140	720
TRH C10-36 (Total)	50	mg/kg	520	1150	270	120950
втех						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	64	61	55	73
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	8300
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	8300
TRH >C16-C34	100	mg/kg	370	880	230	110000
TRH >C34-C40	100	mg/kg	270	140	< 100	340
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5



Client Sample ID			SS41/0.0-0.1	SS42/0.0-0.1	SS43/0.0-0.1	SS44/0.0-0.1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins   mgt Sample No.			M18-Ap02742	M18-Ap02743	M18-Ap02744	M18-Ap02745
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	108	94	87	int
p-Terphenyl-d14 (surr.)	1	%	98	83	99	62
Polychlorinated Biphenyls						
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1221	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1232	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1248	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1254	0.1	mg/kg	-	-	-	< 0.1
Aroclor-1260	0.1	mg/kg	-	-	-	< 0.1
Total PCB*	0.1	mg/kg	-	-	-	< 0.1
Dibutylchlorendate (surr.)	1	%	-	-	-	150
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	77
% Moisture	1	%	13	5.8	33	21
Heavy Metals						
Arsenic	2	mg/kg	4.5	5.6	19	11
Cadmium	0.4	mg/kg	< 0.4	< 0.4	9.5	5.8
Chromium	5	mg/kg	16	15	210	36
Copper	5	mg/kg	42	62	510	120
Lead	5	mg/kg	25	61	1200	140
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	6.7	8.8	240	45
Zinc	5	mg/kg	160	260	6300	650

Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SS45/0.0-0.1 Soil M18-Ap02746 Mar 28, 2018	SS46/0.0-0.1 Soil M18-Ap02747 Mar 28, 2018	SS47/0.0-0.1 Soil M18-Ap02748 Mar 28, 2018	SS48/0.0-0.1 Soil M18-Ap02749 Mar 28, 2018
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	32	< 20	28
TRH C15-C28	50	mg/kg	160	340	220	1900
TRH C29-C36	50	mg/kg	140	490	270	1300
TRH C10-36 (Total)	50	mg/kg	300	862	490	3228



Client Sample ID	t Sample ID		SS45/0.0-0.1	SS46/0.0-0.1	SS47/0.0-0.1	SS48/0.0-0.1	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins   mgt Sample No.			M18-Ap02746	M18-Ap02747	M18-Ap02748	M18-Ap02749	
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	Mar 28, 2018	
Test/Reference	LOR	Unit					
BTEX							
Benzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1	
m&p-Xylenes	0.1	ma/ka	< 0.2	< 0.2	< 0.2	< 0.2	
o-Xvlene	0.1	ma/ka	< 0.1	< 0.1	< 0.1	< 0.1	
Xylenes - Total	0.3	ma/ka	< 0.3	< 0.3	< 0.3	< 0.3	
4-Bromofluorobenzene (surr.)	1	%	77	73	84	91	
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions	70		10			
	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5	
TRH C6-C10	20	ma/ka	< 20	< 20	< 20	< 20	
TRH C6-C10 Less BTEX (E1) <sup>N04</sup>	20	ma/ka	< 20	< 20	< 20	< 20	
TRH >C10-C16	50	ma/ka	< 50	< 50	< 50	< 50	
TRH >C10-C16 less Nanhthalene (F2) <sup>N01</sup>	50	ma/ka	< 50	< 50	< 50	< 50	
TRH $>C16-C34$	100	ma/ka	280	760	430	3000	
TRH >C34-C40	100	ma/ka	< 100	170	120	510	
Polycyclic Aromatic Hydrocarbons	100	mg/kg		170	120	010	
Benzo(a)pyrene TEO (lower bound) *	0.5	ma/ka	< 0.5	< 0.5	< 0.5	32	
Benzo(a)pyrene TEQ (lower bound) *	0.5	ma/ka	0.6	0.6	0.6	32	
Benzo(a)pyrene TEQ (inequality bound) *	0.5	ma/ka	1.2	1.2	1.2	32	
Acenanothene	0.5	ma/ka	- 0.5	- 0.5	- 0.5	< 0.5	
Acenaphthylene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	1.8	
Anthracene	0.5	ma/ka	< 0.5	< 0.5	0.9	3.7	
Benz(a)anthracene	0.5	ma/ka	< 0.5	< 0.5	0.6	32	
Benzo(a)nvrene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	16	
Benzo(b&i)fluoranthene <sup>N07</sup>	0.5	ma/ka	< 0.5	< 0.5	< 0.5	32	
Benzo(a h i)pervlene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	10	
Benzo(k)fluoranthene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	25	
Chrysene	0.5	ma/ka	< 0.5	< 0.5	0.6	60	
Dibenz(a,b)anthracene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	5.1	
Fluoranthene	0.5	ma/ka	< 0.5	< 0.5	0.8	40	
Fluorene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	0.7	
Indeno(1.2.3-cd)pyrene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	12	
Naphthalene	0.5	ma/ka	< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	0.9	5.4	
Pyrene	0.5	mg/kg	< 0.5	< 0.5	0.7	49	
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	4.5	292.7	
2-Fluorobiphenyl (surr.)	1	%	111	96	96	91	
p-Terphenyl-d14 (surr.)	1	%	120	97	97	89	
Polychlorinated Biphenyls							
Aroclor-1016	0.1	mg/kg	-	-	-	< 0.1	
Aroclor-1221	0.1	ma/ka	-	-	-	< 0.1	
Aroclor-1232	0.1	mg/ka	-	-	-	< 0.1	
Aroclor-1242	0.1	mg/kg	-	-	-	< 0.1	
Aroclor-1248	0.1	mg/ka	-	-	-	< 0.1	
Aroclor-1254	0.1	mg/ka	-	-	-	< 0.1	
Aroclor-1260	0.1	mg/ka	-	-	-	< 0.1	
Total PCB*	0.1	mg/kg	-	-	-	< 0.1	
Dibutylchlorendate (surr.)	1	%	-	-	-	105	
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	82	



Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			SS45/0.0-0.1 Soil M18-Ap02746 Mar 28, 2018	SS46/0.0-0.1 Soil M18-Ap02747 Mar 28, 2018	SS47/0.0-0.1 Soil M18-Ap02748 Mar 28, 2018	SS48/0.0-0.1 Soil M18-Ap02749 Mar 28, 2018
Test/Reference	LOR	Unit				
% Moisture Heavy Metals	1	%	20	34	14	11
Arsenic	2	mg/kg	6.6	5.3	11	14
Cadmium	0.4	mg/kg	7.3	1.5	2.5	9.7
Chromium	5	mg/kg	19	13	30	76
Copper	5	mg/kg	120	70	180	5500
Lead	5	mg/kg	190	230	210	2000
Mercury	0.1	mg/kg	0.3	< 0.1	< 0.1	0.4
Nickel	5	mg/kg	28	15	27	70
Zinc	5	mg/kg	500	480	780	1300

Client Sample ID			SS49/0.0-0.1	SS50/0.0-0.1	DS1	DS2	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins   mgt Sample No.			M18-Ap02750	M18-Ap02751	M18-Ap02752	M18-Ap02753	
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 27, 2018	Mar 27, 2018	
Test/Reference	LOR	Unit					
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20	
TRH C10-C14	20	mg/kg	< 20	1300	30	33	
TRH C15-C28	50	mg/kg	210	47000	320	250	
TRH C29-C36	50	mg/kg	300	4800	500	350	
TRH C10-36 (Total)	50	mg/kg	510	53100	850	633	
BTEX							
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2	
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3	
4-Bromofluorobenzene (surr.)	1	%	80	56	80	72	
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20	
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20	
TRH >C10-C16	50	mg/kg	< 50	1500	< 50	< 50	
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	1500	< 50	< 50	
TRH >C16-C34	100	mg/kg	470	51000	700	500	
TRH >C34-C40	100	mg/kg	< 100	1500	170	170	
Polycyclic Aromatic Hydrocarbons							
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	0.6	
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2	
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	



Client Sample ID			SS49/0.0-0.1	SS50/0.0-0.1	DS1	DS2	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins   mgt Sample No.			M18-Ap02750	M18-Ap02751	M18-Ap02752	M18-Ap02753	
Date Sampled			Mar 28, 2018	Mar 28, 2018	Mar 27, 2018	Mar 27, 2018	
Test/Reference	LOR	Unit					
Polycyclic Aromatic Hydrocarbons							
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
Pyrene	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5	
Total PAH*	0.5	mg/kg	< 0.5	0.9	< 0.5	< 0.5	
2-Fluorobiphenyl (surr.)	1	%	99	99	104	99	
p-Terphenyl-d14 (surr.)	1	%	97	91	113	107	
Polychlorinated Biphenyls							
Aroclor-1016	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1232	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1242	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1248	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1254	0.1	mg/kg	-	< 0.1	-	-	
Aroclor-1260	0.1	mg/kg	-	< 0.1	-	-	
Total PCB*	0.1	mg/kg	-	< 0.1	-	-	
Dibutylchlorendate (surr.)	1	%	-	97	-	-	
Tetrachloro-m-xylene (surr.)	1	%	-	98	-	-	
% Clay	1	%	11	-	-	-	
Conductivity (1:5 aqueous extract at 25°C as rec.)	10	uS/cm	21	-	-	-	
pH (1:5 Aqueous extract at 25°C as rec.)	0.1	pH Units	5.9	-	-	-	
% Moisture	1	%	19	7.0	32	30	
Heavy Metals							
Arsenic	2	mg/kg	22	9.0	4.7	12	
Cadmium	0.4	mg/kg	3.5	< 0.4	< 0.4	2.5	
Chromium	5	mg/kg	88	16	< 5	43	
Copper	5	mg/kg	190	21	< 5	73	
Lead	5	mg/kg	1400	24	7.7	1000	
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1	
Nickel	5	mg/kg	61	< 5	< 5	33	
Zinc	5	mg/kg	1100	61	7.5	1500	
Cation Exchange Capacity							
Cation Exchange Capacity	0.05	meq/100g	6.5	-	-	-	



Client Sample ID			DS3	SS27A/0.0-0.1	SS28A/0.0-0.1	
Sample Matrix			Soil	Soil	Soil	
Eurofins   mgt Sample No.			M18-Ap02754	M18-Ap02763	M18-Ap02764	
Date Sampled			Mar 27, 2018	Mar 28, 2018	Mar 28, 2018	
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	tions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	
TRH C10-C14	20	mg/kg	70	< 20	< 20	
TRH C15-C28	50	mg/kg	710	< 50	< 50	
TRH C29-C36	50	mg/kg	590	95	< 50	
TRH C10-36 (Total)	50	mg/kg	1370	95	< 50	
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	
4-Bromofluorobenzene (surr.)	1	%	81	84	90	
Total Recoverable Hydrocarbons - 2013 NEPM Fract	tions					
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	
TRH >C10-C16	50	mg/kg	90	< 50	< 50	
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	90	< 50	< 50	
TRH >C16-C34	100	mg/kg	970	120	< 100	
TRH >C34-C40	100	mg/kg	410	< 100	< 100	
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Fluoranthene	0.5	mg/kg	0.5	< 0.5	< 0.5	
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	
Total PAH*	0.5	mg/kg	0.5	< 0.5	< 0.5	
2-Fluorobiphenyl (surr.)	1	%	85	106	77	
p-Terphenyl-d14 (surr.)	1	%	95	107	81	
	1	1				
% Moisture	1	%	31	8.3	7.8	



Client Sample ID Sample Matrix Eurofins   mgt Sample No. Date Sampled			DS3 Soil M18-Ap02754 Mar 27, 2018	SS27A/0.0-0.1 Soil M18-Ap02763 Mar 28, 2018	SS28A/0.0-0.1 Soil M18-Ap02764 Mar 28, 2018
Test/Reference	LOR	Unit			
Heavy Metals					
Arsenic	2	mg/kg	7.7	8.6	10
Cadmium	0.4	mg/kg	4.4	< 0.4	< 0.4
Chromium	5	mg/kg	25	13	18
Copper	5	mg/kg	55	16	5.9
Lead	5	mg/kg	76	27	19
Mercury	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Nickel	5	mg/kg	39	7.7	< 5
Zinc	5	mg/kg	160	75	76



#### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins   mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 06, 2018	14 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Melbourne	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 06, 2018	14 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Apr 06, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
Polychlorinated Biphenyls	Melbourne	Apr 06, 2018	28 Days
Method: LTM-ORG-2220 OCP & PCB in Soil and Water			
% Clay	Brisbane	Apr 09, 2018	6 Day
Method: LTM-GEN-7040			
pH (1:5 Aqueous extract at 25°C as rec.)	Melbourne	Apr 06, 2018	7 Day
Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25°C as rec.)	Melbourne	Apr 06, 2018	7 Day
Method: LTM-INO-4030 Conductivity			
Cation Exchange Capacity	Melbourne	Apr 09, 2018	180 Days
Method: LTM-MET-3060 - Cation Exchange Capacity (CEC) & Exchangeable Sodium Percentage (ESP)			
% Moisture	Melbourne	Apr 04, 2018	14 Day
Mathematical TM OFN 7000 Matching			

- Method: LTM-GEN-7080 Moisture

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Co Ad	Company Name: Geo-Logix P/L   Address: Bld Q2 Level 3, 2309/4 Daydream St   Warriewood NSW 2102			Order No.: Report #: Phone: Fax:				: PO2507 592301 02 9979 1722 02 9979 1222			2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce		
Pro Pro	oject Name: oject ID:	KEMPSEY 1801031												Eurofins   mgt Analytical Services Manager : Nibha Vaidya			
Sample Detail						% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	271					Х	Х	Х	Х	Х	Х			
Sydi	ney Laboratory	- NATA Site # 1	8217				Х	X									
Bris	bane Laborator	y - NATA Site #	20794			Х											
Pert	h Laboratory - N	NATA Site # 237	36														
No	Sample ID	Sample Date	Sampling	Matrix													
	Gampio ib	oumpio puto	Time	maanix													
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	Х				X		X	X	X			
2	SS2/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02703							X		X			
3	SS3/0.0-0.1	Mar 27, 2018		Soll	M18-Ap02704							×		×			
5	SS4/0.0-0.1	$\frac{1}{1000} = \frac{21}{20} = 2$		Soil	M18-Ap02705							x		$\frac{1}{x}$	1		
6	SS6/0 0-0 1	Mar 27, 2018		Soil	M18-Ap02707							x		x	-		
7	SS7/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02708							X		x	•		
8	SS8/0.0-0.1	Mar 27. 2018		Soil	M18-Ap02709							X		X	1		
9	SS9/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02710							Х		х	]		
9	SS9/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02710							Х		Х	]		

🔅 euro	ofins	mgt	ABN– 50 005 ( e.mail : Enviro web : www.eur	085 521 Sales@o rofins.co	eurofins m.au	s.com	<b>M</b> 2- 0 P N S	lelbourn -5 Kings vakleigh hone : 4 ATA # 1 ite # 12	ie ston Tov VIC 31 ⊦61 3 85 1261 54 & 14	vn Clos 66 564 500 271	e 00	<b>Syd</b> Unit 16 M Lan Pho NAT	<b>Iney</b> t F3, Building F Mars Road he Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 460 NATA # 1261 Site # 207	Perth 2/91 Leach Highway Kewdale WA 6105 0 Phone : +61 8 9251 9600 94 NATA # 1261 Site # 23736
Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	L 3, 2309/4 Daydream	St		Or Re Ph Fa	der N port i ione: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
Sample Detail					Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborator	y - NATA Site	# 1254 & 14271					Х	х	Х	Х	X	х	-		
Sydney Laboratory - I	NATA Site # 18	3217			Х	X							-		
Brisbane Laboratory	- NATA Site #	20794		Х									-		
Perth Laboratory - NA	A I A Site # 237	36 Coil	M18 Ap02711							v		v	-		
10 3310/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02712							×		x	-		
12 SS12/0.0-0.1	Mar 27, 2018	Soil	M18-Ap02712							X		x	1		
13 SS13/0.0-0.1 M	Mar 27, 2018	Soil	M18-Ap02714							Х		X	1		
14 SS14/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02715							х		х			
15 SS15/0.0-0.1 M	Mar 27, 2018	Soil	M18-Ap02716							Х		х	1		
16 SS16/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02717							Х		Х	1		
17 SS17/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02718							Х		Х	]		
18 SS18/0.0-0.1 M	Mar 27, 2018	Soil	M18-Ap02719							Х		Х	]		
19 SS19/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02720							Х		Х	]		
20 SS20/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02721							Х		Х			
21 SS21/0.0-0.1	Mar 27, 2018	Soil	M18-Ap02722							Х		Х	]		
Company Name: Geo-Logix P/L				085 521 Sales@ rofins.cc	eurofin: m.au	s.com	<b>M</b> 20 P N S	lelbourn -5 Kings akleigh hone : + ATA # 1 ite # 12	te ston Tov VIC 310 ⊦61 3 85 1261 54 & 14	vn Clos 66 664 500 271	ie 10	<b>Syd</b> Unit 16 M Lan Pho NAT	<b>Iney</b> Hars Road Nars Road he Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 460 NATA # 1261 Site # 207	Perth 2/91 Leach Highway Kewdale WA 6105 0 Phone : +61 8 9251 9600 '94 NATA # 1261 Site # 23736
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Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Daydrea	m St		Or Re Ph Fa	der N port i none: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
Sample Detail Melbourne Laboratory - NATA Site # 1254 & 14271						Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborator	y - NATA Site	# 1254 & 14271					Х	х	х	Х	X	х	-		
Sydney Laboratory - I	NATA Site # 18	8217			Х	X							-		
Brisbane Laboratory	- NATA Site #	20794		X									-		
Perth Laboratory - NA	ATA Site # 237	36	M40 A=00700							v		v	-		
22 5522/0.0-0.1	Mar 27, 2018	Soil	M18 Ap02724							×		×	-		
24 SS24/0.0-0.1	Mar 27, 2018	Soil	M18-An02725							x		x	1		
25 SS25/0.0-0.1	Mar 27, 2018	Soil	M18-Ap02726	1						X		X	1		
26 SS26/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02727	1						х		X	1		
27 SS27/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02728	1	1					х	1	х	1		
28 SS28/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02729	1	l	İ				х	İ	х	1		
29 SS29/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02730							х		Х	1		
30 SS30/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02731							х		Х	1		
31 SS31/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02732	Х				Х		х	Х	Х	1		
32 SS32/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02733							Х		Х	]		
33 SS33/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02734							Х		Х	]		

Company Name: Geo-Logix P/L			ABN– 50 005 e.mail : Envirc web : www.eu	085 521 Sales@ rofins.cc	eurofin: om.au	s.com	<b>M</b> 2 <sup>.</sup> 0 P N S	lelbourn -5 Kings akleigh hone : - ATA # <sup>2</sup> ite # 12	ie ston Tov VIC 310 ⊦61 3 85 1261 54 & 14	vn Clos 66 564 500 271	e 00	<b>Syd</b> Unit 16 M Lan Pho NAT	<b>Iney</b> t F3, Building F Mars Road he Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 460 NATA # 1261 Site # 207	Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736
Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Daydrea	am St		Or Re Ph Fa	der N port i none:	o.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
	% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7						
Melbourne Laborator	y - NATA Site	# 1254 & 14271					Х	Х	х	Х	X	Х	-		
Sydney Laboratory - I	NATA Site # 18	8217			X	X							-		
Brisbane Laboratory	- NATA Site #	20794		X									-		
Perth Laboratory - NA	AIA Site # 237	36 Soil	M18 Ap02725							v		v	-		
35 SS35/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02735							X		x	-		
36 SS36/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02730	1						X		x	1		
37 SS37/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02738							X		X	1		
38 SS38/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02739	1	1					Х	1	х	1		
39 SS39/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02740							Х		х	1		
40 SS40/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02741							Х		Х	1		
41 SS41/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02742							Х		Х	]		
42 SS42/0.0-0.1 M	Mar <u>28,</u> 2018	Soil	M18-Ap02743							Х		Х	]		
43 SS43/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02744							Х		Х	]		
44 SS44/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02745						Х	Х		Х			
45 SS45/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02746							Х		Х	]		

Company Name: Geo-Logix P/L				ABN– 50 005 ( e.mail : Enviro web : www.eur	085 521 Sales@ rofins.cc	eurofins m.au	s.com	<b>M</b> 2- 0 Pl N Si	lelbourn -5 Kings vakleigh hone : - ATA # <sup>2</sup> ite # 12	e ston Tov VIC 31 ⊦61 3 85 1261 54 & 14	vn Clos 66 564 500 271	se 00	<b>Syd</b> Unit 16 M Lan Pho NAT	Iney IF3, Building F Wars Road Ie Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 2079	Perth 2/91 Leach Highway Kewdale WA 6105 Phone: +61 8 9251 9600 4 NATA # 1261 Site # 23736
Co	ompany Name: Idress:	Geo-Logix P, Bld Q2 Level Warriewood NSW 2102	/L 3, 2309/4 Daydream St			Or Re Ph Fa	der N eport # ione: ix:	0.: ¢:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	22			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pr Pr	oject Name: oject ID:	KEMPSEY 1801031												Eurofin	s   mgt Analytical Ser	vices Manager : Nibha Vaidya
		Sa	mple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Mell	bourne Laborato	ory - NATA Site	# 1254 & 14271					Х	х	Х	Х	Х	х			
Syd	ney Laboratory	- NATA Site # 1	8217			Х	X									
Bris	bane Laborator	y - NATA Site #	20794		Х											
Pert	h Laboratory - N	ATA Site # 237	36									<u> </u>				
46	SS46/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02747							X		X			
47	<u>SS47/0.0-0.1</u>	Mar 28, 2018	Soil	M18-Ap02748						~	X		X			
48	5548/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02749	v					X			X			
49	<u>3349/0.0-0.1</u>	Mar 28, 2018	5011	M18 Ap02754	~					v						
50	000/0.0-0.1	Nor 27, 2018	Soil	1VI 18-Ap02751						^						
51	160	Mar 27, 2018	5011	M18 Ap02752								-				
52	2002	Mar 27 2019	Soil	M18_0002754								+	×			
53	P1	$\frac{1}{100} = \frac{21}{2010} = $	Water	M18-Ap02755								+	x			
55	R2	$\frac{1}{100} = \frac{21}{20}, \frac{2010}{2019}$	Water	M18-An02756								+	x			
56	A4/0 0-0 1	Mar 28, 2018	Soil	M18-Ap02757		x						-				
57	A1/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02758			x									
<u>, , , , , , , , , , , , , , , , , , , </u>			001		L	I	· ·		I	L	I			1		

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Co Ad	mpany Name: Idress:	Geo-Logix P, Bld Q2 Level Warriewood NSW 2102	′L 3, 2309/4 Daydream St			Or Re Ph Fa	der Neport # port # none: x:	0.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pro Pro	oject Name: oject ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Ser	vices Manager : Nibha Vaidya
		Sa	mple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melk	ourne Laborato	ory - NATA Site	# 1254 & 14271					Х	х	х	Х	X	х			
Sydi	ney Laboratory	- NATA Site # 1	8217			Х	Х									
Bris	bane Laboratory	y - NATA Site #	20794		Х									-		
Pert	h Laboratory - N	ATA Site # 237	36	1												
58	A5/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02759			X							-		
59	A6/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02760			X					-				
60	A2/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02761			X							-		
61	A3/0.0-0.1	Mar 28, 2018	Soli	M18-Ap02762			×				v					
62	SS27A/0.0-0.1	Mar 28, 2018	Soli	M18-Ap02763												
63	SS28A/0.0-0.1	Mar 28, 2018	Soli	M18-Ap02764				V			×		×			
64	551/0.2-0.3	Mar 27, 2018	Soll	IN18-Ap02765				X						•		
60	552/0.2-0.3	Mar 27, 2018	Soll	IN18-Ap02766				X						•		
67	553/0.2-0.3	Iviar 27, 2018	Soll	N18-Ap02767				× ×						•		
62	SS4/U.Z-U.3	Mar 27, 2018	5011	M19 Ac02760				 						1		
60	SS6/0 2-0 2	Mar 27, 2018	Soil	M18-Ap02770	<u> </u>			<u>л</u> Х						-		
09	330/0.2-0.3	IVIAI 21, 2010	10011	110-Ap02770				^						]		

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Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Dayc	Iream St			Or Re Ph Fa	der Ne port # one: x:	0.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031													Eurofir	ns   mgt Analytical Se	ervices Manager : Nibha Vaidya
	Sar	nple Detail			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborato	ory - NATA Site	# 1254 & 14271	l					Х	Х	Х	Х	X	х	-		
Sydney Laboratory -	- NATA Site # 18	8217				Х	Х							-		
Brisbane Laboratory	y - NATA Site #	20794			Х									-		
Perth Laboratory - N	ATA Site # 237	36		40.4.00774				V						-		
71 558/02.02	Mar 27, 2018	S		10-ApU2//1				×						{		
72 \$\$9/0.2-0.3	Mar 27 2018			18-Ap02773				X						1		
73 SS10/0.2-0.3	Mar 27, 2018	S	ioil M	18-Ap02774				X						1		
74 SS11/0.2-0.3	Mar 27, 2018	s	ioil M	18-Ap02775				X						-		
75 SS12/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02776				х								
76 SS13/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02777				х				İ	İ	1		
77 SS14/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02778				х				İ	İ	1		
78 SS15/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02779				Х								
79 SS16/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02780				х						1		
80 SS17/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02781				Х						]		
81 SS18/0.2-0.3	Mar 27, 2018	S	oil M	18-Ap02782				Х								

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Co Ad	ompany Name: Idress:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	/L 3, 2309/4 Daydream St			Or Re Ph Fa	der Neport # port # none: x:	o.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pr Pr	oject Name: oject ID:	KEMPSEY 1801031												Eurofin	s   mgt Analytical Ser	vices Manager : Nibha Vaidya
		Sa	mple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melk	oourne Laborato	ory - NATA Site	# 1254 & 14271					Х	х	Х	Х	X	х			
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х									
Bris	bane Laborator	y - NATA Site #	20794		Х											
Pert	h Laboratory - N	ATA Site # 237	36	M40 A 00700				Y								
ŏ∠ 92	SS19/0.2-0.3	Mar 27, 2018	Soil	M18 Ap02783				×								
84	SS21/0 2-0 3	Mar 27 2018	Soil	M18-An02785				X								
85	SS22/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02786				X				1				
86	SS23/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02787				X								
87	SS24/0.2-0.3	Mar 27. 2018	Soil	M18-Ap02788				Х								
88	SS25/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02789		1		Х	1			1				
89	SS26/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02790		1		Х	1			1				
90	SS29/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02791		l		Х	l			1				
91	SS30/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02792				Х								
92	SS31/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02793				Х								
93	SS32/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02794				Х								

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Company Name: Address:	Geo-Logix P/I Bld Q2 Level Warriewood NSW 2102	L 3, 2309/4 Daydre	am St		Or Re Pr Fa	rder N eport a none: ix:	o.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofin	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
	San	nple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborato	ory - NATA Site #	# 1254 & 14271					Х	Х	х	Х	X	Х	-		
Sydney Laboratory -	- NATA Site # 18	3217			X	X							-		
Brisbane Laboratory	y - NATA Site # 2	20794		X									1		
Perth Laboratory - N	Mor 29 2019	30	N449 Ap02705				~						-		
95 \$\$34/0.2-0.3	Mar 28 2018		M18-002795	+			x					1	1		
96 SS35/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02790	-			X						1		
97 SS36/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02798	1			X						1		
98 SS37/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02799	1	1		Х						1		
99 SS38/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02800		1		Х						1		
100 SS39/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02801				х						]		
101 SS40/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02802				х						]		
102 SS41/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02803				Х						]		
103 SS42/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02804				Х						]		
104 SS43/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02805				Х						]		
105 SS44/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02806				Х								

🔅 eurofins   mgt	ABN- 50 005 00 e.maii : EnviroS web : www.euro	85 521 ales@e fins.cor	urofins. n.au	.com	<b>M</b> 2- 0i Pł N/ Si	elbourn 5 Kings akleigh hone : + ATA # 1 ite # 125	e ton Tov VIC 310 61 3 85 261 54 & 14	vn Clos 66 564 500 271	e 0	<b>Syd</b> Unii 16 I Lan Pho NA	Iney F3, Building F Mars Road he Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 2079	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 4 NATA # 1261 Site # 23736
Company Name:       Geo-Logix P/L         Address:       Bld Q2 Level 3, 2309/4 Daydream St         Warriewood       NSW 2102         Project Name:       KEMPSEY			Orc Rej Pho Fax	der No port # one: k:	D.: !:	P 59 02 02	O250 92301 2 9979 2 9979	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project ID: 1801031											Eurofin	s   mgt Analytical Ser	vices Manager : Nibha Vaidya
Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laboratory - NATA Site # 1254 & 14271					Х	Х	Х	Х	Х	Х			
Sydney Laboratory - NATA Site # 18217			х	Х									
Brisbane Laboratory - NATA Site # 20794		Х											
Perth Laboratory - NATA Site # 23736													
106 SS45/0.2-0.3 Mar 28, 2018 Soil N	118-Ap02807				Х								
107 SS46/0.2-0.3 Mar 28, 2018 Soil N	118-Ap02808				Х						-		
108 SS47/0.2-0.3 Mar 28, 2018 Soil M	118-Ap02809				Х								
109 SS48/0.2-0.3 Mar 28, 2018 Soil M	118-Ap02810				Х								
110 SS49/0.2-0.3 Mar 28, 2018 Soil M	118-Ap02811				X								
111 SS50/0.2-0.3 Mar 28, 2018 Soil M	118-Ap02812				X						ļ		
112 DS4 Mar 28, 2018 Soil N	118-Ap02813				X								
113 DS5 Mar 28, 2018 Soil N	118-Ap02814				X						4		
114 SS2/A/0.2-0.3 Mar 28, 2018 Soil N	118-Ap02815				X								
T15         S528A/0.2-0.3         Mar 28, 2018         Soil         N           Test Counts         Image: Counts	118-AD02816	3	1	5	× 52	3	3	55	3	57			



## Internal Quality Control Review and Glossary

### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

#### Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
сос	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
СР	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### **QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



# **Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank		[	1		1		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank				[			
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank		1	1	[			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	"	0.5			0.5	-	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >034-040	mg/kg	< 100			100	Pass	
Method Blank					1		
	malka	< 0.5			0.5	Booo	
Acenaphthulana	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Antiliacene Bonz/o)anthracano	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrepe	mg/kg	< 0.5			0.5	Pass	
Benzo(b&i)fluoranthene	ma/ka	< 0.5			0.5	Pass	
Benzo(a b i)pervlene	ma/ka	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	ma/ka	< 0.5			0.5	Pass	
Chrysene	ma/ka	< 0.5			0.5	Pass	
Dibenz(a,b)anthracene	ma/ka	< 0.5			0.5	Pass	
Fluoranthene	ma/ka	< 0.5			0.5	Pass	
Fluorene	ma/ka	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	ma/ka	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank		•					
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank			1				
% Clay	%	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C as rec.)	uS/cm	< 10			10	Pass	



Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank			1	T		
Heavy Metals						
Arsenic	mg/kg	< 2		2	Pass	
Cadmium	mg/kg	< 0.4		0.4	Pass	
Chromium	mg/kg	< 5		5	Pass	
Copper	mg/kg	< 5		5	Pass	
Lead	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 5		5	Pass	
Zinc	mg/kg	< 5		5	Pass	
Method Blank			I	I		
Cation Exchange Capacity						
Cation Exchange Capacity	meq/100g	0.05		0.05	Pass	
LCS - % Recovery			I	I		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	113		70-130	Pass	
TRH C10-C14	%	87		70-130	Pass	
LCS - % Recovery			1	1		
BTEX						
Benzene	%	80		70-130	Pass	
Toluene	%	71		70-130	Pass	
Ethylbenzene	%	79		70-130	Pass	
m&p-Xylenes	%	86		70-130	Pass	
Xylenes - Total	%	83		70-130	Pass	
LCS - % Recovery			1			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	%	97		70-130	Pass	
TRH C6-C10	%	116		70-130	Pass	
TRH >C10-C16	%	78		70-130	Pass	
LCS - % Recovery			1	I		
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	%	92		70-130	Pass	
Acenaphthylene	%	98		70-130	Pass	
Anthracene	%	95		70-130	Pass	
Benz(a)anthracene	%	107		70-130	Pass	
Benzo(a)pyrene	%	96		70-130	Pass	
Benzo(b&j)fluoranthene	%	81		70-130	Pass	
Benzo(g.h.i)perylene	%	106		70-130	Pass	
Benzo(k)fluoranthene	%	90		70-130	Pass	
Chrysene	%	105		70-130	Pass	
Dibenz(a.h)anthracene	%	94		70-130	Pass	
Fluoranthene	%	108		70-130	Pass	
Fluorene	%	93		70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	111		70-130	Pass	
Naphthalene	%	93		70-130	Pass	
Phenanthrene	%	96		70-130	Pass	
Pyrene	%	106		70-130	Pass	
LCS - % Recovery				1		
Polychlorinated Biphenyls						
Aroclor-1260	%	113		70-130	Pass	
LCS - % Recovery	1			1		
% Clay	%	93		70-130	Pass	
LCS - % Recovery				1		
Heavy Metals						



Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Arsenic			%	108		80-120	Pass	
Cadmium			%	110		80-120	Pass	
Chromium			%	116		80-120	Pass	
Copper			%	113		80-120	Pass	
Lead			%	117		80-120	Pass	
Mercury			%	96		75-125	Pass	
Nickel			%	113		80-120	Pass	
Zinc			%	109		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery				T		1		
Polycyclic Aromatic Hydrocarbons	5	T		Result 1				
Acenaphthene	M18-Ap02706	CP	%	73		70-130	Pass	
Acenaphthylene	M18-Ap02706	CP	%	72		70-130	Pass	
Anthracene	M18-Ap02706	CP	%	82		70-130	Pass	
Benz(a)anthracene	M18-Ap02706	CP	%	78		70-130	Pass	
Benzo(a)pyrene	M18-Ap02706	CP	%	71		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02706	CP	%	82		70-130	Pass	
Benzo(g.h.i)perylene	M18-Ap02706	CP	%	75		70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02706	CP	%	75		70-130	Pass	
Chrysene	M18-Ap02706	CP	%	71		70-130	Pass	
Dibenz(a.h)anthracene	M18-Ap02706	CP	%	88		70-130	Pass	
Fluoranthene	M18-Ap02706	CP	%	82		70-130	Pass	
Fluorene	M18-Ap02706	CP	%	72		70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02706	CP	%	77		70-130	Pass	
Naphthalene	M18-Ap02706	CP	%	72		70-130	Pass	
Phenanthrene	M18-Ap02706	CP	%	76		70-130	Pass	
Pyrene	M18-Ap02706	CP	%	83		70-130	Pass	
Spike - % Recovery				Ť	,	1		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1				
TRH C6-C9	M18-Ap02709	CP	%	107		70-130	Pass	
Spike - % Recovery				1	r r	l.		
BTEX	r			Result 1				
Benzene	M18-Ap02709	CP	%	80		70-130	Pass	
Toluene	M18-Ap02709	CP	%	79		70-130	Pass	
Ethylbenzene	M18-Ap02709	CP	%	81		70-130	Pass	
m&p-Xylenes	M18-Ap02709	CP	%	91		70-130	Pass	
o-Xylene	M18-Ap02709	CP	%	85		70-130	Pass	
Xylenes - Total	M18-Ap02709	CP	%	89		70-130	Pass	
Spike - % Recovery				1				
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1				
Naphthalene	M18-Ap02709	CP	%	92		70-130	Pass	
TRH C6-C10	M18-Ap02709	CP	%	115		70-130	Pass	
Spike - % Recovery				1				
Heavy Metals	I			Result 1				
Arsenic	M18-Ap02709	CP	%	116		75-125	Pass	
Cadmium	M18-Ap02709	CP	%	109		75-125	Pass	
Chromium	M18-Ap02709	CP	%	122		75-125	Pass	
Copper	M18-Ap02709	CP	%	115		75-125	Pass	
Mercury	M18-Ap02709	CP	%	98		70-130	Pass	
Nickel	M18-Ap02709	CP	%	112		75-125	Pass	
Zinc	M18-Ap02709	CP	%	117		75-125	Pass	
Spike - % Recovery				1				
Polycyclic Aromatic Hydrocarbons	<b>5</b>	,		Result 1				
Acenaphthene	M18-Ap02716	CP	%	75		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthylene	M18-Ap02716	CP	%	75		70-130	Pass	
Anthracene	M18-Ap02716	CP	%	76		70-130	Pass	
Benz(a)anthracene	M18-Ap02716	CP	%	78		70-130	Pass	
Benzo(a)pyrene	M18-Ap02716	CP	%	84		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02716	CP	%	78		70-130	Pass	
Benzo(g.h.i)perylene	M18-Ap02716	CP	%	85		70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02716	CP	%	79		70-130	Pass	
Chrysene	M18-Ap02716	CP	%	74		70-130	Pass	
Dibenz(a.h)anthracene	M18-Ap02716	CP	%	92		70-130	Pass	
Fluoranthene	M18-Ap02716	CP	%	83		70-130	Pass	
Fluorene	M18-Ap02716	CP	%	73		70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02716	CP	%	82		70-130	Pass	
Naphthalene	M18-Ap02716	CP	%	72		70-130	Pass	
Phenanthrene	M18-Ap02716	CP	%	72		70-130	Pass	
Pyrene	M18-Ap02716	CP	%	86		70-130	Pass	
Spike - % Recovery				-	1	-		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1				
TRH C10-C14	M18-Ap02721	CP	%	99		70-130	Pass	
Spike - % Recovery						-		
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1				
TRH >C10-C16	M18-Ap02721	CP	%	83		70-130	Pass	
Spike - % Recovery						-		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1				
TRH C6-C9	M18-Ap02722	CP	%	85		70-130	Pass	
Spike - % Recovery					1	-		
ВТЕХ	1			Result 1				
Benzene	M18-Ap02722	CP	%	76		70-130	Pass	
Toluene	M18-Ap02722	CP	%	79		70-130	Pass	
Ethylbenzene	M18-Ap02722	CP	%	91		70-130	Pass	
m&p-Xylenes	M18-Ap02722	CP	%	99		70-130	Pass	
o-Xylene	M18-Ap02722	CP	%	91		70-130	Pass	
Xylenes - Total	M18-Ap02722	CP	%	96		70-130	Pass	
Spike - % Recovery					1	1		
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1				
Naphthalene	M18-Ap02722	CP	%	96		70-130	Pass	
TRH C6-C10	M18-Ap02722	CP	%	93		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons	5			Result 1				
Acenaphthene	M18-Ap02726	CP	%	78		70-130	Pass	
Acenaphthylene	M18-Ap02726	CP	%	73		70-130	Pass	
Anthracene	M18-Ap02726	CP	%	84		70-130	Pass	
Benz(a)anthracene	M18-Ap02726	CP	%	78		70-130	Pass	
Benzo(a)pyrene	M18-Ap02726	CP	%	73		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02726	CP	%	78		70-130	Pass	
Benzo(g.h.i)perylene	M18-Ap02726	CP	%	78		70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02726	CP	%	84		70-130	Pass	
Chrysene	M18-Ap02726	CP	%	72		70-130	Pass	
Dibenz(a.h)anthracene	M18-Ap02726	CP	%	75		70-130	Pass	
Fluoranthene	M18-Ap02726	CP	%	74		70-130	Pass	
Fluorene	M18-Ap02726	CP	%	71		70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02726	CP	%	90		70-130	Pass	
Naphthalene	M18-Ap02726	CP	%	74		70-130	Pass	
Phenanthrene	M18-Ap02726	CP	%	76		70-130	Pass	
Pyrene	M18-Ap02726	CP	%	72		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	M18-Ap02729	CP	%	109		75-125	Pass	
Cadmium	M18-Ap02729	CP	%	106		75-125	Pass	
Chromium	M18-Ap02729	CP	%	154		75-125	Fail	Q08
Mercury	M18-Ap02729	CP	%	94		70-130	Pass	
Spike - % Recovery					·			
Polycyclic Aromatic Hydrocarbons	5			Result 1				
Acenaphthene	M18-Ap02736	CP	%	89		70-130	Pass	
Acenaphthylene	M18-Ap02736	CP	%	98		70-130	Pass	
Anthracene	M18-Ap02736	CP	%	86		70-130	Pass	
Benz(a)anthracene	M18-Ap02736	СР	%	95		70-130	Pass	
Benzo(a)pyrene	M18-Ap02736	СР	%	101		70-130	Pass	
Benzo(b&i)fluoranthene	M18-Ap02736	CP	%	125		70-130	Pass	
Benzo(g.h.i)pervlene	M18-Ap02736	CP	%	110		70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02736	CP	%	112		70-130	Pass	
Chrysene	M18-Ap02736	CP	%	88		70-130	Pass	
Dibenz(a,h)anthracene	M18-Ap02736	CP	%	85		70-130	Pass	
Fluoranthene	M18-Ap02736	CP	%	114		70-130	Pass	
Fluorene	M18-Ap02736	CP	%	92		70-130	Pass	
Indeno(1,2,3-cd)pyrene	M18-Ap02736	CP	%	116		70-130	Pass	
Naphthalene	M18-Ap02736	CP	%	95		70-130	Pass	
Phenanthrene	M18-Ap02736	CP	%	86		70-130	Pass	
Pyrene	M18-Ap02736	CP	%	101		70-130	Pass	
Spike - % Recovery	111071002700		/0	101		10 100	1 400	
Heavy Metals				Result 1				
Arsenic	M18-Ap02739	CP	%	101		75-125	Pass	
Cadmium	M18-Ap02739	CP	%	100		75-125	Pass	
Chromium	M18-Ap02739	CP	%	115		75-125	Pass	
Copper	M18-Ap02739	CP	%	123		75-125	Pass	
	M18-Ap02739	CP	%	89		75-125	Pass	
Mercury	M18-Ap02739	CP	%	94		70-120	Pass	
Nickel	M18-Ap02739		70 0/_	120		75-125	Dass	
Zinc	M18-Ap02739		70 0/_	90		75-125	Dass	
Spike - % Pecovery	WIT0-Ap02739		70			75-125	1 855	
Total Recoverable Hydrocarbons	1000 NEPM Eract	ione		Pocult 1				
			0/	01		70.120	Page	
Spike - % Pecovery	10110-Ap02741	UF	/0	91		70-130	газэ	
Total Recoverable Hydrocarbons -	2013 NEPM Eract	ions		Result 1				
TPH > C10 C16			0/	96		70.120	Pace	
Spike - % Percovery	10110-Ap02741	UF	/0	00		70-130	газэ	
Polychlorinated Binhenyls				Result 1				
Arcelor 1260	M18 Ap02214		0/			70.120	Page	
Spike - % Pecovery	WIT0-Ap02314		70	30		70-130	1 855	
Polycyclic Aromatic Hydrocarbons				Pocult 1				
	M18 Ap02746	CP	0/	102		70.120	Pace	
	M18_Ap02746		/0	102		70-130	Dace	
Acertaphilitylene	M19 Ap02746		0/	100		70-130	Pass	
Ronz(a)anthroanna	N10-Ap02740		70 0/	109		70-130	Pass	
	M19 Ap02746		-70 07			70-130	Page	
	IVI 10-Apu2/46		<u>%</u>	99		70-130	Pass	
	IVI 10-Apu2/46		% 0/	94		70-130	Pass	
	N10-ADU2/46		~~~ 0/	91		70-130	Pass	
	IVI18-Ap02746		%	96	<u> </u>	70-130	Pass	
Unrysene	IN18-AD02746	CP	%	113		/0-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Dibenz(a.h)anthracene	M18-Ap02746	CP	%	94			70-130	Pass	
Fluoranthene	M18-Ap02746	CP	%	100			70-130	Pass	
Fluorene	M18-Ap02746	CP	%	105			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02746	CP	%	92			70-130	Pass	
Naphthalene	M18-Ap02746	CP	%	97			70-130	Pass	
Phenanthrene	M18-Ap02746	CP	%	105			70-130	Pass	
Pyrene	M18-Ap02746	CP	%	101			70-130	Pass	
Spike - % Recovery		•							
Heavy Metals				Result 1					
Arsenic	M18-Ap02749	CP	%	111			75-125	Pass	
Cadmium	M18-Ap02749	CP	%	104			75-125	Pass	
Chromium	M18-Ap02749	CP	%	103			75-125	Pass	
Mercury	M18-Ap02749	CP	%	121			70-130	Pass	
Nickel	M18-Ap02749	CP	%	135			75-125	Fail	Q08
Spike - % Recovery	• •								
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1					
TRH C6-C9	M18-Ap02752	CP	%	90			70-130	Pass	
Spike - % Recovery	• •								
BTEX				Result 1					
Benzene	M18-Ap02752	CP	%	76			70-130	Pass	
Toluene	M18-Ap02752	CP	%	83			70-130	Pass	
Ethylbenzene	M18-Ap02752	СР	%	90			70-130	Pass	
m&p-Xylenes	M18-Ap02752	CP	%	90			70-130	Pass	
o-Xylene	M18-Ap02752	СР	%	88			70-130	Pass	
Xylenes - Total	M18-Ap02752	СР	%	89			70-130	Pass	
Spike - % Recovery	• •								
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1					
Naphthalene	M18-Ap02752	CP	%	79			70-130	Pass	
TRH C6-C10	M18-Ap02752	CP	%	90			70-130	Pass	
Spike - % Recovery				•			•		
Polycyclic Aromatic Hydrocarbons	3			Result 1					
Acenaphthene	M18-Ap02764	CP	%	93			70-130	Pass	
Acenaphthylene	M18-Ap02764	CP	%	96			70-130	Pass	
Anthracene	M18-Ap02764	CP	%	103			70-130	Pass	
Benz(a)anthracene	M18-Ap02764	CP	%	98			70-130	Pass	
Benzo(a)pyrene	M18-Ap02764	CP	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02764	CP	%	89			70-130	Pass	
Benzo(g.h.i)perylene	M18-Ap02764	CP	%	73			70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02764	CP	%	101			70-130	Pass	
Chrysene	M18-Ap02764	CP	%	99			70-130	Pass	
Dibenz(a.h)anthracene	M18-Ap02764	CP	%	72			70-130	Pass	
Fluoranthene	M18-Ap02764	CP	%	96			70-130	Pass	
Fluorene	M18-Ap02764	CP	%	96			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02764	CP	%	71			70-130	Pass	
Naphthalene	M18-Ap02764	CP	%	88			70-130	Pass	
Phenanthrene	M18-Ap02764	CP	%	93			70-130	Pass	
Pyrene	M18-Ap02764	СР	%	96			70-130	Pass	
Test	Lab Sample ID	QA	Units	Result 1			Acceptance	Pass	Qualifying
Duplicate	· ·	Source					Limits		Code
				Recult 1	Result 2	PDD			
% Clay	B18-Ma11/20	NCP	0/_	3.8	3.8	~1	30%	Pass	
70 Olay	D10-1via11420	NOF	/0	5.0	5.0		50 /0	1 922	



Duplicate									
Polycyclic Aromatic Hydrocarbons	6			Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02705	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate				1				1	
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02707	CP	%	14	16	13	30%	Pass	
Duplicate								1	
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02708	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX			1	Result 1	Result 2	RPD			
Benzene	M18-Ap02708	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M18-Ap02708	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-Ap02708	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-Ap02708	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-Ap02708	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M18-Ap02708	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	ļ
Duplicate								1	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions	1	Result 1	Result 2	RPD			
Naphthalene	M18-Ap02708	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-Ap02708	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate								1	
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02708	CP	mg/kg	10	6.0	53	30%	Fail	Q15
	M18-Ap02708	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-Ap02708		mg/kg	11	12	9.0	30%	Pass	
Copper	M18-Ap02708	CP	mg/kg	7.8	9.0	15	30%	Pass	
Lead	M18-Ap02708		mg/kg	200	200	2.0	30%	Pass	
Nielcel	M18-Ap02708		mg/kg	< 0.1	< 0.1	<1	30%	Pass	
	M18-Ap02708		mg/kg	0.3	0.0	4.0	30%	Pass	
	M18-Ap02708	CP	mg/kg	170	180	<1	30%	Pass	
				Deput 1	Deput 2	DDD			
	M49 Ap02700		ma//.a				209/	Deee	
	M18 Ap02700		mg/kg	1.4	1.5	-1	20%	Pass	
Chromium	M18 Ap02700		mg/kg	11	< 0.4 11	<1	30%	Pass Daga	
Copper	M18_Ap02700		mg/kg	80	80	10	30%	Page	
	M18_Ap02700		ma/ka	120	120	1.0	30%	Pass	
Mercury	M18_Ap02700		ma/ka			-1	30%	Pass	
Nickel	M18-An02700		ma/ka	62	62	10	30%	Page	
Zinc	M18_Ap02700		ma/ka	85	87	20	30%	Pace	
200			піу/ку	00	07	2.0	50 /0	1 0 2 2	



Duplicate				-					
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	M18-Ap02710	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Ap02710	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-Ap02710	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions	-	Result 1	Result 2	RPD			
TRH >C10-C16	M18-Ap02710	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-Ap02710	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-Ap02710	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons	5		-	Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02715	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02717	CP	%	17	18	3.0	30%	Pass	
Duplicate					1				
Heavy Metals			1	Result 1	Result 2	RPD			
Arsenic	M18-Ap02718	CP	mg/kg	36	37	3.0	30%	Pass	
Cadmium	M18-Ap02718	CP	mg/kg	1.4	1.3	7.0	30%	Pass	
Chromium	M18-Ap02718	CP	mg/kg	30	30	1.0	30%	Pass	
Copper	M18-Ap02718	CP	mg/kg	83	68	20	30%	Pass	
Lead	M18-Ap02718	CP	mg/kg	150	170	13	30%	Pass	
Mercury	M18-Ap02718	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02718	CP	mg/kg	18	23	28	30%	Pass	
Zinc	M18-Ap02718	CP	mg/kg	620	650	5.0	30%	Pass	
Duplicate					1			1	
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	M18-Ap02720	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Ap02720	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-Ap02720	CP	mg/kg	55	58	3.0	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions	1	Result 1	Result 2	RPD			
TRH >C10-C16	M18-Ap02720	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-Ap02720	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-Ap02720	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02721	CP	mg/kg	< 20	< 20	<1	30%	Pass	



BTEX         Product         P	Duplicate				-			-		
Benzane         M18-Ap02721         CP         mg/kg         < 0.1         < < 1.1         30%         Pass           EtlyBonzone         M18-Ap02721         CP         mg/kg         < 0.1	втех				Result 1	Result 2	RPD			
Toluene         M18+Ap02721         CP         mg/kq         < 0.1         < (.1         < (.3)         Pass           mbp-Xylenes         M18+Ap02721         CP         mg/kq         < 0.2	Benzene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Erlybenzone         M18-Ap02721         CP         mg/kg         < 0.1         < (-1)         < (-1)         30%         Pass           oxylene         M18-Ap02721         CP         mg/kg         < 0.3	Toluene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
mkp.payenesM18.pdp2721CPmgkg<0.2<0.2<0.430%Passo.XylenesM18.pdp2721CPmgkg<0.1	Ethylbenzene	M18-Ap02721	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
o.Yujene         M18-Ap02721         CP         mg/kg         < 0.1         < (-1         30%         Pass           Xujenes - Total         M18-Ap02721         CP         mg/kg         < 0.3	m&p-Xylenes	M18-Ap02721	СР	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Xylenes - TotalM18-Ap02721CPmg/kg< 0.3PassDuplicateDuplicateTotal Recoverable Hydrocarbons - DT3 NEPM FrattiensResult 1Result 2RPDNapthalaneM18-Ap02721CPmg/kg< 0.5	o-Xylene	M18-Ap02721	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
DepicationUse of the term of the term of ter	Xylenes - Total	M18-Ap02721	СР	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions         Result 1         Result 2         RPD         Image 1         Result 2         RPD         RPD           Naphrhalene         M18-Ap02721         CP         mg/kg         <.0.5	Duplicate									
Naphthalene         M18-Ap02721         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           TRH C6-C10         M18-Ap02725         CP         mg/kg         < 20	Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH Co-C10         M18-Ap02721         CP         mg/kg         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < < 20         < <	Naphthalene	M18-Ap02721	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate         Verticate         Verticate         Verticate         Verticate           Polycyclic Aromatic Hydrocarbon         M18-Ap02725         CP         mg/kg         < 0.5	TRH C6-C10	M18-Ap02721	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Polycyclic Aromatic Hydrocarbons         Result 1         Result 1         Result 2         RPD         Image           Acenaphthene         M18-Ap02725         CP         mg/kg         <0.5	Duplicate							-		
Acenaphthene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Acenaphthylene         M18-Ap02725         CP         mg/kg         < 0.5	Polycyclic Aromatic Hydrocarbons	5			Result 1	Result 2	RPD			
Acenaphtylene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Anthracene         M18-Ap02725         CP         mg/kg         < 0.5	Acenaphthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene         M18-Ap02725         CP         mg/kg         <0.5         <0.5         <1         30%         Pass           Benz(a)anthracene         M18-Ap02725         CP         mg/kg         <0.5	Acenaphthylene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene         M18-Ap02725         CP         mg/kg         <0.5         <0.5         <1         30%         Pass           Benzo(b,l)luoranthene         M18-Ap02725         CP         mg/kg         <0.5	Anthracene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene         M18-Ap02725         CP         mg/kg         <0.5         <0.5         <1         30%         Pass           Benzo(a,h)perylene         M18-Ap02725         CP         mg/kg         <0.5	Benz(a)anthracene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(bk)fituoranthene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Benzo(k)fuoranthene         M18-Ap02725         CP         mg/kg         < 0.5	Benzo(a)pyrene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g).h)perylene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Benzo(k)fluoranthene         M18-Ap02725         CP         mg/kg         < 0.5	Benzo(b&j)fluoranthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k/Iluoranthene         M18-Ap02725         CP         mg/kg         < 0.5         < 1         30%         Pass           Chrysene         M18-Ap02725         CP         mg/kg         < 0.5	Benzo(g.h.i)perylene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene         M18-Ap02725         CP         mg/kg         < 0.5         < 1         30%         Pass           Dibenz(a,h)anthracene         M18-Ap02725         CP         mg/kg         < 0.5	Benzo(k)fluoranthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Fluoranthene         M18-Ap02725         CP         mg/kg         < 0.5	Chrysene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Fluorene         M18-Ap02725         CP         mg/kg         < 0.5	Dibenz(a.h)anthracene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
FluoreneM18-Ap02725CPmg/kg< 0.5< 0.5< 130%PassIndeno(1.2.3-cd)pyreneM18-Ap02725CPmg/kg< 0.5	Fluoranthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Inden(1.2.3-cd)pyrene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Naphthalene         M18-Ap02725         CP         mg/kg         < 0.5	Fluorene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Phenanthrene         M18-Ap02725         CP         mg/kg         < 0.5	Indeno(1.2.3-cd)pyrene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Pyrene         M18-Ap02725         CP         mg/kg         < 0.5	Naphthalene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene         M18-Ap02725         CP         mg/kg         < 0.5         < 0.5         < 1         30%         Pass           Duplicate         Result 2         RPD         Image: Constraint of the constra	Phenanthrene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate         Result 1         Result 2         RPD         Image: Mail of the state st	Pyrene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Kesult 1         Result 2         RPD         C         C           % Moisture         M18-Ap02727         CP         %         14         15         6.0         30%         Pass           Duplicate         V         Kesult 2         RPD         Kesult 2         RPD         Kesult 2           Arsenic         M18-Ap02728         CP         mg/kg         23         25         8.0         30%         Pass           Cadmium         M18-Ap02728         CP         mg/kg         1.0         1.0         2.0         30%         Pass           Copper         M18-Ap02728         CP         mg/kg         72         84         15         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Nickel         M18-Ap02728         CP         mg/kg         300         28         6.0         30%         Pass           Zinc         M18-Ap02728         CP         mg/kg         300         28         6.0         30%         Pass           Duplicate         V         Kesult 1         Result 1         Result 1         30%         Pass         C	Duplicate									
% Moisture         M18-Ap02727         CP         %         14         15         6.0         30%         Pass           Duplicate         Verticate         Result 1         Result 2         RPD         Image: Constraint of the second of the					Result 1	Result 2	RPD		_	
Uppicate           Heavy Metals         Result 1         Result 2         RPD         Image: Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6">Colspan="6"Colspan="6">Colspan="6"Colspan="6"Colspan="6">Colspan="6"Co	% Moisture	M18-Ap02727	СР	%	14	15	6.0	30%	Pass	
Heavy Metals         Kesuit 1         Result 2         RPD         Image: Comparison 1           Arsenic         M18-Ap02728         CP         mg/kg         23         25         8.0         30%         Pass           Cadmium         M18-Ap02728         CP         mg/kg         1.0         2.0         30%         Pass           Chromium         M18-Ap02728         CP         mg/kg         28         31         10         30%         Pass           Copper         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         30         28         6.0         30%         Pass           Since         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Zinc         M18-Ap02729         CP         mg/kg         13         14         1.0         30%         Pass           Cadmium         M18-Ap02729         CP         mg/kg         2.0         2.0	Duplicate				D 14		0.00		1	
Arsenic         M18-Ap02728         CP         mg/kg         2.3         2.5         8.0         30%         Pass           Cadmium         M18-Ap02728         CP         mg/kg         1.0         1.0         2.0         30%         Pass           Chromium         M18-Ap02728         CP         mg/kg         2.8         3.1         1.0         30%         Pass           Copper         M18-Ap02728         CP         mg/kg         7.2         8.4         1.5         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         9.4         9.6         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         3.0         2.8         6.0         30%         Pass           Nickel         M18-Ap02728         CP         mg/kg         3.0         2.8         6.0         30%         Pass           Duplicate         E         Result 1         Result 2         RPD         ImageImage         Image           Arsenic         M18-Ap02729         CP         mg/kg         1.0         3.0%         Pass           Cadmium         M18-Ap02729         CP         mg/kg         7.	Heavy Metals	140 4-00700	0.0		Result 1	Result 2	RPD	0.00/	Deer	
Cadmium         M18-Ap02728         CP         mg/kg         1.0         1.0         2.0         33%         Pass           Chromium         M18-Ap02728         CP         mg/kg         28         31         10         30%         Pass           Copper         M18-Ap02728         CP         mg/kg         72         84         15         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         30         28         6.0         30%         Pass           Nickel         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Duplicate	Arsenic	M18-Ap02728		mg/kg	23	25	8.0	30%	Pass	
Chromium         M18-Ap02728         CP         Ing/kg         28         31         10         30%         Pass           Copper         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         30         28         6.0         30%         Pass           Nickel         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Zinc         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Duplicate	Cadmium	M18-Ap02728		mg/kg	1.0	1.0	2.0	30%	Pass	
Copper         InterApo2728         CP         Intg/kg         72         64         13         30%         Pass           Lead         M18-Ap02728         CP         mg/kg         94         96         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         30         28         6.0         30%         Pass           Nickel         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Zinc         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Duplicate	Chioman	M10-Ap02720		mg/kg	20	04	10	30%	Pass	
Lead         M18-Ap02728         CP         Ing/kg         94         96         2.0         30%         Pass           Mercury         M18-Ap02728         CP         mg/kg         <0.1		M19 Ap02720		mg/kg	04	04	10	30%	Pass	
Miteredary         Miteredary boundary         Miteredary boundary         Key boundary         K	Moreury	M18 Ap02728		mg/kg	- 0.1	90 < 0.1	2.0	30%	Pass	
Nicken         Mile-Ap02728         CP         Ing/kg         30         28         6.0         30%         Pass           Zinc         M18-Ap02728         CP         mg/kg         370         340         10         30%         Pass           Duplicate	Nickol	M18 Ap02728		mg/kg	20	29	<u>د</u> ا ۵0	30%	Pass	
Duplicate         Result 1         Result 2         RPD         Mile Ap02729         CP         mg/kg         13         14         1.0         30%         Pass           Arsenic         M18-Ap02729         CP         mg/kg         13         14         1.0         30%         Pass           Cadmium         M18-Ap02729         CP         mg/kg         2.0         2.0         30%         Pass           Chromium         M18-Ap02729         CP         mg/kg         70         71         2.0         30%         Pass           Copper         M18-Ap02729         CP         mg/kg         140         150         2.0         30%         Pass           Lead         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Mercury         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg         10         30%         Pass           Zinc         M18-Ap02729         CP         mg/kg         120         1.0         30%         Pass	Zinc	M18-Ap02728	CP	mg/kg	370	340	10	30%	Pass	
Heavy Metals         Result 1         Result 2         RPD           Arsenic         M18-Ap02729         CP         mg/kg         13         14         1.0         30%         Pass           Cadmium         M18-Ap02729         CP         mg/kg         2.0         2.0         2.0         30%         Pass           Chromium         M18-Ap02729         CP         mg/kg         70         71         2.0         30%         Pass           Copper         M18-Ap02729         CP         mg/kg         140         150         2.0         30%         Pass           Lead         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Mercury         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Lead         M18-Ap02729         CP         mg/kg         410         420         1.0         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg		W10 Ap02720	01	iiig/kg	570	040	10	5078	1 433	
Arsenic       M18-Ap02729       CP       mg/kg       13       14       1.0       30%       Pass         Cadmium       M18-Ap02729       CP       mg/kg       2.0       2.0       2.0       30%       Pass         Chromium       M18-Ap02729       CP       mg/kg       70       71       2.0       30%       Pass         Chromium       M18-Ap02729       CP       mg/kg       70       71       2.0       30%       Pass         Copper       M18-Ap02729       CP       mg/kg       140       150       2.0       30%       Pass         Lead       M18-Ap02729       CP       mg/kg       410       420       2.0       30%       Pass         Mercury       M18-Ap02729       CP       mg/kg       410       420       2.0       30%       Pass         Nickel       M18-Ap02729       CP       mg/kg       2.01       <1	Heavy Metals				Result 1	Result 2	RPD			
Allocation       Mile Ap02729       CP       mg/kg       10       14       1.0       00%       140         Cadmium       M18-Ap02729       CP       mg/kg       2.0       2.0       2.0       30%       Pass         Chromium       M18-Ap02729       CP       mg/kg       70       71       2.0       30%       Pass         Copper       M18-Ap02729       CP       mg/kg       140       150       2.0       30%       Pass         Lead       M18-Ap02729       CP       mg/kg       410       420       2.0       30%       Pass         Mercury       M18-Ap02729       CP       mg/kg       410       420       2.0       30%       Pass         Nickel       M18-Ap02729       CP       mg/kg       410       420       2.0       30%       Pass         Zinc       M18-Ap02729       CP       mg/kg       10       30%       Pass	Arsenic	M18-Ap02729	CP	ma/ka	13	14	1.0	30%	Pass	
Chromium         M18-Ap02729         CP         mg/kg         70         71         2.0         30%         Pass           Copper         M18-Ap02729         CP         mg/kg         140         150         2.0         30%         Pass           Lead         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Mercury         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg         2.01         <11	Cadmium	M18-Ap02729	CP	ma/ka	20	2.0	2.0	30%	Pass	
Copper         M18-Ap02729         CP         mg/kg         140         150         2.0         30%         Pass           Lead         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Mercury         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg         <0.1	Chromium	M18-Ap02729	CP	ma/ka	70	71	2.0	30%	Pass	
Lead         M18-Ap02729         CP         mg/kg         410         420         2.0         30%         Pass           Mercury         M18-Ap02729         CP         mg/kg         <0.1	Copper	M18-Ap02729	CP	ma/ka	140	150	2.0	30%	Pass	
Mercury         M18-Ap02729         CP         mg/kg         < 0.1         < 1         30%         Pass           Nickel         M18-Ap02729         CP         mg/kg         120         120         1.0         30%         Pass           Zinc         M18-Ap02729         CP         mg/kg         1400         1400         30%         Pass	Lead	M18-Ap02729	CP	ma/ka	410	420	2.0	30%	Pass	
Nickel         M18-Ap02729         CP         mg/kg         120         1.0         30%         Pass           Zinc         M18-Ap02729         CP         mg/kg         1400         1.0         30%         Pass	Mercury	M18-Ap02729	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Zinc M18-Ap02729 CP mg/kg 1400 1400 1.0 30% Pass	Nickel	M18-Ap02729	CP	mg/ka	120	120	1.0	30%	Pass	
	Zinc	M18-Ap02729	CP	mg/kg	1400	1400	1.0	30%	Pass	



Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	M18-Ap02730	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Ap02730	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	M18-Ap02730	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	M18-Ap02730	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-Ap02730	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-Ap02730	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate								-	
<b>Total Recoverable Hydrocarbons -</b>	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	M18-Ap02731	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	M18-Ap02731	CP	mg/kg	57	56	1.0	30%	Pass	
TRH C29-C36	M18-Ap02731	CP	mg/kg	61	63	3.0	30%	Pass	
Duplicate								-	
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	M18-Ap02731	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	M18-Ap02731	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	M18-Ap02731	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate								-	
Polycyclic Aromatic Hydrocarbons	5		1	Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02731	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate								1	
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract	M18-Ap02732	CP	uS/cm	23	22	49	30%	Pass	
pH (1:5 Aqueous extract at 25°C as		0.	40,011			1.0	0070	1 400	
rec.)	M18-Ap02732	CP	pH Units	6.1	5.9	pass	30%	Pass	
Duplicate								-	
Polycyclic Aromatic Hydrocarbons	5			Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02735	CP	mg/kg	1.0	0.7	36	30%	Fail	Q15
Acenaphthylene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Benzo(a)pyrene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Benzo(b&j)fluoranthene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Benzo(g.h.i)perylene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Benzo(k)fluoranthene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Chrysene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Dibenz(a.h)anthracene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	 
Fluoranthene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Duplicate							-		
Polycyclic Aromatic Hydrocarbons	6			Result 1	Result 2	RPD			
Fluorene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02735	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate							•		
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02737	CP	%	29	33	11	30%	Pass	
Duplicate							•		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02738	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M18-Ap02738	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M18-Ap02738	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-Ap02738	CP	ma/ka	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-Ap02738	CP	ma/ka	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-Ap02738	CP	ma/ka	< 0.1	< 0.1	<1	30%	Pass	
Xvlenes - Total	M18-Ap02738	CP	ma/ka	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	M18-Ap02738	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-Ap02738	CP	ma/ka	< 20	< 20	<1	30%	Pass	
Duplicate		0.			1 20		0070	1 400	
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02739	CP	ma/ka	12	12	1.0	30%	Pass	
Cadmium	M18-Ap02739	CP	ma/ka	0.5	0.5	7.0	30%	Pass	
Chromium	M18-Ap02739	CP	ma/ka	18	18	1.0	30%	Pass	
Copper	M18-Ap02739	CP	ma/ka	25	25	1.0	30%	Pass	
Lead	M18-Ap02739	CP	ma/ka	48	48	<1	30%	Pass	
Mercury	M18-Ap02739	CP	ma/ka	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02739	CP	ma/ka	8.7	8.7	<1	30%	Pass	
Zinc	M18-Ap02739	CP	ma/ka	140	140	<1	30%	Pass	
Duplicate		0.		1 10			0070	1 400	
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C15-C28	M18-Ap02745	CP	ma/ka	120000	140000	16	30%	Pass	
Duplicate		-				-			
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C16-C34	M18-Ap02745	CP	mg/kg	110000	130000	15	30%	Pass	
Duplicate			00		1				
Polycyclic Aromatic Hydrocarbons	3			Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)pervlene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a,h)anthracene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pvrene	M18-Ap02745	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	



Duplicate									
Polycyclic Aromatic Hydrocarbons	5			Result 1	Result 2	RPD			
Naphthalene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02745	СР	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M18-Ap02313	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02747	CP	%	34	45	27	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02748	CP	mg/kg	11	13	15	30%	Pass	
Cadmium	M18-Ap02748	CP	mg/kg	2.5	2.3	8.0	30%	Pass	
Chromium	M18-Ap02748	CP	mg/kg	30	23	28	30%	Pass	
Copper	M18-Ap02748	CP	mg/kg	180	200	6.0	30%	Pass	
Lead	M18-Ap02748	CP	mg/kg	210	180	16	30%	Pass	ļ
Mercury	M18-Ap02748	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	ļ
Nickel	M18-Ap02748	CP	mg/kg	27	24	12	30%	Pass	ļ
Zinc	M18-Ap02748	CP	mg/kg	780	730	6.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Cadmium	M18-Ap02749	CP	mg/kg	9.7	9.7	<1	30%	Pass	
Chromium	M18-Ap02749	CP	mg/kg	76	76	1.0	30%	Pass	
Copper	M18-Ap02749	CP	mg/kg	5500	5500	1.0	30%	Pass	
Lead	M18-Ap02749	CP	mg/kg	2000	2000	2.0	30%	Pass	
Mercury	M18-Ap02749	CP	mg/kg	0.4	0.4	1.0	30%	Pass	
	M18-Ap02749	СР	mg/kg	70	70	1.0	30%	Pass	
	M18-Ap02749	CP	mg/kg	1300	1300	1.0	30%	Pass	
Duplicate				Desult 1	Desult 0			1	
		CD	mallea	Result	Result 2	RPD	200/	Deee	
Acenaphthulana	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphinylene	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Antiliacene Bonz(a)anthracana	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&i)fluoranthene	M18-Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g h i)pon/ono	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Page	
Benzo(k)fluoranthana	M18 Ap02763		mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-An02762		ma/ka	205	< 0.5	~1	30%	Page	
Dihenz(a h)anthracene	M18-An02762	CP	ma/ka	< 0.5	< 0.5	~1	30%	Pase	
Fluoranthene	M18-An02762	CP	ma/ka	< 0.5	< 0.5	~1	30%	Pase	
Fluorene	M18-An02763	C.P	ma/ka	< 0.5	< 0.5	~1	30%	Pase	
Indeno(1,2,3-cd)pyrepe	M18-Ap02703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02703	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02763	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02763	CP	mg/ka	< 0.5	< 0.5	<1	30%	Pass	
		<b>U</b> 1					0070		<i>i</i>

# Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

## **Qualifier Codes/Comments**

## Code Description

N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q08	The matrix spike recovery is outside of the recommended acceptance criteria. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference

Q15 The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

# Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacallis	Senior Analyst-Volatile (VIC)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
Joseph Edouard	Senior Analyst-Organic (VIC)
Michael Brancati	Senior Analyst-Inorganic (VIC)
Nibha Vaidya	Senior Analyst-Asbestos (NSW)

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Glenn Jackson National Operations Manager Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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# Certificate of Analysis

Geo-Logix P/L Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102



WORLD RECOGNISED ACCREDITATION

NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention:	
Report	

Project name

**Received Date** 

Project ID

**592301-W-V2** KEMPSEY 1801031 Mar 29, 2018

**Ben Pearce** 

Client Sample ID			D4	Ba
Sample Matrix			K1 Wator	R2 Wator
Eurofins   mgt Sample No.			M18-Ap02755	M18-Ap02756
Date Sampled			Mar 27, 2018	Mar 28, 2018
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions			
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1
BTEX				
Benzene	0.001	mg/L	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	95	89
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions			
Naphthalene <sup>N02</sup>	0.01	mg/L	< 0.01	< 0.01
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	0.02	mg/L	< 0.02	< 0.02
TRH >C10-C16	0.05	mg/L	< 0.05	< 0.05
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	0.05	mg/L	< 0.05	< 0.05
TRH >C16-C34	0.1	mg/L	< 0.1	< 0.1
TRH >C34-C40	0.1	mg/L	< 0.1	< 0.1
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.001	mg/L	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001
Benzo(b&j)fluoranthene <sup>N07</sup>	0.001	mg/L	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001



Client Sample ID Sample Matrix			R1 Water	R2 Water
Eurofins   mgt Sample No.			M18-Ap02755	M18-Ap02756
Date Sampled			Mar 27, 2018	Mar 28, 2018
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
Naphthalene	0.001	mg/L	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001
Total PAH*	0.001	mg/L	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	%	75	71
p-Terphenyl-d14 (surr.)	1	%	85	98
Heavy Metals				
Arsenic	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Lead	0.001	mg/L	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005



# Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Eurofins   mgt Suite B7			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Apr 06, 2018	7 Day
- Method: LTM-ORG-2010 TRH C6-C36			
BTEX	Melbourne	Apr 05, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 05, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Apr 06, 2018	7 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Apr 06, 2018	7 Day
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Melbourne	Apr 05, 2018	28 Days
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			

First Reported: Apr 11, 2018 Date Reported: Apr 16, 2018

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Co Ad	mpany Name: dress:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	′L 3, 2309/4 Da	aydream St			Or Re Ph Fa	der N port i ione: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pro Pro	oject Name: oject ID:	KEMPSEY 1801031													Eurofir	ıs   mgt Analytical Sei	vices Manager : Nibha Vaidya
	Sample Detail								HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	271					Х	Х	Х	Х	х	х	-		
Sydi	ney Laboratory	- NATA Site # 1	8217				Х	X							-		
Bris	bane Laborator	y - NATA Site #	20794			X									-		
Pert	h Laboratory - I	NATA Site # 237	36												-		
No		Sample Date	Sampling	Matrix											-		
	Cumpie ib	Campie Dute	Time	matrix											-		
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	Х				Х		Х	X	Х	-		
2	SS2/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02703							Х		X	-		
3	SS3/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02704							X		X	-		
4	SS4/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02705							X		X	4		
5	SS5/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02706							X		X	-		
6	556/0.0-0.1	Mar 27, 2018		Soll	M18-Ap02707							X		X	4		
/	557/0.0-0.1	Mar 27, 2018		501	M18-Ap02708							X		X	-		
8	558/0.0-0.1	Mar 27, 2018		501	IN18-Ap02709							X		X	-		
9	559/0.0-0.1	Iviar 27, 2018		501	_INI18-Ар02710							Х		X	]		

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3 Warriewood NSW 2102	, 2309/4 Daydream	St		Or Re Ph Fa	der N port # ione: x:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7					
Melbourne Laboratory	y - NATA Site #	1254 & 14271					Х	х	х	Х	X	Х	-		
Sydney Laboratory - I	NATA Site # 182	217			Х	X							-		
Brisbane Laboratory	- NATA Site # 2	0794		Х									-		
Perth Laboratory - NA	A I A Site # 23/3		M18 Ap02711							v		v	-		
10 SS10/0.0-0.1 N	Mar 27, 2018	Soil	M18 Ap02712							×		×	-		
12 SS12/0.0-0.1 M	Mar 27, 2018	Soil	M18-Ap02713							x		x	1		
13 SS13/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02714							X		X	1		
14 SS14/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02715							Х		x	1		
15 SS15/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02716							Х		х	1		
16 SS16/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02717					l		Х	İ	х	1		
17 SS17/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02718							Х		Х	1		
18 SS18/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02719							Х		Х	1		
19 SS19/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02720							Х		Х	1		
20 SS20/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02721							Х		Х	]		
21 SS21/0.0-0.1 N	Mar 27, 2018	Soil	M18-Ap02722							х		х	J		

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Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Daydrea	m St		Or Re Ph Fa	der N port i none: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
	% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7						
Melbourne Laborator	y - NATA Site	# 1254 & 14271					Х	х	х	Х	X	х	-		
Sydney Laboratory - I	NATA Site # 18	8217			Х	X							-		
Brisbane Laboratory	- NATA Site #	20794		X									-		
Perth Laboratory - NA	ATA Site # 237	36	M40 A=00700							v		v	-		
22 5522/0.0-0.1	Mar 27, 2018	Soil	M18 Ap02724							×		×	-		
24 SS24/0.0-0.1	Mar 27, 2018	Soil	M18-An02725							x		x	1		
25 SS25/0.0-0.1	Mar 27, 2018	Soil	M18-Ap02726	1						X		X	1		
26 SS26/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02727	1						х		X	1		
27 SS27/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02728	1	1					х	1	х	1		
28 SS28/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02729	1	l	İ				х	İ	х	1		
29 SS29/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02730							х		Х	1		
30 SS30/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02731							х		Х	1		
31 SS31/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02732	Х				Х		х	Х	Х	1		
32 SS32/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02733							Х		Х	]		
33 SS33/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02734							Х		Х	]		

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Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Daydrea	am St		Or Re Ph Fa	der N port i none:	o.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
	Sar	nple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborator	y - NATA Site	# 1254 & 14271					Х	Х	х	Х	X	Х	-		
Sydney Laboratory - I	NATA Site # 18	8217			X	X							-		
Brisbane Laboratory	- NATA Site #	20794		X									-		
Perth Laboratory - NA	AIA Site # 237	36 Soil	M18 Ap02725							v		v	-		
35 SS35/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02735							X		x	-		
36 SS36/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02730	1						X		x	1		
37 SS37/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02738							X		X	1		
38 SS38/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02739	1	1					Х	1	х	1		
39 SS39/0.0-0.1 M	Mar 28, 2018	Soil	M18-Ap02740							Х		х	1		
40 SS40/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02741							Х		Х	1		
41 SS41/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02742							Х		Х	]		
42 SS42/0.0-0.1 M	Mar <u>28,</u> 2018	Soil	M18-Ap02743							Х		Х	]		
43 SS43/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02744							Х		Х	]		
44 SS44/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02745						Х	Х		Х			
45 SS45/0.0-0.1 N	Mar 28, 2018	Soil	M18-Ap02746							Х		Х	]		

	🔅 eur	mgt	ABN– 50 005 e.mail : Enviro web : www.eu	085 521 Sales@ rofins.co	eurofin: om.au	s.com	Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271				se 00	Syd Unit 16 M Lan Pho NAT	Iney t F3, Building F Mars Road te Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 2075	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 WATA # 1261 Site # 23736	
Co Ao	ompany Name: Idress:	Geo-Logix P, Bld Q2 Level Warriewood NSW 2102	/L 3, 2309/4 Daydream St			Or Re Ph Fa	der N port i none:	o.: #:	P 5 0 0	0250 92301 2 997 2 997	7 9 172 9 122	22			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pr Pr	oject Name: oject ID:	KEMPSEY 1801031												Eurofir	ns   mgt Analytical Sei	vices Manager : Nibha Vaidya
			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7					
Mell	bourne Laborato	ory - NATA Site	# 1254 & 14271					х	Х	Х	Х	Х	х			
Syd	ney Laboratory	- NATA Site # 1	8217			Х	x									
Bris	bane Laborator	y - NATA Site #	20794		Х											
Pert	h Laboratory - N	ATA Site # 237	36													
46	SS46/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02747							Х		Х			
47	SS47/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02748							Х		Х			
48	SS48/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02749						X	X		X			
49	SS49/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02750	X				X		X	X	X			
50	SS50/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02751						X	X		X			
51	DS1	Mar 27, 2018	Soil	M18-Ap02752							X		X			
52	DS2	Mar 27, 2018	Soil	M18-Ap02753							X	-	X			
53	DS3	Mar 27, 2018	Soil	M18-Ap02754							X	-	X			
54		Mar 27, 2018	Water	M18-Ap02755								-	X			
55	K2	Mar 28, 2018	Water	M18-Ap02756		~			<u> </u>				X			
56	A4/0.0-0.1	Mar 28, 2018	Soll	M18-Ap02757		X			<u> </u>							
57	A1/0.0-0.1	mar 28, 2018	501	IM18-Ap02758			X							]		

	🔅 eur	eurotins mgt ABN e.mail web : v				)85 521 Sales@ ofins.co	eurofins m.au	s.com	Meibourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271					<b>Syd</b> Unit 16 I Lan Pho NA	Iney IF3, Building F Wars Road Ie Cove West NSW 2066 one : +61 2 9900 8400 TA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 2079	Perth           2/91 Leach Highway           Kewdale WA 6105           0         Phone : +61 8 9251 9600           94         NATA # 1261           Site # 23736
Co Ac	ompany Name: Idress:	Geo-Logix P Bld Q2 Leve Warriewood NSW 2102	/L I 3, 2309/4 Day	/dream St			Or Re Ph Fa	der N port # none: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Pr Pr	oject Name: oject ID:	KEMPSEY 1801031													Eurofin	ns   mgt Analytical Se	rvices Manager : Nibha Vaidya
			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7						
Melt	oourne Laborato	ory - NATA Site	# 1254 & 1427	71					Х	Х	Х	Х	X	х			
Syd	ney Laboratory	- NATA Site # 1	8217				Х	X									
Bris	bane Laborator	y - NATA Site #	20794			Х											
Pert	h Laboratory - N	ATA Site # 237	736														
58	A5/0.0-0.1	Mar 28, 2018		Soll	M18-Ap02759			X									
59 60	A6/0.0-0.1	Mar 28, 2018		5011 Soil	M18 Ap02760			X									
61	A3/0 0-0 1	Mar 28, 2018		Soil	M18-Ap02762			x									
62	SS27A/0 0-0 1	Mar 28, 2018		Soil	M18-Ap02762							х		x			
63	SS28A/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02764							X		X			
64	SS1/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02765				х								
65	SS2/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02766				х				1	1			
66	SS3/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02767				Х								
67	SS4/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02768			İ	х				1				
68	SS5/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02769				Х								
69	SS6/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02770				Х								

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Company Name: Address:	Geo-Logix P/ Bld Q2 Level Warriewood NSW 2102	'L 3, 2309/4 Dayc	Iream St			Or Re Ph Fa	der Ne port # one: x:	0.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2 2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name: Project ID:	KEMPSEY 1801031													Eurofir	ns   mgt Analytical Se	ervices Manager : Nibha Vaidya
		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7						
Melbourne Laborato	ory - NATA Site	# 1254 & 14271	l					Х	Х	Х	Х	X	х	-		
Sydney Laboratory -	- NATA Site # 18	8217				Х	Х							-		
Brisbane Laboratory	y - NATA Site #	20794			Х									-		
Perth Laboratory - N	ATA Site # 237	36		40.4-00774				V						-		
71 558/02.02	Mar 27, 2018	S		10-ApU2//1				×						{		
72 \$\$9/0.2-0.3	Mar 27, 2018			18-Ap02773				X						1		
73 SS10/0.2-0.3	Mar 27, 2018	S	ioil M	18-Ap02774				X						1		
74 SS11/0.2-0.3	Mar 27, 2018	s	ioil M	18-Ap02775				X						-		
75 SS12/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02776				Х								
76 SS13/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02777				х				İ	İ	1		
77 SS14/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02778				х				İ	İ	1		
78 SS15/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02779				Х								
79 SS16/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02780				х						1		
80 SS17/0.2-0.3	Mar 27, 2018	s	oil M	18-Ap02781				Х						]		
81 SS18/0.2-0.3	Mar 27, 2018	S	oil M	18-Ap02782				Х								

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Co Ac	Company Name:       Geo-Logix P/L         Address:       Bld Q2 Level 3, 2309/4 Daydream St         Warriewood       NSW 2102					Or Re Ph Fa	der Neport # port # none: ix:	o.: #:	.: PO2507 592301 02 9979 1722 02 9979 1222						Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name:KEMPSEYProject ID:1801031													Eurofins   mgt Analytical Services Manager : Nibha Vaidya			
		Sa	mple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melt	bourne Laborato	ory - NATA Site	# 1254 & 14271					Х	х	Х	Х	X	х			
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х									
Bris	bane Laborator	y - NATA Site #	20794		Х											
Pert	h Laboratory - N	NATA Site # 237	36													
82	SS19/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02783				X								
83	SS20/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02784				X								
84	5521/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02785				X				-				
85	5522/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02786				X								
86	SS23/0.2-0.3	Mar 27, 2018	Soli	M18-Ap02787				X								
87	SS24/0.2-0.3	Mar 27, 2018	Soli	M18-Ap02788				X								
88	5525/0.2-0.3	War 28, 2018	Soll	M18-Ap02789				X								
89	5526/0.2-0.3	Mar 28, 2018	Soll	IN18-Ap02790				X								
90	5529/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02791				X								
91	5530/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02792				X								
92	5531/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02793				X								
93	SS32/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02794				Х						]		

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Company Name: Address:	Geo-Logix P/I Bld Q2 Level Warriewood NSW 2102	L 3, 2309/4 Daydrea	am St		Or Re Ph Fa	rder N eport a none: ix:	o.: #:	P 59 02 02	O250 92301 2 997 2 997	7 9 172 9 122	2			Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project Name:KEMPSEYProject ID:1801031					Eurofins   mgt Analytical Services Manager										rvices Manager : Nibha Vaidya
	San	nple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborato	ory - NATA Site #	# 1254 & 14271					Х	х	х	Х	X	Х	-		
Sydney Laboratory -	- NATA Site # 18	3217			Х	X							4		
Brisbane Laboratory	/ - NATA Site # 2	20794		X									-		
Perth Laboratory - N	A FA Site # 2373	36	N40 A=00705		-		v						-		
94 5533/0.2-0.3	Mar 28, 2018	501	M18 Ap02795				X						-		
96 SS35/0 2-0 3	Mar 28, 2018	Soil	M18-Ap02795	1			x						1		
97 SS36/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02798	1			X						1		
98 SS37/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02799				X						1		
99 SS38/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02800				х					1	1		
100 SS39/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02801				Х						1		
101 SS40/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02802				Х						]		
102 SS41/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02803				Х						]		
103 SS42/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02804				Х						]		
104 SS43/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02805				Х								
105 SS44/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02806				Х								

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Company Name:       Geo-Logix P/L         Address:       Bld Q2 Level 3, 2309/4 Daydream St         Warriewood       NSW 2102         Project Name:       KEMPSEY					Or Re Ph Fa	der Neport # ione: x:	o.: #:	PO2507 592301 02 9979 1722 02 9979 1222						Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce
Project ID:	1801031				Eurofins   mgt Analytical Services Manager :									vices Manager : Nibha Vaidya	
Sample Detail					Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7			
Melbourne Laborato	ory - NATA Site	# 1254 & 14271					х	х	х	х	х	х	]		
Sydney Laboratory	- NATA Site # 1	8217			Х	Х									
Brisbane Laboratory	y - NATA Site #	20794		х											
Perth Laboratory - N	ATA Site # 237	36	1										_		
106 SS45/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02807				Х						-		
107 SS46/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02808		<u> </u>		Х						4		
108 SS47/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02809				Х						-		
109 SS48/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02810				Х						4		
110 SS49/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02811				Х						-		
111 SS50/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02812				Х						-		
112 DS4	Mar 28, 2018	Soil	M18-Ap02813				Х						4		
113 DS5	Mar 28, 2018	Soil	M18-Ap02814				X						-		
114 SS27A/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02815				X						-		
115  SS28A/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02816	0			X	0	0		0	67	-		
Test Counts				3	1	5	52	3	3	55	3	57			



## Internal Quality Control Review and Glossary

#### General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

#### Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
coc	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
СР	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

#### **QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.


**Quality Control Results** 

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/L	< 0.02		0.02	Pass	
TRH C10-C14	mg/L	< 0.05		0.05	Pass	
TRH C15-C28	mg/L	< 0.1		0.1	Pass	
TRH C29-C36	mg/L	< 0.1		0.1	Pass	
Method Blank		1		1		
BTEX						
Benzene	mg/L	< 0.001		0.001	Pass	
Toluene	mg/L	< 0.001		0.001	Pass	
Ethylbenzene	mg/L	< 0.001		0.001	Pass	
m&p-Xylenes	mg/L	< 0.002		0.002	Pass	
o-Xylene	mg/L	< 0.001		0.001	Pass	
Xylenes - Total	mg/L	< 0.003		0.003	Pass	
Method Blank		1		1		
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/L	< 0.01		0.01	Pass	
TRH C6-C10	mg/L	< 0.02		0.02	Pass	
TRH >C10-C16	mg/L	< 0.05		0.05	Pass	
TRH >C16-C34	mg/L	< 0.1		0.1	Pass	
TRH >C34-C40	mg/L	< 0.1		0.1	Pass	
Method Blank		1				
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	mg/L	< 0.001		0.001	Pass	
Acenaphthylene	mg/L	< 0.001		0.001	Pass	
Anthracene	mg/L	< 0.001		0.001	Pass	
Benz(a)anthracene	mg/L	< 0.001		0.001	Pass	
Benzo(a)pyrene	mg/L	< 0.001		0.001	Pass	
Benzo(b&j)fluoranthene	mg/L	< 0.001		0.001	Pass	
Benzo(g.h.i)perylene	mg/L	< 0.001		0.001	Pass	
Benzo(k)fluoranthene	mg/L	< 0.001		0.001	Pass	
Chrysene	mg/L	< 0.001		0.001	Pass	
Dibenz(a.h)anthracene	mg/L	< 0.001		0.001	Pass	
Fluoranthene	mg/L	< 0.001		0.001	Pass	
Fluorene	mg/L	< 0.001		0.001	Pass	
Indeno(1.2.3-cd)pyrene	mg/L	< 0.001		0.001	Pass	
Naphthalene	mg/L	< 0.001		0.001	Pass	
Phenanthrene	mg/L	< 0.001		0.001	Pass	
Pyrene	mg/L	< 0.001		0.001	Pass	
Method Blank		1				
Heavy Metals						
Arsenic	mg/L	< 0.001		0.001	Pass	
Cadmium	mg/L	< 0.0002		0.0002	Pass	
Chromium	mg/L	< 0.001		0.001	Pass	
Copper	mg/L	< 0.001		0.001	Pass	
Lead	mg/L	< 0.001		0.001	Pass	
Mercury	mg/L	< 0.0001		0.0001	Pass	
Nickel	mg/L	< 0.001		0.001	Pass	
Zinc	mg/L	< 0.005		0.005	Pass	
LCS - % Recovery		1		1		
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	108		70-130	Pass	



Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code		
TRH C10-C14			%	87		70-130	Pass	
LCS - % Recovery								
ВТЕХ								
Benzene			%	108		70-130	Pass	
Toluene			%	99		70-130	Pass	
Ethylbenzene			%	104		70-130	Pass	
m&p-Xylenes			%	100		70-130	Pass	
Xylenes - Total			%	100		70-130	Pass	
LCS - % Recovery								
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions						
Naphthalene			%	100		70-130	Pass	
TRH C6-C10			%	107		70-130	Pass	
TRH >C10-C16			%	79		70-130	Pass	
LCS - % Recovery								
Polycyclic Aromatic Hydrocarbons	;							
Acenaphthene			%	78		70-130	Pass	
Acenaphthylene			%	71		70-130	Pass	
Anthracene			%	78		70-130	Pass	
Benz(a)anthracene			%	87		70-130	Pass	
Benzo(a)pyrene			%	87		70-130	Pass	
Benzo(b&j)fluoranthene			%	106		70-130	Pass	
Benzo(g.h.i)perylene			%	102		70-130	Pass	
Benzo(k)fluoranthene			%	77		70-130	Pass	
Chrysene			%	97		70-130	Pass	
Dibenz(a.h)anthracene			%	97		70-130	Pass	
Fluoranthene			%	97		70-130	Pass	
Fluorene			%	71		70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	102		70-130	Pass	
Naphthalene			%	72		70-130	Pass	
Phenanthrene			%	76		70-130	Pass	
Pyrene			%	88		70-130	Pass	
LCS - % Recovery								
Heavy Metals								
Arsenic			%	91		80-120	Pass	
Cadmium			%	102		80-120	Pass	
Chromium			%	94		80-120	Pass	
Copper			%	92		80-120	Pass	
Lead			%	98		80-120	Pass	
Mercury			%	103		75-125	Pass	
Nickel			%	92		80-120	Pass	
Zinc			%	92		80-120	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery					· ·			
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1				
TRH C10-C14         M18-Ap00304         NCP				98		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1				
TRH >C10-C16 M18-Ap00304 NCP				93		70-130	Pass	
Spike - % Recovery								
Polycyclic Aromatic Hydrocarbons				Result 1				
Acenaphthene	M18-Ma33922	NCP	%	75		70-130	Pass	
Acenaphthylene	M18-Ma33922	NCP	%	84		70-130	Pass	
Anthracene	M18-Ma33922	NCP	%	88		70-130	Pass	
Benz(a)anthracene	M18-Ma33922	NCP	%	101		70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	M18-Ma33922	NCP	%	82	82		70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ma33922	NCP	%	96			70-130	Pass	
Benzo(g.h.i)perylene	M18-Ma33922	NCP	%	96			70-130	Pass	
Benzo(k)fluoranthene	M18-Ma33922	NCP	%	86			70-130	Pass	
Chrysene	M18-Ma33922	NCP	%	102			70-130	Pass	
Dibenz(a.h)anthracene	M18-Ma33922	NCP	%	93			70-130	Pass	
Fluoranthene	M18-Ma33922	NCP	%	110			70-130	Pass	
Fluorene	M18-Ma33922	NCP	%	87			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ma33922	NCP	%	96			70-130	Pass	
Naphthalene	M18-Ma33922	NCP	%	77			70-130	Pass	
Phenanthrene	M18-Ma33922	NCP	%	83			70-130	Pass	
Pyrene	M18-Ma33922	NCP	%	104			70-130	Pass	
Spike - % Recovery				1					
Heavy Metals				Result 1					
Arsenic	M18-Ap03119	NCP	%	89			75-125	Pass	
Cadmium	M18-Ap03119	NCP	%	101			75-125	Pass	
Chromium	M18-Ap03119	NCP	%	96			75-125	Pass	
Copper	M18-Ap03119	NCP	%	91			75-125	Pass	
Lead	M18-Ap03119	NCP	%	97			75-125	Pass	
Mercury	M18-Ap03119	NCP	%	102			70-130	Pass	
Nickel	M18-Ap03119	NCP	%	91			75-125	Pass	
Zinc	M18-Ap03119	NCP	%	109			75-125	Pass	
Spike - % Recovery					1		I		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1					
TRH C6-C9	M18-Ap02756	CP	%	113			70-130	Pass	
Spike - % Recovery				-			1		
BTEX	1			Result 1					
Benzene	M18-Ap02756	CP	%	109			70-130	Pass	
Toluene	M18-Ap02756	CP	%	102			70-130	Pass	
Ethylbenzene	M18-Ap02756	CP	%	106			70-130	Pass	
m&p-Xylenes	M18-Ap02756	CP	%	103			70-130	Pass	
o-Xylene	M18-Ap02756	CP	%	104			70-130	Pass	
Xylenes - Total	M18-Ap02756	CP	%	103			70-130	Pass	
Spike - % Recovery							1		
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions	<b>0</b> /	Result 1				_	
Naphthalene	M18-Ap02756	СР	%	99			70-130	Pass	
TRH C6-C10	M18-Ap02756		%	113			70-130	Pass	O
Test	Lab Sample ID	Source	Units	Result 1			Limits	Limits	Code
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02755	CP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	M18-Ma36278	NCP	mg/L	0.30	0 0.38 2		30%	Pass	
TRH C15-C28	M18-Ma36278	NCP	mg/L	0.2	0.2	23	30%	Pass	
TRH C29-C36	M18-Ma36278	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate	•			•					
BTEX				Result 1	Result 2	RPD			
Benzene	M18-Ap02755	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	M18-Ap02755	СР	mg/L	< 0.001	0.001 < 0.001 <1		30%	Pass	
Ethylbenzene	M18-Ap02755	CP	mg/L	< 0.001	)1 < 0.001 <1		30%	Pass	
m&p-Xylenes	M18-Ap02755	СР	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M18-Ap02755	СР	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	M18-Ap02755	CP	mg/L	< 0.003	< 0.003	<1	30%	Pass	



Duplicate												
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD						
Naphthalene M18-Ap02755 CP mg/L		< 0.01	< 0.01	<1	30%	Pass						
TRH C6-C10 M18-Ap02755 CP mg/L		mg/L	< 0.02	< 0.02	<1	30%	Pass					
TRH >C10-C16	M18-Ma36278	NCP	mg/L	0.22	0.29	26	30%	Pass				
TRH >C16-C34	M18-Ma36278	NCP	mg/L	< 0.1	0.1	26	30%	Pass				
TRH >C34-C40	M18-Ma36278	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass				
Duplicate												
Polycyclic Aromatic Hydrocarbons	6			Result 1	Result 2	RPD						
Acenaphthene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Acenaphthylene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Anthracene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Benz(a)anthracene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Benzo(a)pyrene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Benzo(b&j)fluoranthene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Benzo(g.h.i)perylene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Benzo(k)fluoranthene S18-Ma32033		NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Chrysene S18-Ma32		NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Dibenz(a.h)anthracene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Fluoranthene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Fluorene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Indeno(1.2.3-cd)pyrene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Naphthalene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Phenanthrene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Pyrene	S18-Ma32033	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Duplicate												
Heavy Metals				Result 1	Result 2	RPD						
Arsenic	M18-Ap03119	NCP	mg/L	0.003	0.003	5.0	30%	Pass				
Cadmium	M18-Ap03119	NCP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass				
Chromium	M18-Ap03119	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass				
Copper	M18-Ap03119	NCP	mg/L	0.004	0.005	13	30%	Pass	l			
Lead	M18-Ap03119	NCP	mg/L	0.003	0.003	<1	30%	Pass				
Mercury	M18-Ap03119	NCP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass				
Nickel	M18-Ap03119	NCP	mg/L	0.002	0.002	6.0	30%	Pass				
Zinc	M18-Ap03119	NCP	mg/L	0.057	0.057	<1	30%	Pass				



#### Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

#### **Qualifier Codes/Comments**

Code Description

N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

N07 Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

#### Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Harry Bacallis	Senior Analyst-Volatile (VIC)
Joseph Edouard	Senior Analyst-Organic (VIC)

Glenn Jackson National Operations Manager Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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## Certificate of Analysis



NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Geo-Logix P/L Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102

Attention:	Ben Pearce
Report	592301-V2-AID
Project Name	KEMPSEY
Project ID	1801031
Received Date	Mar 29, 2018
Date Reported	Apr 11, 2018
Methodology:	
Asbestos Fibre Identification	Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques. NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.
Unknown Mineral Fibres	Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity. NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.
Subsampling Soil Samples	The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub- sampling routine based on ISO 3082:2009(E) is employed. <i>NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.</i>
Bonded asbestos- containing material (ACM)	The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004. NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.
Limit of Reporting	The performance limitation of the AS4964 method for inhomogeneous samples is around 0.1 g/kg (0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis where required, this is considered to be at the nominal reporting limit of 0.01% (w / w). The examination of large sample sizes(500 mL is recommended) may improve the likelihood of identifying ACM in the > 2mm fraction. The NEPM screening level of 0.001% (w / w) asbestos in soil for FA(friable asbestos) and AF(asbestos fines) then applies where they are able to be quantified by gravimetric procedures. This quantitative screening is not generally applicable to FF(free fibres) and results of Trace Analysis are referred. NOTE: NATA News March 2014, p.7, states in relation to AS4964: "This is a qualitative method with a nominal reporting limit of 0.01%" and that currently in Australia "there is no validated method available for the quantification of asbestos". Accordingly, NATA Accreditation does not cover the performance of this service (indicated with an asterisk). This report is consistent with the analytical procedures and reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended) and the Western Australia Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia, 2009, including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil Lune 2011.





Accredited for compliance with ISO/IEC 17025–Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Project Name	KEMPSEY
Project ID	1801031
Date Sampled	Mar 28, 2018
Report	592301-V2-AID

Client Sample ID	Eurofins   mgt Sample No.	Date Sampled	Sample Description	Result
A4/0.0-0.1	18-Ap02757	Mar 28, 2018	Approximate Sample 244g Sample consisted of: Brown fine grain soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No respirable fibres detected.
A1/0.0-0.1	18-Ap02758	Mar 28, 2018	Approximate Sample 438g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.
A5/0.0-0.1	18-Ap02759	Mar 28, 2018	Approximate Sample 474g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.
A6/0.0-0.1	18-Ap02760	Mar 28, 2018	Approximate Sample 516g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.
A2/0.0-0.1	18-Ap02761	Mar 28, 2018	Approximate Sample 415g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.
A3/0.0-0.1	18-Ap02762	Mar 28, 2018	Approximate Sample 421g Sample consisted of: Brown fine grain soil and rocks	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.



#### **Sample History**

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Apr 09, 2018	Indefinite
Asbestos - LTM-ASB-8020	Sydney	Apr 09, 2018	Indefinite

	eur	ofins	mgt			ABN – e.mail web : v	50 005 : Enviro vww.eui	085 52 <sup>.</sup> Sales@ rofins.cc	1 !eurofins om.au	s.com		Melbou 3-5 Kin Oakleig Phone NATA # Site # 1	urne gston T jh VIC 3 : +61 3 ≇ 1261 254 & <sup>-</sup>	own Close 3166 8564 5000 14271	<b>Sydney</b> Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217	Brisbane 1/21 Smallwood Murarrie QLD 4 Phone : +61 7 33 NATA # 1261 Sit	Place 172 902 4600 re # 20794	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736
Company Name:       Geo-Logix P/L         Address:       Bld Q2 Level 3, 2309/4 Daydream St         Warriewood       NSW 2102					Or Re Ph Fa	der N port i one: x:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contact	ed: : : Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pear	2018 12:48 PM 18 rce		
Pr Pr	oject Name: oject ID:	KEMPSEY 1801031													Eurofins   mgt #	Analytical Serv	vices Ma	nager : Nibha Vaidya
	Sample Detail						Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Mell	ourne Laborate	ory - NATA Site	# 1254 & 142	.71					Х	х	Х	х	Х	х				
Syd	ney Laboratory	- NATA Site # 1	8217				Х	X	ļ'									
Bris	bane Laborator	y - NATA Site #	20794			Х		<u> </u>	<u> </u>									
Pert	h Laboratory - I	NATA Site # 237	736					—	<u> </u>									
Exte	ernal Laboratory		0					<u> </u>	<u> </u>									
NO	Sample ID	Sample Date	Time	Watrix														
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	х		$\vdash$	$\square$	х		х	х	x				
2	SS2/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02703	<u> </u>		_	<u> </u> '		L	Х		X				
3	SS3/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02704			—	<u> </u> '			X		X				
4	SS4/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02705			—	<u> </u> '			X		X				
5	SS5/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02706			+	<u> </u>			X						
0	556/0.0-0.1	Mar 27, 2018		5011 Soil	M18 Ap02707	+		+	<u> </u>									
8	SS8/0 0 0 1	Mar 27, 2018		Soil	M18-Ap02700			$\vdash$	<u> </u>									
0	SS0/0.0-0.1	Mar 27, 2018		Soil	M18 Ap02709			$\vdash$	<u> </u>									
9	559/0.0-0.1	uviar 27, 2018		5011	μνιτο-Αρυ2710	I		L		L	I	X		× 1				

🔅 euro	ofins     mgt		ABN – e.mail : web : v	50 005 : Enviros vww.eur	085 52 Sales@ rofins.co	1 eurofins om.au	s.com		Melbou 3-5 Kin Oakleig Phone NATA Site # 1	urne gston Tr jh VIC 3 : +61 3 # 1261 254 & 1	own Close 3166 8564 5000 14271	<b>Sydney</b> Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217	Brisbane 1/21 Smallwo Murarrie QLD Phone : +61 7 NATA # 1261	od Place 4172 7 3902 4600 Site # 20794	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736
Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St		Or Re Ph Fa	der N eport ione: ix:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contact	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031											Eurofins   mgt #	Analytical So	ervices Ma	nager : Nibha Vaidya
	Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ry - NATA Site # 1254 & 142	271				Х	х	х	х	х	Х				
Sydney Laboratory -	NATA Site # 18217			Х	X										
Brisbane Laboratory	- NATA Site # 20794		X												
Perth Laboratory - N	ATA Site # 23736														
10 SS10/0.0-0.1	Mar 27, 2018	Soil M18-Ap02711							X		X				
11 SS11/0.0-0.1	Mar 27, 2018	Soil M18-Ap02712							X		X				
12 5512/0.0-0.1	Mar 27, 2018	Soil M18-Ap02713							×		×				
13 <u>3313/0.0-0.1</u>	Mar 27, 2018	Soil M18-Ap02714							X		x				
15 SS15/0.0-0.1	Mar 27, 2018	Soil M18-Ap02716							x		x				
16 SS16/0.0-0.1	Mar 27, 2018	Soil M18-Ap02717							X		X				
17 SS17/0.0-0.1	Mar 27, 2018	Soil M18-Ap02718							X		X				
18 SS18/0.0-0.1	Mar 27, 2018	Soil M18-Ap02719							х		X				
19 SS19/0.0-0.1	Mar 27, 2018	Soil M18-Ap02720							х		x				
20 SS20/0.0-0.1	Mar 27, 2018	Soil M18-Ap02721							х		X				
21 SS21/0.0-0.1	Mar 27, 2018	Soil M18-Ap02722							Х		Х				

🔅 euro	ofins     mgt		ABN – e.mail : web : w	50 005 Enviros vww.eur	085 52 Sales@ ofins.co	1 eurofins om.au	s.com		Melbou 3-5 Kin Oakleig Phone NATA # Site # 1	urne gston T gh VIC 3 : +61 3 # 1261 1254 & 2	own Close 3166 8564 5000 14271	Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217	Brisbane 1/21 Smallwo Murarrie QLD Phone : +61 7 NATA # 1261	od Place 4172 7 3902 4600 Site # 20794	Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736
Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St		Or Re Ph Fa	der N port i one: x:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contact	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031											Eurofins   mgt A	Analytical So	ervices Ma	nager : Nibha Vaidya
	Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	НОГД	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ry - NATA Site # 1254 & 142	271				х	х	х	х	х	Х				
Sydney Laboratory -	NATA Site # 18217			Х	Х										
Brisbane Laboratory	- NATA Site # 20794		X												
Perth Laboratory - N	ATA Site # 23736	1													
22 SS22/0.0-0.1	Mar 27, 2018	Soil M18-Ap02723							X		X				
23 SS23/0.0-0.1	Mar 27, 2018	Soil M18-Ap02724							X		X				
24 5524/0.0-0.1	Mar 27, 2018	Soil M18-Ap02725							×						
25 3325/0.0-0.1	Mar 28, 2018	Soil M18-Ap02727							x		x				
20 <u>3320/0.0-0.1</u> 27 <u>SS27/0.0-0.1</u>	Mar 28, 2018	Soil M18-Ap02728							X		X				
28 SS28/0 0-0 1	Mar 28, 2018	Soil M18-Ap02729							x		X				
29 SS29/0.0-0.1	Mar 28, 2018	Soil M18-Ap02730							X		x				
30 SS30/0.0-0.1	Mar 28, 2018	Soil M18-Ap02731	1						х		X				
31 SS31/0.0-0.1	Mar 28, 2018	Soil M18-Ap02732	x				х		х	x	X				
32 SS32/0.0-0.1	Mar 28, 2018	Soil M18-Ap02733	1						Х		Х				
33 SS33/0.0-0.1	Mar 28, 2018	Soil M18-Ap02734							Х		Х				

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St		Or Re Ph Fa	der N eport ione: x:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contact	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031											Eurofins   mgt /	Analytical So	ervices Ma	nager : Nibha Vaidya
	Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ry - NATA Site # 1254 & 142	271				Х	х	х	х	Х	Х				
Sydney Laboratory -	NATA Site # 18217			Х	Х										
Brisbane Laboratory	/ - NATA Site # 20794		Х												
Perth Laboratory - N	ATA Site # 23736	1													
34 SS34/0.0-0.1	Mar 28, 2018	Soil M18-Ap02735							Х		X				
35 SS35/0.0-0.1	Mar 28, 2018	Soil M18-Ap02736	-						X		X				
36 \$\$36/0.0-0.1	Mar 28, 2018	Soil M18-Ap02737	-						X		X				
37 5537/0.0-0.1	Mar 28, 2018	Soli M18-Ap02738							×						
30 \$\$30/0.0-0.1	Mar 28, 2018	Soil M18-Ap02739							x		x				
40 \$\$40/0.0-0.1	Mar 28, 2018	Soil M18-Ap02740							X		X				
41 SS41/0.0-0.1	Mar 28, 2018	Soil M18-Ap02747	1						X		x				
42 SS42/0.0-0.1	Mar 28, 2018	Soil M18-Ap02743							Х		X				
43 SS43/0.0-0.1	Mar 28, 2018	Soil M18-Ap02744	1						х		x				
44 SS44/0.0-0.1	Mar 28, 2018	Soil M18-Ap02745					l	х	х		X				
45 SS45/0.0-0.1	Mar 28, 2018	Soil M18-Ap02746							Х		Х				

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St			Or Re Ph Fa	der N port one: x:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contact	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031												Eurofins   mgt A	Analytical So	ervices Ma	nager : Nibha Vaidya
	Sample Detail			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ory - NATA Site # 1254 & 142	271					Х	Х	Х	Х	х	Х				
Sydney Laboratory	- NATA Site # 18217				х	х										
Brisbane Laborator	y - NATA Site # 20794			Х												
Perth Laboratory - N	NATA Site # 23736															
46 SS46/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02747							Х		X				
47 SS47/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02748							X		X				
48 SS48/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02749	v					X	X		X				
49 \$\$49/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02750	X				X	v	X	X	X				
50 5550/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02751						^	×						
52 DS2	Mar 27, 2018	Soil	M18-Ap02753							x		x				
53 DS3	Mar 27, 2018	Soil	M18-Ap02754							X		X				
54 R1	Mar 27, 2018	Water	M18-Ap02755									x				
55 R2	Mar 28, 2018	Water	M18-Ap02756									X				
56 A4/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02757		x			1								
57 A1/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02758			Х										

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St			Or Re Ph Fa	der N eport ione: x:	lo.: #:	P 5 0	O250 92301 2 997 2 997	7   9 172: 9 122:	2 2		Receive Due: Priority Contact	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031												Eurofins   mgt #	Analytical S	ervices Ma	nager : Nibha Vaidya
	Sample Detail			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	НОГД	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ory - NATA Site # 1254 & 14	271					х	х	х	х	x	x				
Sydney Laboratory -	- NATA Site # 18217				Х	Х										
Brisbane Laboratory	/ - NATA Site # 20794			Х												
Perth Laboratory - N	ATA Site # 23736															
58 A5/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02759			X										
59 A6/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02760			X										
60 A2/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02761			X										
61 A3/0.0-0.1	Mar 28, 2018	Soil	M18-Ap02762	-		X				v		×				
62 SS27A/0.0-0.1	Mar 28, 2018	Soll	M18-Ap02763													
64 SS1/0 2-0 3	Mar 27, 2018	Soil	M18-Ap02765	+	<u> </u>		x			$\uparrow$	<u> </u>					
65 \$\$2/0 2-0 3	Mar 27, 2010	Soil	M18-Ap02765	1			x									
66 SS3/0 2-0.3	Mar 27, 2018	Soil	M18-Ap02767				X									
67 SS4/0 2-0.3	Mar 27, 2018	Soil	M18-Ap02768	1			x									
68 SS5/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02769				X									
69 SS6/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02770				Х									

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St			Or Re Ph Fa	der N port i one: x:	lo.: #:	P 5 0 0	O250 92301 2 997 2 997	7 9 172: 9 122:	2 2		Receive Due: Priority Contac	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 18 rce
Project Name: Project ID:	KEMPSEY 1801031												Eurofins   mgt /	Analytical S	ervices Ma	nager : Nibha Vaidya
	Sample Detail			% Clay	Asbestos - AS4964	Asbestos - WA guidelines	НОГД	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ory - NATA Site # 1254 & 142	271					х	Х	х	х	Х	х				
Sydney Laboratory -	- NATA Site # 18217				Х	X										
Brisbane Laboratory	/ - NATA Site # 20794			Х												
Perth Laboratory - N	ATA Site # 23736	1														
70 SS7/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02771				X									
71 558/0.2-0.3	Mar 27, 2018	Soll	M18-Ap02772				×									
72 \$59/0.2-0.3	Mar 27, 2018	Soil	M18 Ap02773				×									
74 \$\$11/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02775				X									
75 \$\$12/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02776				x									
76 SS13/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02777				X									
77 SS14/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02778				X									
78 SS15/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02779				х									
79 SS16/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02780				х									
80 SS17/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02781				Х									
81 SS18/0.2-0.3	Mar 27, 2018	Soil	M18-Ap02782				Х									

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da Warriewood NSW 2102	aydream St		Or Re Ph Fa	der N port one: x:	lo.: #:	P 5: 0: 0:	O250 92301 2 997 2 997	7 9 172 9 122	2 2		Receive Due: Priority Contac	ed: : t Name:	Mar 29, 2 Apr 9, 20 5 Day Ben Pea	2018 12:48 PM 118 rce
Project Name: Project ID:	KEMPSEY 1801031											Eurofins   mgt /	Analytical S	ervices Ma	nager : Nibha Vaidya
	Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ry - NATA Site # 1254 & 142	271				Х	х	Х	Х	Х	Х				
Sydney Laboratory -	NATA Site # 18217			Х	X										
Brisbane Laboratory	- NATA Site # 20794		X												
Perth Laboratory - N	ATA Site # 23736	1 1													
82 SS19/0.2-0.3	Mar 27, 2018	Soil M18-Ap02783				X									
83 SS20/0.2-0.3	Mar 27, 2018	Soil M18-Ap02784				X									
84 \$\$21/0.2-0.3	Mar 27, 2018	Soil M18-Ap02785				X									
85 5522/0.2-0.3	Mar 27, 2018	Soil M18-Ap02786													
87 \$\$23/0.2-0.3	Mar 27, 2018	Soil M18-Ap02788				×									
88 \$\$25/0.2-0.3	Mar 27, 2018	Soil M18-Ap02789				X									
89 \$\$26/0.2-0.3	Mar 28, 2018	Soil M18-Ap02790				X									
90 SS29/0.2-0.3	Mar 28, 2018	Soil M18-Ap02791				x									
91 SS30/0.2-0.3	Mar 28, 2018	Soil M18-Ap02792				X									
92 SS31/0.2-0.3	Mar 28, 2018	Soil M18-Ap02793				х									
93 SS32/0.2-0.3	Mar 28, 2018	Soil M18-Ap02794				Х									

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3, 2309/4 Da	aydream St		Or Re	der N eport	lo.: #:	P 5	O250 92301	7			Receive Due:	ed:	Mar 29, 2 Apr 9, 20	2018 12:48 PM 18
	Warriewood NSW 2102			Ph Fa	ione: x:		0	2 997 2 997	9 172 9 122	2 2		Contact	: t Name:	5 Day Ben Pea	rce
Project Name: Project ID:	KEMPSEY 1801031											Eurofine Lucet	an alutional C		
	Sample Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ry - NATA Site # 1254 & 14	271				Х	X	Х	Х	X	Х				
Sydney Laboratory -	NATA Site # 18217			Х	X										
Brisbane Laboratory	- NATA Site # 20794		X												
Perth Laboratory - N	ATA Site # 23736					v									
94 5533/0.2-0.3	Mar 28, 2018	Soil M18-Ap02795													
95 3334/0.2-0.3	Mar 28, 2018	Soil M18-Ap02795				×									
97 \$\$36/0.2-0.3	Mar 28, 2018	Soil M18-Ap02797				X									
98 SS37/0.2-0.3	Mar 28, 2018	Soil M18-Ap02799				X									
99 SS38/0.2-0.3	Mar 28, 2018	Soil M18-Ap02800				X									
100 SS39/0.2-0.3	Mar 28, 2018	Soil M18-Ap02801				Х									
101 SS40/0.2-0.3	Mar 28, 2018	Soil M18-Ap02802				Х									
102 SS41/0.2-0.3	Mar 28, 2018	Soil M18-Ap02803				Х									
103 SS42/0.2-0.3	Mar 28, 2018	Soil M18-Ap02804				Х									
104 SS43/0.2-0.3	Mar 28, 2018	Soil M18-Ap02805				Х									
105 SS44/0.2-0.3	Mar 28, 2018	Soil M18-Ap02806				Х									

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Company Name: Address:	Geo-Logix P/L Bld Q2 Level 3 Warriewood NSW 2102	- 3, 2309/4 Daydream St			Or Re Ph Fa	der N eport ione: ix:	lo.: #:	P 5 0 0	20250 9230 2 997 2 997	7 1 9 172 9 122	2 2		Receive Due: Priority Contact	ed: M A : 5 t Name: B	lar 29, 2 pr 9, 20 Day en Pear	018 12:48 PM 18 ce
Project Name: Project ID:	KEMPSEY 1801031												Eurofins   mgt A	Analytical Servi	ces Mar	nager : Nibha Vaidya
	San	nple Detail		% Clay	Asbestos - AS4964	Asbestos - WA guidelines	HOLD	pH (1:5 Aqueous extract at 25°C as rec.)	Polychlorinated Biphenyls	Moisture Set	Cation Exchange Capacity	Eurofins   mgt Suite B7				
Melbourne Laborato	ory - NATA Site #	1254 & 14271					Х	Х	Х	Х	х	Х				
Sydney Laboratory -	- NATA Site # 18	217			Х	Х										
Brisbane Laboratory	y - NATA Site # 2	20794		Х												
Perth Laboratory - N	ATA Site # 2373	6														
106 SS45/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02807				Х									
107 SS46/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02808				Х									
108 SS47/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02809				Х									
109 SS48/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02810				Х									
110 SS49/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02811				Х									
111 SS50/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02812				X									
112 DS4	Mar 28, 2018	Soil	M18-Ap02813	_			X					+				
113 DS5	Mar 28, 2018	Soil	M18-Ap02814	_			X					+				
114 SS27A/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02815				X									
115  SS28A/0.2-0.3	Mar 28, 2018	Soil	M18-Ap02816	_		_	X	-			-					
Test Counts				3	1	5	52	3	3	55	3	57				



#### Internal Quality Control Review and Glossary General

#### 1. QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. Samples were analysed on an 'as received' basis.
- 4. This report replaces any interim results previously issued.

#### **Holding Times**

Units

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

mgt

% w/w: weight for weight I	basis	grams per kilogram
Filter loading:		fibres/100 graticule areas
Reported Concentration:		fibres/mL
Flowrate:		L/min
Terms		
Dry	Where a moisture has been determined on a solid sample the resu	It is expressed on a dry basis
LOR	Limit of Reporting	
COC	Chain of Custody	
SRA	Sample Receipt Advice	
ISO	International Standards Organisation	
AS	Australian Standards	
WA DOH	Western Australia Department of Health	
NOHSC	National Occupational Health and Safety Commission	
ACM	Bonded asbestos-containing material means any material containing although possibly broken or fragmented, and where the asbestos is to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on ceiling plaster, ceiling tiles, and gasket materials. This term is restr approximates the thickness of common asbestos cement sheeting for fibre release.	ng more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, s bound in a matrix such as cement or resin. Common examples of ACM include but are not limited acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and icted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it and for fragments to be smaller than this would imply a high degree of damage and hence potential
FA	FA comprises friable asbestos material and includes severely weat is defined here as asbestos material that is in a degraded condition was previously bonded and is now significantly degraded (crumblir	thered cement sheet, insulation products and woven asbestos material. This type of friable asbestos n such that it can be broken or crumbled by hand pressure. This material is typically unbonded or ng).
PACM	Presumed Asbestos-Containing Material means thermal system in: than 1980 that are assumed to contain greater than one percent as	sulation and surfacing material found in buildings, vessels, and vessel sections constructed no later sbestos but have not been sampled or analyzed to verify or negate the presence of asbestos.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, sm small fibres (< 5 microns in length) are not considered to be such a (Note that for bonded ACM fragments to pass through a 7 mm x 7	aller than 7mm. It is the free fibres which present the greatest risk to human health, although very a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres	(typically 90:10 ratios).



#### Comments

The report has been revised (V2) to amend sample descriptions.

Ap02758, Ap02759, Ap02761, Ap02762: Samples received were less than the nominal 500mL as recommended in Section 4.10 of the NEPM Schedule B1 - Guideline on Investigation Levels for Soil and Groundwater.

#### Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

#### **Qualifier Codes/Comments**

CodeDescriptionN/ANot applicable

#### Asbestos Counter/Identifier:

Laxman Dias

Senior Analyst-Asbestos (NSW)

#### Authorised by:

Matthew Quigley

Senior Analyst-Asbestos (NSW)

Glenn Jackson National Operations Manager

Final Report - this report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Uncertainty data is available on request

Eurofins | mgt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Eurofins | mgt be liable for consequential damages including, but not limited to, lost profits, damages for failure to meet deadlines and lost production arising from this report. This document shall not be reproduced except in full and relates only to the items tested. Unless indicated otherwise, the tests were performed on the samples as received.



Melbourne Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217 Hors State Cove Mest NSW 2066 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Perth 2/91 Leach Highway Kewdale WA 6105 Phone : +61 8 9251 9600 NATA # 1261 Site # 23736

ABN - 50 005 085 521

e.mail : EnviroSales@eurofins.com web : www.eurofins.com.au

## Sample Receipt Advice

Company name.	Geo-Logix P/L
Contact name:	Ben Pearce
Project name:	KEMPSEY
Project ID:	1801031
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Mar 29, 2018 12:48 PM
Eurofins   mgt reference:	592301

Cool only D/

#### Sample information

Compony nome

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- $\checkmark$ Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 9.9 degrees Celsius.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- $\mathbf{V}$ Appropriate sample containers have been used.
- Sample containers for volatile analysis received with zero headspace.
- $\boxtimes$ Split sample sent to requested external lab.
- $\times$ Some samples have been subcontracted.
- Notes<sup>N/A</sup> Custody Seals intact (if used).

Did not receive SS44A/0.0-0.1/57-62 RECD IN SYD 6/4 EBD: ASB1|AH310/

### Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Pearce - bpearce@geo-logix.com.au.



Environmental Laboratory Air Analysis Water Analysis Soil Contamination Analysis

NATA Accreditation Stack Emission Sampling & Analysis Trade Waste Sampling & Analysis Groundwater Sampling & Analysis



38 Years of Environmental Analysis & Experience

Geo-Log Building Q2, 2309/4 Daydr Warriewood, ABN: 86 116 892	<b>jix Pty Ltd</b> Level 3 eam St NSW 2102 936	Project Manage Contact email: Project Name:	: <u>Be</u> bp	en Pe earce@	earce egeo-lo osey	e ogix.co	om.au		2/1	/					Page Purc Quo Sene	e chase te Re d Inv	/ o e Orde eferer oice t	f 7	ac	count	5 :s@p	s geo-	logi	K.CO	m.au				1		
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			a bas		(Burels			ANALYSI	S RE	QU	IR	ED			31		Singl											-		11:00	
Lab ID	Sample ID	Date	soil	water	atrix	paint, filters	other	Comments	COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	vocs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols Metais - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	Н	Clay Content	Cation Exchangles	Нога	SUITE	Eurofins MGT Suite Codes
	SS1/0.0-0.1	27/03/2018 X						some BT + pH, Clay, CEC		×	×		X	'X				>	(							×	X	X	1	B7	B1A TRH/MAH
	SS1/0.2-0.3	27/03/2018 X																										1	X		B2 TRH/BTEXN/Pb
	SS2/0 0-0 1	27/03/2018 X						2 C	1	X	X		X	×				X											1	BI	B2A TRH/MAH/Pb B3 PAH/Phenols
· · · · · ·	SS2/0.2-0.3	27/03/2018 X	1	100		-																						>	X	1	B4 TRH/BTEXN/PAH
The second	852/0.0-0.1	27/03/2018 X								×	x		Y	X				X												By	B4A TRH/BTEXN/PAH/Phenols
-	662/0.0-0.1	27/02/2018		+		_						-																3	X		B6 TRH/BTEXN/M8
	553/0.2-0.3	27/03/2018		+						x	X		X	χ				X												BI	B7 TRH/BTEXN/PAH/M8
	\$54/0.0-0.1	27/03/2018 X		+	-	-	1.			5									-										Y ·		B7A TRH/BTEXN/PAH/Phenols/M8 B8 TRH/VOC/PAH/M8
	SS4/0.2-0.3	27/03/2018 X	_	+						X	X		X	X				×											1	RY	B9 TRH/BTEXN/PAH/OCP/M8
	SS5/0.0-0.1	27/03/2018 X	-	+	-					~				~					·						_			1	y .	5	B10 TRH/BTEXN/PAH/OCP/OPP/M8 B11 Na/K/Ca/Mg/Cl/SQ./CQ./HCQ./NH-/NQ
	SS5/0.2-0.3	27/03/2018 X	-	+		_			┢	V	~		v	N				X	+					-		-	-		n .	RT	B11A B11/Alkalinity
	SS6/0.0-0.1	27/03/2018 X		+	-	_				^			~	~					-									-	-	31	B11B B11/EC/TDS
	SS6/0.2-0.3	27/03/2018 X	+	+		_	_		+-	2	~	-	v	17		_	-	-			-				_	-	_	-	×	12-1	B12 TRH/BTEXN/Oxygenates/Ethanol B12A TRH/BTEXN/Oxygenates
	SS7/0.0-0.1	27/03/2018 X	_		_		-		╀	~	X		~	X					4			_							1	01	B13 OCP/PCB
-	SS7/0.2-0.3	27/03/2018 X		_	_	_	-		_			-	-			_			-							_		/	~	2	B14 OCP/OPP B15 OCP/OPP/PCB
	SS8/0.0-0.1	27/03/2018 X	CIL.	1	-				_	X	X		X	Х				X												57	B16 TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB
5	SS8/0.2-0.3	27/03/2018 X	2.00	18	10	_			1	1									_									/	X		B17 SO <sub>4</sub> /NO <sub>3</sub> /Fe++/HPC/CUB
	SS9/0.0-0.1	27/03/2018 X								X	1	٢	X	Х				X												B7	B18 CI-/SO₄/pH B19 N/P/K
	SS9/0.2-0.3	27/03/2018 X						4 1																				/	$\mathcal{S}_{ }$	· ·	B20 CEC/%ESP/Ca/Ma/Na/K
Metals**(circle	a) As. Cd. Cr. Cu. Ni,	Pb, Zn, Hg, Cr <sup>6+</sup> , Cr <sup>5</sup>	†, Fe	<sup>2+</sup> , F	e 3+.	Be,	B, AI	, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, B	a, TI, E	i, Sb																					

Geo-Log Building Q2, L	ix Pty Ltd	Project Mana	ger:	Ben	Pear	rce		CHAIN OF CUSTO	YC						Page Purc	e :has	2 e Orc	of 7	8 o:	P	20	50	7				_					
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Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	Comments	COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	vocs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	TCI P	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	Hd			Hold	SUITE	Eurofins MGT Suite Codes	
	SS10/0.0-0.1	27/03/2018	3 X							X	X	>		×					X											BJ	B1 TRH/BTEXN B1A TRH/MAH	
	SS10/0.2-0.3	27/03/2018	зx																										X		B2 TRH/BTEXN/Pb	
	SS11/0.0-0.1	27/03/2018	зx							X	X			X					χ											BJ	B2A TRH/MAH/Pb B3 PAH/Phenols	
	SS11/0.2-0.3	27/03/2018	зx																										X	)	B4 TRH/BTEXN/PAH	
	SS12/0.0-0.1	27/03/2018	зx							X	X			X					Х											37	B4A TRH/BTEXN/PAH/Phenois	
	SS12/0.2-0.3	27/03/2018	зх																										X		B6 TRH/BTEXN/M8	-
in the	SS13/0.0-0.1	27/03/2018	зx							x	X			$\times$				1	X,											51	B7 TRH/BTEXN/PAH/M8	2
	SS13/0.2-0.3	27/03/2018	x																										V		B8 TRH/VOC/PAH/M8	
	SS14/0.0-0.1	27/03/2018	8 X							X	X			×					X										<u> </u>	BT	B9 TRH/BTEXN/PAH/OCP/M8 B10 TRH/BTEXN/PAH/OCP/OPP/M8	
	SS14/0.2-0.3	27/03/2018	x																										X		B11 Na/K/Ca/Mg/Cl/SO4/CO3/HCO3/NH3/NG	O <sub>3</sub>
	SS15/0.0-0.1	27/03/2018	зx							X	x			$\times$					Х											BT	B11A B11/Alkalinity B11B B11/EC/TDS	
	SS15/0.2-0.3	27/03/2018	зx																										X		B12 TRH/BTEXN/Oxygenates/Ethanol	
	SS16/0.0-0.1	27/03/2018	x							X	X			X				)	×											37	B12A TRH/BTEXN/Oxygenates	
	SS16/0.2-0.3	27/03/2018	x																										X		B14 OCP/OPP	
	SS17/0.0-0.1	27/03/2018	x							X	X			X				)	X											B7	B15 OCP/OPP/PCB B16 TDS/SOJ/CHJ/Alk/BOD/COD/HPC/CLIF	в
	SS17/0.2-0.3	27/03/2018	x																										X		B17 SO4/NO3/Fe++/HPC/CUB	-
	SS18/0.0-0.1	27/03/2018	x							X	X			X					X											BI	B18 CI-/SO <sub>4</sub> /pH	
	SS18/0.2-0.3	27/03/2018	x																										X		B19 N/P/K B20 CEC/%ESP/Ca/Ma/Na/K	

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr <sup>6+</sup>, Cr <sup>3+</sup>, Fe <sup>2+</sup>, Fe <sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

**Chain of Custody** Amy Et/ment 4/4/18 9:13 592301 Received by: Buis D Date/Times 273/8Signature: Relinquished by: GUAL EVANS\_\_\_\_ Date/Time: 29/3/11 Signature: 2

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Lab ID	Sample ID	Date	soil	vater	ir	baint, filters	other	Comments	COMPOSITE	<b>FRH - C6 - C10</b>	rrh - c10 - c4	/ocs	BTEXN	PAHs	CBs	ocPs	OPPs	henols	Metals - M8	Metals - Lead	Metals - Specif	ICLP Achaetae (ID o		Asbestos (WA	-oreign Materi	Conductivity (E	F			fold	SUITE	Eurofins MGT Suite Codes
	SS19/0.0-0.1	27/03/2018	x	-	10				Ť	X	,	x	X	X		-	-	-	X	_	_			-	-		-		-		<u>B7</u>	B1 TRH/BTEXN
	SS19/0.2-0.3	27/03/2018	x								Í												+							X		B1A TRH/MAH B2 TRH/BTEXN/Pb
	SS20/0.0-0.1	27/03/2018	x							X	X	6	X	X					X										1		R7	B2A TRH/MAH/Pb
	SS20/0.2-0.3	27/03/2018	sх													1														X		B4 TRH/BTEXN/PAH
	SS21/0.0-0.1	27/03/2018	x							Х	x		X	X	2				X												87	B4A TRH/BTEXN/PAH/Phenols B5 TRH/BTEXN/M7
	SS21/0.2-0.3	27/03/2018	x										1400	maine	-														)	X		B6 TRH/BTEXN/M8
	SS22/0.0-0.1	27/03/2018	x							×	X	1	X	X					X											1	87	B7 TRH/BTEXN/PAH/M8 B7A TRH/BTEXN/PAH/Phenols/M8
	SS22/0.2-0.3	27/03/2018	x					₽°																					1	X		B8 TRH/VOC/PAH/M8
	SS23/0.0-0.1	27/03/2018	x							X	X		X	X	2				$\boldsymbol{\chi}$												BT	B9 TRH/BTEXN/PAH/OCP/M8 B10 TRH/BTEXN/PAH/OCP/OPP/M8
	SS23/0.2-0.3	27/03/2018	x									_																	2	X		B11 Na/K/Ca/Mg/Cl/SO <sub>4</sub> /CO <sub>3</sub> /HCO <sub>3</sub> /NH <sub>3</sub> /NO <sub>3</sub>
	SS24/0.0-0.1	27/03/2018	x							×	X	'	X	X	1				×												BT	B11A B11/Alkalinity B11B B11/EC/TDS
	SS24/0.2-0.3	27/03/2018	x							_		_									_								)	X		B12 TRH/BTEXN/Oxygenates/Ethanol
	SS25/0.0-0.1	27/03/2018	х							Х	X	!	X	X					Х												BI	B12A TRH/BTEXN/Oxygenates B13 OCP/PCB
	SS25/0.2-0.3	27/03/2018	х									_													_				)	X		B14 OCP/OPP
	SS26/0.0-0.1	28/03/2018	х							X	X	i	X	' X					X												37	B15 OCP/OPP/PCB B16 TDS/SO <sub>4</sub> /CH <sub>4</sub> /Alk/BOD/COD/HPC/CUB
	SS26/0.2-0.3	28/03/2018	х																											K		B17 SO./NO3/Fe++/HPC/CUB
	SS27/0.0-0.1	28/03/2018	х							Х	χ		X	X					×											1	BJ	B18 CI-/SO <sub>4</sub> /pH
	SS27/0.2-0.3	28/03/2018	×																										->	K	-	B20 CEC/%ESP/Ca/Ma/Na/K

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr <sup>6+</sup>, Cr <sup>3+</sup>, Fe <sup>2+</sup>, Fe <sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

**Chain of Custody** ElvisD Date/Time: 29/3/18 signature: Any Relinquished by: Grand Grands Date/Time: 29/3/18 Signature: EFIMGT 4/4/18 9:13 Received by: 592301

Geo-Log	ix Pty Ltd							CHAIN OF CUSTOD	Y						Pag	e	4	of 7		DI	32	50.	7								
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Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	Comments	COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	vocs	BTEXN	PAHs	PCBs	ocps	OPPs	Phenols	Metais - M8	Metals - Lead	Metals - Specify	Asbestos (ID on	Achactac (M/A F	Foreign Materia	El utilitation		clay Center	Cation Enchau	Hold	SUITE	Eurofins MGT Suite Codes
	SS28/0 0-0 1	28/03/2018	3 X							x	X	(	x	X				)	K)								.4			B7	B1 TRH/BTEXN
	SS28/07-0-2	20/00/2010	, A									1																	38		B2 TRH/BTEXN/Pb
	SS20/0.0.0.1	28/02/2019								×		6	×	X	-				v										2.8	RD	B2A TRH/MAH/Pb
	5529/0.0-0.1	20/03/2010								1		1							^				1						×	1. /	B3 PAH/Phenois B4 TRH/BTEXN/PAH
	5529/0.2-0.3	28/03/2018				-	-		-	V		,	X			-			5				-	-	-		-			R7	B4A TRH/BTEXN/PAH/Phenols
	SS30/0.0-0.1	28/03/2018	X		-	-	3	.6		X		C		X	•				^	-	-	-	+	-	+	-	-	-	V	5	B5 TRH/BTEXN/M7 B6 TRH/BTEXN/M8
	SS30/0.2-0.3	28/03/2018	B X		-		9	WHERT + PH, CEC & Clay					V	.,					~		_	_	-		-	~	×	V		R7	B7 TRH/BTEXN/PAH/M8
	SS31/0.0-0.1	28/03/2018	<sup>B</sup> X		-		-		$\vdash$	X	X			X					4	_	_		-	_	+	-^		~	V	57	B7A TRH/BTEXN/PAH/Phenols/M8
	SS31/0.2-0.3	28/03/2018	X			-	-		-			-			,	-				-	_	_	-		-	-	_	-	~	01	B9 TRH/VOC/PAH/M8 B9 TRH/BTEXN/PAH/OCP/M8
	SS32/0.0-0.1	28/03/2018	x							X	X	-	X.	X					X	_		_	-	_	_		_	-		51	B10 TRH/BTEXN/PAH/OCP/OPP/M8
	SS32/0.2-0.3	28/03/2018	x				-						-					_	_			-	-		_	-	-	-	X	~	B11 Na/K/Ca/Mg/Cl/SO <sub>4</sub> /CO <sub>3</sub> /HCO <sub>3</sub> /NH <sub>3</sub> /NO <sub>3</sub> B114 B11/Alkalinity
	SS33/0.0-0.1	28/03/2018	x							X	X	-	X	X					X	_			_	_	_		_	_		57	B11B B11/EC/TDS
	SS33/0.2-0.3	28/03/2018	x				e <sup>2</sup>					_							_				_		_	_		_	X	_	B12 TRH/BTEXN/Oxygenates/Ethanol
	SS34/0.0-0.1	28/03/2018	x							Х	X		χ	X					X									_		RT	B12A TRH/BTEXN/Oxygenates B13 OCP/PCB
	SS34/0.2-0.3	28/03/2018	x																										X		B14 OCP/OPP
	SS35/0.0-0.1	28/03/2018	x							X	X		X	X					X											BI	B15 OCP/OPP/PCB B16 TDS/SO./CH./Alk/BOD/COD/HPC/CUB
	SS35/0.2-0.3	28/03/2018	x						1																				$ \chi $	. ,	B17 SO <sub>4</sub> /NO <sub>3</sub> /Fe++/HPC/CUB
	SS36/0.0-0.1	28/03/2018	x							X	X		X	X					X											BJ	B18 CI-/SO₄/pH
	SS36/0.2-0.3	28/03/2018	x							~																			X	- 1	B19 N/P/K B20 CEC/%ESP/Ca/Ma/Na/K

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr<sup>6+</sup>, Cr<sup>3+</sup>, Fe<sup>2+</sup>, Fe<sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

**Chain of Custody** Amy EPIMGT 4/4/18 9:13 Date/Time: 213/18 Signature: Relinquished by: Sanah Elans Date/Time: 29/3/18 Signature Elviso Received by: \_ 592301

Geo-Log	ix Pty Ltd							CHAIN OF CU	STOD	Y						Page	Z	5 0	of 7													
Building Q2, I	_evel 3	Project Mana	ger:	Ben	Pear	се									1	Purc	hase	e Orc	ler No	»:	PC	2:	50	7								
2309/4 Daydr	eam St															-	n area	65														
Warriewood,	NSW 2102	Contact emai	1:	bpearc	ce@gec	o-logix.c	:om.a	<u>au</u>							(	Quot	e Re	efere	nce:	11								8				
ABN: 86 116 892	936	Project Name	:	Kem	npse	у	_									Send	Inv	oice	to:	<u>a</u>	ccou	nts@	Dgeo	o-log	gix.c	om.a	au					
P: (02) 9979 17 F: (02) 9979 12	22 22	Project Numb	oer:		180	1031		Date Submitted	1: <u>29/</u> .	3/1						ΤΑΤι	requ	ired:		S	tanda	rd										
								AN	ALYSIS	RE	QU	IRE	ED			101-								33	80				5			
		×		N	latri	ix																		Î								
Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	Comments		COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	vocs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - Mo	Metals - Leau Metals - Snerify **	TCLP	Asbestos (ID only)	Asbestos (WA DO	Foreign Materials	Conductivity (EC)	Hd			Hold	SUITE	Eurofins MGT Suite Codes
	SS37/0.0-0.1	28/03/2018	x								$\otimes$	X	7	Х	X				)	5							-				P7	B1 TRH/BTEXN B1A TRH/MAH
	SS37/0.2-0.3	28/03/2018	x																											X		B2 TRH/BTEXN/Pb
	SS38/0 0-0 1	28/03/2018	x								x	X.		x	X.					/											R7	B2A TRH/MAH/Pb
	6628/0 2 0 2	28/03/2018	~				e.				/*									<u> </u>						50 m				X		B3 PAH/Phenois B4 TRH/BTEXN/PAH
	3336/0.2-0.3	26/03/2016	^	_							V	1	,	V	V		-		)	1	-	-	-	-			-		ť		Py	B4A TRH/BTEXN/PAH/Phenols
	SS39/0.0-0.1	28/03/2018	X	_		$\vdash$				-	~	X		~	Y	-	-	-	-/	`	+	+	-	-	+				-	~	51	B5 TRH/BTEXN/M7
	SS39/0.2-0.3	28/03/2018	Х			-					$\mathbf{v}$	N		V	V	-	-	-	1	/		-		-	+					~	Des	B7 TRH/BTEXN/PAH/M8
	SS40/0.0-0.1	28/03/2018	Х			-	-			-	X	X			X	-		_	/	\ 	+		-	-	-	-			_	,	51	B7A TRH/BTEXN/PAH/Phenols/M8
	SS40/0.2-0.3	28/03/2018	х							_	_	0.14	_	0		-	_	_				_		_						X	-	B8 TRH/VOC/PAH/M8 B9 TRH/BTEXN/PAH/OCP/M8
	SS41/0.0-0.1	28/03/2018	х								$\mathcal{D}$	χ		$\boldsymbol{\lambda}$	X				/	X			_	_							37	B10 TRH/BTEXN/PAH/OCP/OPP/M8
	SS41/0.2-0.3	28/03/2018	х																										/	X		B11 Na/K/Ca/Mg/Cl/SO <sub>4</sub> /CO <sub>3</sub> /HCO <sub>3</sub> /NH <sub>3</sub> /NO <sub>3</sub>
	SS42/0.0-0.1	28/03/2018	x								X	X		X	X					X											BT	B11A B11/Alkalinity B11B B11/EC/TDS
	SS42/0.2-0.3	28/03/2018	x																											X		B12 TRH/BTEXN/Oxygenates/Ethanol
	SS43/0 0-0 1	28/03/2018	x								X	X		X	χ				X	2											B7	B12A TRH/BTEXN/Oxygenates
	SS43/0 2 0 3	28/03/2018	v									1																	1	X		B13 OCP/PCB B14 OCP/OPP
	00440.0.04	20/03/2010	î,			-		suiteRY + Priz			X	X		V	X	x				1	+	1	-		-		-		- 1	~	B7	B15 OCP/OPP/PCB
	5544/0.0-0.1	28/03/2018	X					United States		-	~	Δ		~ .			-		$\dashv$	~	+			-	-		+		,	Y	51	B16 TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB
	SS44/0.2-0.3	28/03/2018	Х	_							V	V	-	V	22			_	-	V		+	-	-	+		-		-/	1	1-	B17 SO <sub>4</sub> /NO <sub>3</sub> /Fe++/HPC/CUB B18 CI-/SO <sub>4</sub> /pH
	SS45/0.0-0.1	28/03/2018	Х			<u> </u>					X	X	-	X	X	_	-		+	~			_	-				-			BI	B19 N/P/K
	SS45/0.2-0.3	28/03/2018	Х																										1	$\boldsymbol{\chi}$		B20 CEC/%ESP/Ca/Ma/Na/K

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr<sup>6+</sup>, Cr<sup>3+</sup>, Fe<sup>2+</sup>, Fe<sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

**Chain of Custody** Relinquished by: SAVAL GAVS\_Date/Time: 29/8/18 Signature: Anny EF/mar 4/4/18 9:13 Date/Time291318 Signature: Received by: Elvis D 592301

Geo-Log	Jix Pty Ltd	Project Mana	der.	Ben	Pearo	e.		CHAIN OF CUSTOD	Y						Page Purc	e :has	6 e Or	of 🦉	7	Pc	2	50	7									
2309/4 Daydr	eam St	1 Toject mana	gen	Don	1 oure														-								-0					
Warriewood,	NSW 2102	Contact emai	l:	bpearc	e@geo	-logix.	<u>com.au</u>								Quot	te R	efere	ence	-								-					
ABN: 86 116 892	936	Project Name	÷ .	Ken	npsey	/				,					Send	d Inv	oice	to:	ć	accol	ints	@geo	o-log	ix.co	om.a	u						
P: (02) 9979 17 F: (02) 9979 12	22	Project Numb	er: .		1801	1031	l	Date Submitted: 29/.	<u>3/1</u>	8	-				TAT	requ	uired	:	_	Standa	ard						- 1					-
								ANALYSIS	RE	QU	IR	ED							150													
				N	latri	x																5	(H)				-	100	0		1	
Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	Comments	COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead		Asbestos (ID only	Asbestos (WA DC	Foreign Materials	Conductivity (EC)	Hd	Clay Conten-	Cation Exclu	Hold	SUITE		Eurofins MGT Suite Codes
	SS46/0.0-0.1	28/03/2018	x							X	X	5	X	X					X											BT	B1	TRH/BTEXN A TRH/MAH
	SS46/0.2-0.3	28/03/2018	x																										X		B2	TRH/BTEXN/Pb
	SS47/0.0-0.1	28/03/2018	x							x	X	<	X	X					X											BY	B2 B3	A TRH/MAH/Pb PAH/Phenois
	SS47/0.2-0.3	28/03/2018	x																										X		B4	TRH/BTEXN/PAH
	SS48/0.0-0.1	28/03/2018	x					suite B7 + PCB		Х	X	_	X	X	X				X											BT	B4	A TRH/BTEXN/PAH/Phenois TRH/BTEXN/M7
	SS48/0.2-0.3	28/03/2018	x																										X		86	TRH/BTEXN/M8
	SS49/0.0-0.1	28/03/2018	x	11.				suite BI + pH, CEC, clay		X	X		X	X					X						-	X	X	20		BI	B7	TRH/BTEXN/PAH/M8 A TRH/BTEXN/PAH/Phenols/M8
	SS49/0.2-0.3	28/03/2018	x																										X		B8	TRH/VOC/PAH/M8
	SS50/0.0-0.1	28/03/2018	x	4		6		suite Bit PCB		X	X		X	X	X				X											137	B9 B1	0 TRH/BTEXN/PAH/OCP/M8
	SS50/0.2-0.3	28/03/2018	x	-																									X	• /	B1	1 Na/K/Ca/Mg/Cl/SO <sub>4</sub> /CO <sub>3</sub> /HCO <sub>3</sub> /NH <sub>3</sub> /NO <sub>3</sub>
	DS1	27/03/2018	x							X	X	,	X	X	5				Х											BJ	B1	1A B11/Alkalinity
	DS2	27/03/2018	x	1						X	X		X	X					×											B7	B1	2 TRH/BTEXN/Oxygenates/Ethanol
	DS3	27/03/2018	x							X	X.		x	X.					X											37	B1	2A TRH/BTEXN/Oxygenates
	DS4	28/03/2018	x																										X		B1	4 OCP/OPP
	DS5	28/03/2018	х																										X		B1	
	R1	27/03/2018	A.	X						X	X		X	X					X											RI	B1	7 SO <sub>4</sub> /NO <sub>3</sub> /Fe++/HPC/CUB
	R2	28/03/2018	1	X						X	X	(	X	X					X											RI	B1	8 CI-/SO <sub>4</sub> /pH
	SS41 A/0.0-0.1	28/3/18	X																				X							~ (	B1 B2	9 N/P/K 0 CEC/%ESP/Ca/Ma/Na/K

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr<sup>6+</sup>, Cr<sup>3+</sup>, Fe<sup>2+</sup>, Fe<sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

**Chain of Custody** Date/Time: 21/3/18 Signature: 52 Amy EFIMGT 4/4/18 9:13 592301 Received by: EvisD Relinquished by; JAVA Date/Time: 2

Geo-Log	ix Pty Ltd							CHAIN OF CUSTO	DY						Pag	je	7	of	7		-											
Building Q2, I	_evel 3	Project Mana	ger:	Ben	Pear	rce									Pur	chas	se Or	der N	lo:	,	00	25	0	7								
2309/4 Daydr	eam St																															
Warriewood,	NSW 2102	Contact emai	il:	bpearc	:e@gec	o-logix.	.com.a	1							Que	ote F	lefer	ence		<												
ABN: 86 116 892	936	Project Name	e:	Kem	npse	ey									Ser	nd In	voice	e to:		acco	unt	s@g	eo-	logi	(.coi	m.a	u					
P: (02) 9979 17 F: (02) 9979 12	22 22	Project Num	oer:		180	)103 <sup>.</sup>	1	Date Submitted: 29	<u>/3/1</u> S RE	</td <td>_</td> <td></td> <td></td> <td>1</td> <td>TAT</td> <td>req</td> <td>uirec</td> <td>:</td> <td>-</td> <td>Stan</td> <td>dard</td> <td></td> <td>1.50</td> <td></td> <td>1</td> <td></td> <td>- Ander</td> <td></td> <td></td> <td></td> <td></td> <td></td>	_			1	TAT	req	uirec	:	-	Stan	dard		1.50		1		- Ander					
				M	Aatr	iv													1.000					~								
						Ê	T	-													*		(ylu	B	als	()						
Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	Comments	COMPOSITE	TRH - C6 - C10	TRH - C10 - C4	2002	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specif	TCLP	Asbestos (ID o	Asbestos (WA	Foreign Materi	Conductivity (F	Hd			Pold	SUITE	Eurofins MGT Suite Codes
	SS44A0.0-0	1 28/3/18	X					Asbestos WADOH																X								B1A TRH/MAH
	5533 0.0-01	28/3/18	V					)																$\mathcal{D}$								B2 TRH/BTEXN/Pb
	5543 0.0-0.1		X					-								-1								x								B2A TRH/MAH/Pb B3 PAH/Phenols
	55434/0.0-0.1		x			2															_			X								B4 TRH/BTEXN/PAH
11	5534 10.0-01		10																				2	X							_	B4A TRH/BTEXN/PAH/Phenols
	schoold o of	V	V					V				1												X						+		B6 TRH/BTEXN/M8
	5390470.0-0.	1	*					87	+		1v	-				-			V											7	37	B7 TRH/BTEXN/PAH/M8
	55274/00-0-0		~				-		1		1~	1	1		-				~				+						3	X		B7A TRH/BTEXN/PAH/Phenols/M8 B8 TRH/VOC/PAH/M8
	552 TA[0:2-0.		X		-		-			-										-	-		+			_		-	1	N		B9 TRH/BTEXN/PAH/OCP/M8
	5528A 01-0	5	/. 				-	07	+-	~	N	+	-		-	-			N		-		_	_		-		_	- 1	2	Dn	B10 TRH/BTEXN/PAH/OCP/OPP/M8
	SS284 0.0-0.		X		-		-	51	÷	X	X	-			-	-			X				-						_	-	51	B11A B11/Alkalinity
			_		$\vdash$	-	-	्र	_	-		-	_			-	-			_			-	_		_			_	+		B11B B11/EC/TDS
			_				_			-	-	-				-				-						_				$\rightarrow$		B12 TRH/BTEXN/Oxygenates/Ethanol B12A TRH/BTEXN/Oxygenates
									_		-	-	_	_					_	_	_		_						_	$\rightarrow$		B13 OCP/PCB
												_										<u>s</u>		_					-	_		B14 OCP/OPP
ic.														_																_		B15 OCP/OPP/PCB B16 TDS/SO <sub>4</sub> /CH <sub>4</sub> /Alk/BOD/COD/HPC/CUB
																																B17 SO <sub>4</sub> /NO <sub>3</sub> /Fe++/HPC/CUB
								×																							·	B18 CI-/SO₄/pH
													2																			B19 N/P/K B20 CEC/%ESP/Ca/Ma/Na/K
Motale**/circle		h Zn Ha Cr <sup>6+</sup> (	2r <sup>3+</sup> c	=e <sup>2+</sup>	Fe 34	+ Be	в ^	IV Mn Fe Co Se Sr Sn Mo Ag B		1 21																						
Metals (circle	) As, Cu, Cr, Cu, Ni, P	D, Zh, Hy, Ch , C	ы, г	е,	Fe	, De,	, D, A	r, v, Mil, re, co, se, si, si, Mo, Ag, B	a, n, b	C 11	eto	dv	12.5		1.0.0			B.		-1-	le:				The second		1			16		
Relinquished by	: firal E	S M) Date∩	Гime: _	Zq	1/3/	·/ig	Signa		ved by:	£	[vi	2	P	)		_ Da	ate/Tir	ne;2	913 2:	3/18	Ssig		re:		1	2	4				AFF 4 S	M IMGT 14/18 9:13 12301

GMD Date/Time: <u>24/3/18</u>Signature: <u>1440</u> Relinquished by:

### **Enviro Sample Vic**

From:	Sarah Evans <sevans@geo-logix.com.au></sevans@geo-logix.com.au>
Sent:	Thursday, 5 April 2018 8:16 AM
То:	Enviro Sample Vic
Subject:	RE: ATTENTION: Eurofins   mgt Sample Receipt Advice - Report 592301 : Site KEMPSEY (1801031)

Hi

The sample you did not receive SS44A/0.0-0.1 does not exist I just wrote it down wrong

Kind regards

#### Sarah Evans | Graduate Environmental Scientist Unit 2309/4 Daydream St, Warriewood NSW 2102 T: 02 9979 1722 | M: 0429 485 561 | W: <u>www.geo-logix.com.au</u>





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From: bpearce [mailto:bpearce@geo-logix.com.au]
Sent: Wednesday, 4 April 2018 8:52 PM
To: Sarah Evans <<u>sevans@geo-logix.com.au</u>>
Subject: Fwd: ATTENTION: Eurofins | mgt Sample Receipt Advice - Report 592301 : Site KEMPSEY (1801031)

Sent from my Samsung Galaxy smartphone.

------ Original message ------From: EnviroSampleVic@eurofins.com Date: 4/4/18 17:23 (GMT+10:00) To: bpearce@geo-logix.com.au Subject: ATTENTION: Eurofins | mgt Sample Receipt Advice - Report 592301 : Site KEMPSEY (1801031)

Dear Valued Client,

ATTENTION: Did not receive SS44A/0.0-0.1.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then

please contact your Eurofins | mgt Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Amy Nolidin Sample Receipt

Eurofins | mgt 2-5 Kingston Town Close OAKLEIGH VIC 3166 AUSTRALIA Phone: Email: <u>Envirosamplevic@eurofins.com</u> Website:<u>environment.eurofins.com.au</u> EnviroNote 1076 - PFAS Biota EnviroNote 1074 - Passive Samplers for VOCs in Air

Click <u>here</u> to report this email as spam.

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### **Enviro Sample NSW**

Nibha Vaidya
Monday, 16 April 2018 12:09 PM
Enviro Sample NSW
FW: Change in sample IDs for Kempsey

Hey Ursula – Use this instead.

Kind Regards,

Nibha Vaidya Phone:+61299008415 Mobile:+61499900805 Email:<u>NibhaVaidya@eurofins.com</u>

From: Sarah Evans [mailto:sevans@geo-logix.com.au] Sent: Monday, 16 April 2018 10:27 AM To: Nibha Vaidya Subject: Change in sample IDs for Kempsey

EXTERNAL EMAIL\*

HI Nibha

Sorry to confuse you but can you can please update to these new sample names below

Can you please update the lab report names in the Kempsey (1801031) Asbestos lab reports 592301- AID to the new sample IDs below:

Current sample name	New Sample Name
SS33/0.0-0.1	A1/0.0-0.1
SS34/0.0-0.1	A2/0.0-0.1
SS40A/0.0-0.1	A3/0.0-0.1
SS41A/0.0-0.1	A4/0.0-0.1
SS43/0.0-0.1	A5/0.0-0.1
SS43A/0.0-0.1	A6/0.0-0.1

If you are able to do this and reissue the reports ASAP that would be fantastic  $\bigcirc$ 

Kind Regards Sarah Evans | Graduate Environmental Scientist Unit 2309/4 Daydream St, Warriewood NSW 2102 T: 02 9979 1722 | M: 0429 485 561 | W: www.geo-logix.com.au



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#### Certificate of Analysis

Geo-Logix P/L Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102



NATA

WORLD RECOGNISED

NATA Accredited Accreditation Number 1261 Site Number 1254

Accredited for compliance with ISO/IEC 17025 – Testing The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

Attention:	
Report	
Project name	
Project ID	

**Received Date** 

**592314-S** KEMPSEY 1801031 Mar 29, 2018

**Ben Pearce** 

Client Sample ID			Te1	тер	тез
Sample Matrix			Soil	Soil	Soil
Sample Matrix			M19 Ap02945	M18 Ap02846	M19 Ap02947
Euronnis   mgt Sample No.			W16-Ap02645	WT0-AP02040	W 10-Ap02647
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions				
TRH C6-C9	20	mg/kg	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	82	76	110
TRH C15-C28	50	mg/kg	320	280	460
TRH C29-C36	50	mg/kg	350	240	540
TRH C10-36 (Total)	50	mg/kg	752	596	1110
BTEX					
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	120	107	69
Total Recoverable Hydrocarbons - 2013 NEPM Fract	ions				
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	84	83	140
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	84	83	140
TRH >C16-C34	100	mg/kg	580	440	800
TRH >C34-C40	100	mg/kg	180	160	400
Polycyclic Aromatic Hydrocarbons					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.9	0.9	0.9
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.8	1.8	1.8
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 1	< 1	< 1
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 1	< 1	< 1



Client Sample ID Sample Matrix			TS1 Soil	TS2 Soil	TS3 Soil
Eurofins   mgt Sample No.			M18-Ap02845	M18-Ap02846	M18-Ap02847
Date Sampled			Mar 27, 2018	Mar 27, 2018	Mar 27, 2018
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 1	< 1	< 1
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 1	< 1	< 1
2-Fluorobiphenyl (surr.)	1	%	100	99	97
p-Terphenyl-d14 (surr.)	1	%	94	93	93
Heavy Metals					
Arsenic	2	mg/kg	2.3	7.4	3.3
Cadmium	0.4	mg/kg	< 0.4	0.9	3.2
Chromium	5	mg/kg	< 5	27	10
Copper	5	mg/kg	< 5	65	39
Lead	5	mg/kg	< 5	180	31
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.1
Nickel	5	mg/kg	< 5	26	27
Zinc	5	mg/kg	< 5	550	110
% Moisture	1	%	33	26	28



#### Sample History

Where samples are submitted/analysed over several days, the last date of extraction and analysis is reported. A recent review of our LIMS has resulted in the correction or clarification of some method identifications. Due to this, some of the method reference information on reports has changed. However, no substantive change has been made to our laboratory methods, and as such there is no change in the validity of current or previous results (regarding both quality and NATA accreditation).

If the date and time of sampling are not provided, the Laboratory will not be responsible for compromised results should testing be performed outside the recommended holding time.

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Apr 06, 2018	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Apr 06, 2018	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Apr 06, 2018	14 Days
- Method: LTM-ORG-2130 PAH and Phenols in Soil and Water			
Metals M8	Sydney	Apr 06, 2018	28 Day
- Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS			
% Moisture	Sydney	Apr 04, 2018	14 Day
- Method: LTM-GEN-7080 Moisture			

•	🔅 eur	ofins	mgt		ABN– 50 005 0 e.mail : EnviroS web : www.eur	185 521 Sales@ ofins.co	eurofins m.au	.com	Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271	Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217	Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 2075	Perth 2/91 Leach Highway Kewdale WA 6105 Phone: +61 8 9251 9600 VATA # 1261 Site # 23736
Company Name:       Geo-Logix P/L         Address:       Bld Q2 Level 3, 2309/4 Daydream St         Warriewood       NSW 2102         Project Name:       KEMPSEY         Project ID:       1801031				Order No.: Report #: Phone: Fax:			0.: PO2506 592314 02 9979 1722 02 9979 1222	Eurofi	Received: Due: Priority: Contact Name:	Mar 29, 2018 12:48 PM Apr 9, 2018 5 Day Ben Pearce		
Sample Detail						HOLD	Moisture Set	Eurofins   mgt Suite B7				
Melbourne Laboratory - NATA Site # 1254 & 14271												
Sydney Laboratory - NATA Site # 18217				Х	х	х						
Brisbane Laboratory - NATA Site # 20794												
Perth Laboratory - NATA Site # 23736												
External Laboratory												
NU	Sample ID	Sample Date	Time	IVIAU IX								
1	TS1	Mar 27, 2018		Soil	M18-Ap02845		Х	Х				
2	TS2	Mar 27, 2018		Soil	M18-Ap02846		Х	Х				
3	TS3	Mar 27, 2018		Soil	M18-Ap02847		Х	Х				
4	TS4	Mar 27, 2018		Soil	M18-Ap02848	Х						
5  TS5  Mar 27, 2018   Soil  M18-Ap02849						Х						
Test Counts					2	3	3					


## Internal Quality Control Review and Glossary

## General

1. Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples are included in this QC report where applicable. Additional QC data may be available on request.

- 2. All soil results are reported on a dry basis, unless otherwise stated.
- 3. All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- 4. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 5. Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- 6. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- 7. Samples were analysed on an 'as received' basis.
- 8. This report replaces any interim results previously issued.

### **Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days. \*\*NOTE: pH duplicates are reported as a range NOT as RPD

#### Units

mg/kg: milligrams per kilogram	mg/L: milligrams per litre	ug/L: micrograms per litre
ppm: Parts per million	ppb: Parts per billion	%: Percentage
org/100mL: Organisms per 100 millilitres	NTU: Nephelometric Turbidity Units	MPN/100mL: Most Probable Number of organisms per 100 millilitres

#### Terms

Dry	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
LOR	Limit of Reporting.
SPIKE	Addition of the analyte to the sample and reported as percentage recovery.
RPD	Relative Percent Difference between two Duplicate pieces of analysis.
LCS	Laboratory Control Sample - reported as percent recovery.
CRM	Certified Reference Material - reported as percent recovery.
Method Blank	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
Surr - Surrogate	The addition of a like compound to the analyte target and reported as percentage recovery.
Duplicate	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
USEPA	United States Environmental Protection Agency
APHA	American Public Health Association
TCLP	Toxicity Characteristic Leaching Procedure
сос	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
СР	Client Parent - QC was performed on samples pertaining to this report
NCP	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
TEQ	Toxic Equivalency Quotient

#### **QC** - Acceptance Criteria

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 50-150%-Phenols & PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.1 where no positive PFAS results have been reported have been reviewed and no data was affected.

### **QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- 2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- 3. Organochlorine Pesticide analysis where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- 4. Organochlorine Pesticide analysis where reporting Spike data, Toxaphene is not added to the Spike.
- 5. Total Recoverable Hydrocarbons where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- 6. pH and Free Chlorine analysed in the laboratory Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- 7. Recovery Data (Spikes & Surrogates) where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- 8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- 9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
- 10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.



## **Quality Control Results**

Test	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Method Blank			1 1		1	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	mg/kg	< 20		20	Pass	
TRH C10-C14	mg/kg	< 20		20	Pass	
TRH C15-C28	mg/kg	< 50		50	Pass	
TRH C29-C36	mg/kg	< 50		50	Pass	
Method Blank			1 1		1	
BTEX						
Benzene	mg/kg	< 0.1		0.1	Pass	
Toluene	mg/kg	< 0.1		0.1	Pass	
Ethylbenzene	mg/kg	< 0.1		0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2		0.2	Pass	
o-Xylene	mg/kg	< 0.1		0.1	Pass	
Xylenes - Total	mg/kg	< 0.3		0.3	Pass	
Method Blank		-				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene	mg/kg	< 0.5		0.5	Pass	
TRH C6-C10	mg/kg	< 20		20	Pass	
TRH >C10-C16	mg/kg	< 50		50	Pass	
TRH >C16-C34	mg/kg	< 100		100	Pass	
TRH >C34-C40	mg/kg	< 100		100	Pass	
Method Blank						
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	mg/kg	< 0.5		0.5	Pass	
Acenaphthylene	mg/kg	< 0.5		0.5	Pass	
Anthracene	mg/kg	< 0.5		0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5		0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5		0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5		0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5		0.5	Pass	
Chrysene	mg/kg	< 0.5		0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5		0.5	Pass	
Fluoranthene	mg/kg	< 0.5		0.5	Pass	
Fluorene	mg/kg	< 0.5		0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5		0.5	Pass	
Naphthalene	mg/kg	< 0.5		0.5	Pass	
Phenanthrene	mg/kg	< 0.5		0.5	Pass	
Pyrene	mg/kg	< 0.5		0.5	Pass	
Method Blank		r	1			
Heavy Metals						
Arsenic	mg/kg	< 2		2	Pass	
Cadmium	mg/kg	< 0.4		0.4	Pass	
Chromium	mg/kg	< 5		5	Pass	
Copper	mg/kg	< 5		5	Pass	
Lead	mg/kg	< 5		5	Pass	
Mercury	mg/kg	< 0.1		0.1	Pass	
Nickel	mg/kg	< 5		5	Pass	
Zinc	mg/kg	< 5		5	Pass	
LCS - % Recovery						
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	%	100		70-130	Pass	



Test			Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
TRH C10-C14			%	75		70-130	Pass	
LCS - % Recovery								
ВТЕХ								
Benzene			%	95		70-130	Pass	
Toluene			%	98		70-130	Pass	
Ethylbenzene			%	98		70-130	Pass	
m&p-Xylenes			%	101		70-130	Pass	
o-Xylene			%	101		70-130	Pass	
Xylenes - Total			%	101		70-130	Pass	
LCS - % Recovery				1				
<b>Total Recoverable Hydrocarbons -</b>	2013 NEPM Fract	ions						
Naphthalene			%	111		70-130	Pass	
TRH C6-C10			%	96		70-130	Pass	
TRH >C10-C16			%	80		70-130	Pass	
LCS - % Recovery				I	1 1	1		
Polycyclic Aromatic Hydrocarbons	\$							
Acenaphthene			%	97		70-130	Pass	
Acenaphthylene			%	93		70-130	Pass	
Anthracene			%	95		70-130	Pass	
Benz(a)anthracene			%	97		70-130	Pass	
Benzo(a)pyrene			%	98		70-130	Pass	
Benzo(b&j)fluoranthene			%	104		70-130	Pass	
Benzo(g.h.i)perylene			%	96		70-130	Pass	
Benzo(k)fluoranthene			%	107		70-130	Pass	
Chrysene			%	92		70-130	Pass	
Dibenz(a.h)anthracene			%	97		70-130	Pass	
Fluoranthene			%	97		70-130	Pass	
Fluorene			%	96		70-130	Pass	
Indeno(1.2.3-cd)pyrene			%	95		70-130	Pass	
Naphthalene			%	95		70-130	Pass	
Phenanthrene			%	90		70-130	Pass	
Pyrene			%	100		70-130	Pass	
LCS - % Recovery				1	1 1	1	1	
Heavy Metals								
Arsenic			%	94		70-130	Pass	
Cadmium			%	92		70-130	Pass	ļ
Chromium			%	96		70-130	Pass	ļ
Copper			%	95		70-130	Pass	ļ
Lead			%	94		70-130	Pass	
Mercury			%	97		70-130	Pass	
Nickel			%	94		70-130	Pass	
Zinc	т		%	94		70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1		Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery						1		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1			_	
TRH C6-C9	S18-Ap00524	NCP	%	83	<u> </u>	70-130	Pass	
1KH C10-C14	S18-Ap03941	NCP	%	77		70-130	Pass	
Spike - % Recovery								
RIFX	040 4 5555	NGT		Result 1	<u> </u>	70.100		
Benzene	S18-Ap00524	NCP	%	92		70-130	Pass	
	S18-Ap00524	NCP	%	94	<u>                                      </u>	/0-130	Pass	
	S18-Ap00524	NCP	%	92	<u> </u>	70-130	Pass	
m&p-Xylenes	518-Ap00524	NCP	%	95	<u> </u>	70-130	Pass	
o-Xylene	S18-Ap00524	NCP	%	95		70-130	Pass	1



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Xylenes - Total	S18-Ap00524	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1					
Naphthalene	S18-Ap00524	NCP	%	92			70-130	Pass	
TRH C6-C10	S18-Ap00524	NCP	%	84			70-130	Pass	
TRH >C10-C16	S18-Ap03941	NCP	%	80			70-130	Pass	
Spike - % Recovery				1					
Polycyclic Aromatic Hydrocarbons	5			Result 1					
Acenaphthene	S18-Ap03941	NCP	%	107			70-130	Pass	
Acenaphthylene	S18-Ap03941	NCP	%	106			70-130	Pass	
Anthracene	S18-Ap03941	NCP	%	111			70-130	Pass	
Benz(a)anthracene	S18-Ap03941	NCP	%	106			70-130	Pass	
Benzo(a)pyrene	S18-Ap03941	NCP	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	S18-Ap03941	NCP	%	107			70-130	Pass	
Benzo(g.h.i)perylene	S18-Ap03916	NCP	%	71			70-130	Pass	
Benzo(k)fluoranthene	S18-Ap03941	NCP	%	104			70-130	Pass	
Chrysene	S18-Ap03941	NCP	%	97			70-130	Pass	
Dibenz(a.h)anthracene	S18-Ap03941	NCP	%	76			70-130	Pass	
Fluoranthene	S18-Ap03941	NCP	%	104			70-130	Pass	
Fluorene	S18-Ap03941	NCP	%	111			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S18-Ap03916	NCP	%	74			70-130	Pass	
Naphthalene	S18-Ap03941	NCP	%	106			70-130	Pass	
Phenanthrene	S18-Ap03941	NCP	%	106			70-130	Pass	
Pyrene	S18-Ap03941	NCP	%	104			70-130	Pass	
Spike - % Recovery				1					
Heavy Metals	1			Result 1					
Arsenic	S18-Ap03361	NCP	%	76			70-130	Pass	
Cadmium	S18-Ap03361	NCP	%	72			70-130	Pass	
Chromium	S18-Ap03361	NCP	%	77			70-130	Pass	
Copper	S18-Ap03361	NCP	%	78			70-130	Pass	
Lead	S18-Ap05843	NCP	%	90			70-130	Pass	
Mercury	S18-Ap03361	NCP	%	75			70-130	Pass	
Nickel	S18-Ap03361	NCP	%	71			70-130	Pass	
Zinc	S18-Ap05843	NCP	%	79			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate					r 1				
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S18-Ap03940	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S18-Ap03940	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S18-Ap03940	NCP	mg/kg	81	94	14	30%	Pass	
TRH C29-C36	S18-Ap03940	NCP	mg/kg	100	110	10	30%	Pass	
Duplicate							1		
BTEX	1			Result 1	Result 2	RPD			
Benzene	S18-Ap03940	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S18-Ap03940	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S18-Ap03940	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S18-Ap03940	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S18-Ap03940	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S18-Ap03940	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	



Duplicate				-					
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S18-Ap03940	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH >C10-C16	S18-Ap03940	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S18-Ap03940	NCP	mg/kg	150	170	12	30%	Pass	
TRH >C34-C40	S18-Ap03940	NCP	mg/kg	< 100	110	15	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S18-Ap03940	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Benzo(k)fluoranthene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S18-Ap03940	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Fluoranthene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S18-Ap03940	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Naphthalene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S18-Ap03940	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S18-Ap04600	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S18-Ap04600	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S18-Ap04600	NCP	mg/kg	3500	4200	18	30%	Pass	
Copper	S18-Ap00543	NCP	mg/kg	26	29	10	30%	Pass	
Lead	S18-Ap00543	NCP	mg/kg	85	74	14	30%	Pass	
Mercury	S18-Ap04600	NCP	mg/kg	0.2	0.1	18	30%	Pass	
Nickel	S18-Ap04600	NCP	mg/kg	8.6	10	15	30%	Pass	
Zinc	S18-Ap04600	NCP	mg/kg	73	63	14	30%	Pass	
Duplicate				-					
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02845	CP	%	33	33	2.0	30%	Pass	



## Comments

Sample Integrity	
Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Appropriate sample containers have been used	Yes
Sample containers for volatile analysis received with minimal headspace	Yes
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

## **Qualifier Codes/Comments**

## Code Description

F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).

Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.

Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs

## Authorised By

Nibha Vaidya

Analytical Services Manager

## Glenn Jackson National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

\* Indicates NATA accreditation does not cover the performance of this service

Measurement uncertainty of test data is available on request or please click here.

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Melbourne Melbourne 3-5 Kingston Town Close Oakleigh Vic 3166 Phone : +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271

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ABN - 50 005 085 521 e.mail : EnviroSales@eurofins.com

# Sample Receipt Advice

Geo-Logix P/L
Ben Pearce
KEMPSEY
1801031
Not provided
5 Day
Mar 29, 2018 12:48 PM
592314

## Sample information

- A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt : 9.9 degrees Celsius.
- All samples have been received as described on the above COC.
- COC has been completed correctly.
- Attempt to chill was evident.
- Appropriately preserved sample containers have been used.
- All samples were received in good condition.
- Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- $\mathbf{V}$ Appropriate sample containers have been used.
- $\times$ Split sample sent to requested external lab.
- $\boxtimes$ Some samples have been subcontracted.
- Custody Seals intact (if used). N/A

## Contact notes

If you have any questions with respect to these samples please contact:

Nibha Vaidya on Phone : +61 (2) 9900 8400 or by e.mail: NibhaVaidya@eurofins.com

Results will be delivered electronically via e.mail to Ben Pearce - bpearce@geo-logix.com.au.





38 Years of Environmental Analysis & Experience

Geo-Log Building Q2, 2309/4 Dayda	<b>gix Pty Ltd</b> Level 3 ream St NSW 2102	Project Mana	ger: I:	Ben	Pear	Ce	com au	CHAIN	OF CUS	STOD	Y.					P P O	age urcha	<u> </u> ase (	of Orde	f <u> </u> er No	;	lo	<u>7</u> 5	O.	6											0
ABN: 86 116 892	936	Project Name		Ker	nose	V				-8						S	and I	nvoi	ice to	0.	ac	coun	ts@	geo.	logi	x.co	m.ai	1 -								
P: (02) 9979 17 F: (02) 9979 12	722 222	Project Numb	ber:		180	, 1031		Dat	e Submitted:	29/3	\$ <u>/18</u> PE	/	IDE			т	AT re	quir	red:		Sta	andaro	d		10 5.				5 Az.		5					
12 Statement of the state				R	Natri	ix						QU										1 2001				ana sa	and and		A second	(And Sold)						1372
Lab ID	Sample ID	Date	soil	water	air	paint, filters	other	C	omments		COMPOSITE	TRH - C6 - C10	TRH - C10 - C40	VOCs	BTEXN	PAHs	OCPs	OPPe	Orrs Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	На		Hold	SUITE	201	E	urofins M0 Code	GT Suit s	e
	TS1	27/03/2018	x				1	send	+0			×	x		XX	×				X	2										B	7	B1 TF	RH/BTEXN		
	TS2	27/03/2018	x					othe	v Lak	>		X	X		XY	L.				>	L.										B	7	B2 TF	RH/BTEXN/Pb		
	TS3	27/03/2018	x									X	X		X	X				>	0										B	7	B2A TR	H/MAH/Pb		
	TS4	28/03/2018	x																											×			B4 TF	RH/BTEXN/PAH		
	TS5	28/03/2018	×																											X			B4A TR	H/BTEXN/PAH/Ph	enols	
	100	20/00/2010	<u> </u>												-				+		+5												B5 TF	RH/BTEXN/M7		
								-	2	_	-					-	+		-		-												B7 TF	RH/BTEXN/PAH/M		
			-		-						-	-				-	+	-	-		-	-						-			-	-	B7A TR	H/BTEXN/PAH/Ph	enols/M8	
											_				5	_	_	_	_	_	_								_	_	_		B8 TF	RH/VOC/PAH/M8	DIMR	
								6	47									_															B10 TF	RH/BTEXN/PAH/O	P/OPP/M8	
6											_																						B11 Na	/K/Ca/Mg/CI/SO <sub>4</sub> /0	O3/HCO3/NH	I <sub>3</sub> /NO <sub>3</sub>
																																	B11A B1	1/Alkalinity		
																					-												B11B B1	1/EC/TDS	ates/Ethanol	
			-		-		-				-		-	-	-	-	+	-	-	-	-						-	-		-	+	-	B12A TR	H/BTEXN/Oxygen	ites	
			-		-						-							-	_	_	-	_						_			-	_	B13 O	CP/PCB		
														_		_	_		_	_	-							_		_	-		B14 O	CP/OPP		
																																	B15 00		D/COD/HPC	/CUB
																																	B17 SC	04/NO3/Fe++/HPC/	CUB	
																					1										1		B18 CI	-/SO₄/pH		
											-				-	-	+	+		-	+							-					B19 N/	P/K		
L				5052							_									_													B20 CE	EC/%ESP/Ca/Ma/N	a/K	

Metals\*\*(circle) As, Cd, Cr, Cu, Ni, Pb, Zn, Hg, Cr <sup>6+</sup>, Cr <sup>3+</sup>, Fe <sup>2+</sup>, Fe <sup>3+</sup>, Be, B, Al, V, Mn, Fe, Co, Se, Sr, Sn, Mo, Ag, Ba, Tl, Bi, Sb

Chain of Custody

Received by: Elvis P

AVAL Gap Date/Time? 29 Signature: Relinquished by:

Amy EF|mGJ 4/4/18 9:13 592314

\_\_\_\_ Date/Time=<u>28(3)18</u> Signature:\_\_\_\_\_ 12:268 PM **ATTACHMENT F** 

17	A B	С	D	E	F	G	Н	1	J	K	L						
1				UCL Statisti	L Statistics for Data Sets with Non-Detects												
2																	
3	User Se	lected Options	3														
4	Date/Time of	Computation	ProUCL 5.1	12-Apr-18 1	0:27:36 AN												
5		From File	Heavy Meta	als ProUCL E	Datafile.xls												
6	Canfidana	-ull Precision	OFF														
7	Confidence Number of Restates		95%														
8	Number of Bootstra	p Operations	2000														
9	Arsenic																
10																	
12																	
12		Total Number of Observations     49     Number of Distinct Observations															
14			Number	r of Detects	48				Number of	Non-Detects	1						
15		Nu	mber of Disti	nct Detects	34			Number	of Distinct	Non-Detects	1						
16			Minin	num Detect	2.5				Minimun	n Non-Detect	2						
17			Maxin	num Detect	36				Maximum	n Non-Detect	2						
18			Variar	ice Detects	43.62				Percent	Non-Detects	2.041%						
19			Me	an Detects	10.41					SD Detects	6.605						
20			Med	ian Detects	8.15					CV Detects	0.635						
21			Skewne	ess Detects	1.698				Kur	tosis Detects	3.644						
22		1	Mean of Logg	ed Detects	2.173				SD of Log	ged Detects	0.584						
23																	
24				Norma	I GOF Tes	t on Detects	Only										
25		Sh	apiro Wilk Te	est Statistic	0.843			Shapiro Wi	lk GOF Te	st							
26		5% Sh	apiro Wilk Cr	itical Value	0.947 Detected Data Not Normal at 5% Significance Level												
27			Lilliefors Te	est Statistic	0.192			Lilliefors	GOF Test								
28		5%	6 Lilliefors Cr	itical Value	0.127	De	etected Dat	a Not Norma	al at 5% Sig	nificance Lev	el						
29			De	tected Data	Not Norma	Il at 5% Sigr	hificance L	evel									
30																	
31		Kaplan-Me	eier (KM) Sta	itistics using	Normal C	ritical Value	es and othe	er Nonparan	netric UCLs	\$							
32				KM Mean	10.23			KM	Standard E	rror of Mean	0.949						
33			0.50	KM SD	6.577				95% KN	1 (BCA) UCL	11.79						
34			95%	KM (t) UCL	11.83	-		95% KM (Pe	ercentile Bo	otstrap) UCL	11.85						
35		00	95% r	(M (Z) UCL	11.8			9	5% KM Boo	otstrap t UCL	12.13						
36		90		vshev UCL	13.08			9:		bysnev UCL	14.37						
37		97.5		ysnev UCL	10.10			93		bysnev UCL	19.08						
38			Ga	mma GOF T	ests on De	tected Obs	ervations (	Only									
39		•	A-D Te	est Statistic	0.826		A	nderson-Da	rlina GOF 1	Fest							
40			5% A-D Cr	itical Value	0.756	Detected	Data Not	Gamma Dis	tributed at 5	5% Significand	e Level						
41			K-S Te	est Statistic	0.127		ł	(olmogorov-	Smirnov G	OF							
42			5% K-S Cr	itical Value	0.129	Detected	data appea	r Gamma Di	stributed at	5% Significar	nce Level						
43		D	etected data	follow Appr	Gamma	Distribution	at 5% Sigi	nificance Le	vel								
45																	
46				Gamma S	tatistics or	Detected D	ata Only										
47			ł	(hat (MLE)	3.114			k si	tar (bias cor	rrected MLE)	2.934						
48			Theta	hat (MLE)	3.341			Theta st	tar (bias cor	rected MLE)	<mark>3.</mark> 547						
49			nı	i hat (MLE)	299				nu star (bia	as corrected)	281.6						
50			Mea	in (detects)	10.41												
51																	
52			Ga	mma ROS S	statistics us	sing Imputed	d Non-Dete	ects									
53		GROS may n	ot be used w	hen data set	has > 50%	NDs with n	nany tied o	bservations	at multiple I	DLs							
54	GROS may	not be used w	hen kstar of	detects is sn	nall such a	s <1.0, espe	cially when	n the sample	size is sma	all (e.g., <15-2	20)						
55		For s	such situation	ns, GROS m	ethod may	yield incorre	ct values o	of UCLs and	BTVs								

	А	В	С	D	E	F	G	H	I	J	K	L					
56		For commo	dictributor	dotootod	data DTVa an	d UCL a may	the comput	tod uping go	III.	ibuition on K	Montinetee						
57		FUI yamina		J delected	Minimum	0.01	be compu	teu using ga	mma usu		w estimates	10.10					
58					Movingung	0.01					Mean	10.19					
59					waximum	6 702		8									
60						1.902		CV									
61				Th	K hat (MLE)	1.893		rected MLE)	1.791								
62				110		0.000		Theta star (bias corrected MLE									
63			Adjusted	Loval of Ci		185.5		nu star (bias corrected)									
64		Approvi	Aujusteu			145.0		A	ated Ohl (	Deviews Malv	(175 50 0)	445					
65	059				(175.50, 0)	145.9			sted Chi a	square value	e (1/5.50, β)	145					
66	35.		proximate	OCL (use	witer ii>=50)	12.27		93 % Gami	na Aujust	eu OCE (use	when h<50)	12.55					
67				E	timates of Ga	mmo Dorom	etere using	KM Ectimo	toc								
68				La	Moon (KM)	10.22	eters using		les		SD (KM)	6 577					
69						10.25				SE o	SD (KIVI)	0.010					
70				V	k hot (KM)	43.25				SE 0		0.949					
71					R Hat (KW)	2.422						2.287					
72				+1	nu nat (KM)	4 226				the		4 475					
73			0.00/		recentile (KM)	4.220			0.00/			4.475					
74			0070	gamma pe	reentile (KM)	10.00			90%	gamma per		19.29					
75		_	90%	yannia pe	icentile (Kivi)	23.28			99%	gamma per	cenule (KIVI)	32.06					
76					Commo	Kaplan Mai	or (KM) St	atistics									
77		Approvi	imata Chi S	auaro Valu	0 (224 13 m)			Adiu	ctod Chi 9	Square Volu	(224 12 0)	190 E					
78	05% 0		vimate KM		e(224.13, u)	12.04	05	Auju % Commo A	diucted K		e (224.13, p)	109.0					
79	30 % Ga			-OCL (use	when n=-50)	12.04	90	70 Gamina A	ujusteu K	IVI-UCL (USE	when h<50)	12.1					
80						Test on Do	toctod Obs	onvations O	nha								
81			Sh	apiro Wilk	Test Statistic	0 974	lected Obs										
82			5% Sh	aniro Wilk (	Critical Value	0.947	Detec	ted Data ann		ormal at 5%	Significance I	ovol					
83			070 011	l illiefors	Test Statistic	0.0479	Delec	icu Dala app	Lilliefors	GOF Test	Significance	-6461					
84		2	5%	6 Lilliefors (	Critical Value	0.127	Detect	ted Data ann		ormal at 5%	Significance	evel					
06				Dete	cted Data apr	ear Lognorn	nal at 5% S	Significance	l evel		olgrinication	20001					
07					and a did obb			ginicanoo	20101								
07				Lo	onormal ROS	Statistics U	sina Impute	ed Non-Dete	cts								
00				Mean in C	riginal Scale	10.23				Meani	n I og Scale	2 143					
00				SD in C	riginal Scale	6.647				SD	n Log Scale	0.617					
01		95% t UCI	L (assumes	normality	of ROS data)	11.83			95% P	ercentile Bo	otstrap UCL	11.73					
91			9!	5% BCA B	ootstrap UCL	11.9				95% Boo	tstrap t UCL	12.32					
03				95% H-UC	L (Log ROS)	12.29											
94				_	, j												
95			Statistic	s using Kl	A estimates o	n Logged Da	ata and As	suming Logi	normal Di	stribution							
96				КММ	ean (logged)	2.143				KN	I Geo Mean	8.526					
97				KM	SD (logged)	0.609			95% C	ritical H Valu	le (KM-Log)	1.97					
98		К	M Standard	Error of M	ean (logged)	0.088				95% H-UC	L (KM -Log)	12.21					
99				KM	SD (logged)	0.609			95% C	ritical H Valu	le (KM-Log)	1.97					
100		К	M Standard	Error of M	ean (logged)	0.088					,						
101																	
102						DL/2 Sta	tistics										
103			DL/2 1	Normal				C	DL/2 Log-7	Fransformed							
104				Mean in C	riginal Scale	10.21				Mean i	n Log Scale	2.129					
105				SD in C	riginal Scale	6.672				SDi	n Log Scale	0.656					
106			95% t U	CL (Assum	es normality)	11.81				95%	H-Stat UCL	12.61					
107			DL/2 is	not a recor	mmended met	hod, provide	ed for comp	parisons and	l historica	l reasons							
108																	
109					Nonparamet	ic Distributio	on Free UC	L Statistics									
110			Detec	ted Data a	ppear Approx	imate Gamn	na Distribu	ted at 5% S	ignificanc	e Level							

ETZ	А	В	С	D	Е	F	G	Н		J	К	L					
111																	
112						Suggested	UCL to Use										
112			95% KM	Adjusted C	Gamma UCL	12 1			95% GROS	Adjusted Ga	mma UCI	12.33					
113						12.1			oon anot			12.00					
114			When a da	to cot follow	a an annrovi	mata (a.a. r	ormal) dist	ibution non	sing one of t	he COE test							
115	104					nate (e.g., i	ionnai) uisu	ibution pas	sing one of								
116	VV	nen applica	ible, it is su	ggested to u	se a UCL ba	seu upon a	distribution	(e.g., gamn	na) passing	both GOF tes	ts in Prouc	iL					
117																	
118	Note	: Suggestio	ins regardin	g the selection	on of a 95%	UCL are pro	ovided to he	lp the user	to select the	e most approp	riate 95% L	JCL.					
119		Recommendations are based upon data size, data distribution, and skewness.															
120	The	se recomm	endations a	re based up	on the result	s of the sim	ulation stud	ies summa	rized in Sing	h, Maichle, ai	nd Lee (200	06).					
121	Howev	er, simulati	ons results	will not cove	r all Real Wo	orld data set	s; for addition	onal insight	the user ma	iy want to con	isult a statis	tician.					
122																	
123	Cadmium																
124																	
125		General Statistics															
126			Total I	Number of O	bservations	49			Number	of Distinct Obs	servations	18					
127	Number of Detects 23 Number of Non-Detects																
127			Nu	mber of Dist	inct Detects	17			Number	of Distinct No	n-Detects	1					
128				Minii		0.5			Number	Minimum N	on Detect	0.4					
129				Movie		7.2				Movimum N	on Detect	0.4					
130				IVIDAII		2.004				Deveent No		0.4					
131				varia	nce Detects	3.294				Percent No	n-Detects	53.06%					
132				M	ean Detects	2.052				S	D Detects	1.815					
133				Med	lian Detects	1.3				C	V Detects	0.884					
134				Skewn	ess Detects	1.634				Kurtosi	is Detects	2.216					
135				Viean of Log	ged Detects	0.41				SD of Logge	d Detects	0.777					
136																	
137					Norma	al GOF Test	on Detects	s Only									
138			Sh	apiro Wilk T	est Statistic	0.786			Shapiro Wi	k GOF Test							
139			5% Sh	apiro Wilk C	ritical Value	0.914	De	etected Data	a Not Norma	l at 5% Signifi	icance Leve	el .					
140				Lilliefors T	est Statistic	0.272			Lilliefors	GOF Test							
141			5%	6 Lilliefors C	ritical Value	0.18	Detected Data Not Normal at 5% Significance Le										
142				De	etected Data	Not Norma	at 5% Sigr	nificance Le	evel								
143		e															
143			Kaplan-Me	eier (KM) St	atistics using	Normal Ci	ritical Value	s and othe	r Nonparam	etric UCLs							
144					KM Mean	1 176			KM	Standard Erro	or of Mean	0.215					
145					KMSD	1.170	_					1 550					
146				050/		1.405				5576 Kivi (L		1.555					
147				95%		1.555		2	35% NIVI (Pe			1.041					
148				95%	KM (Z) UCL	1.529			9:	5% KIM BOOISI	raptUCL	1.676					
149			90	J% KM Chet	byshev UCL	1.819			95	% KM Cheby	shev UCL	2.111					
150			97.8	5% KM Chet	yshev UCL	2.516			99	% KM Cheby	shev UCL	3.311					
151																	
152				Ga	mma GOF 1	ests on De	tected Obse	ervations O	nly								
153				A-D T	est Statistic	0.9		Ar	nderson-Dar	ling GOF Tes	st						
154				5% A-D C	ritical Value	0.757	Detected	d Data Not (	Gamma Dist	ributed at 5%	Significance	e Level					
155				K-S T	est Statistic	0.207		к	olmogorov-	Smirnov GOF							
156				5% K-S C	ritical Value	0.184	Detected	d Data Not (	Gamma Dist	ributed at 5%	Significance	e Level					
157				Detected	Data Not G	amma Distr	ibuted at 59	% Significa	nce Level								
158																	
150					Gamma S	Statistics on	Detected D	ata Only									
160					k hat (MLE)	1.766			k et	ar (bias correc	cted MLE)	1,565					
101				Thet	a hat (MLE)	1 162			Thete et	ar (bias correc	ted MLE)	1 311					
161				net		Q1 0E			meta st	nu etar /biac -	corrected)	71.00					
162				n		01.20				nu star (blas c	Jonected)	71.99					
163				Mea	an (uetects)	2.052											
164																	
165				Ga	amma ROS S	Statistics us	ing Imputed	d Non-Dete	cts								

4	А	В	С	D	E	F	G	Н	I	J	К	L
166			aROS may no	ot be used w	hen data set	t has > 50%	NDs with n	nany tied of	servations	at multiple L	)Ls	
167	G	ROS may no	ot be used w	hen kstar of	detects is sr	nall such a	s <1.0, espe	cially when	the sample	size is sma	II (e.g., <15-2	20)
168			Fors	such situatio	ns, GROS m	ethod may	yield incorre	ect values of	r UCLs and	BIVs		
169				Th	is is especia	lly true whe	n the sample	e size is sm	all.			
170		For gamm	a distributed	detected da	ita, BTVs an	d UCLs ma	y be compu	ted using ga	amma distril	oution on Ki	V estimates	
171					Minimum	0.01					Mean	0.969
172					Maximum	/.3			= = =		Median	0.01
173					SD	1.603				4.	CV	1.655
174					K hat (MLE)	0.309			K St	ar (bias cori	ected MLE)	0.304
175				Ineta	a nat (MLE)	3.133			i neta st	ar (blas cori	ected MLE)	3.187
176			Adjusted	. III	unat (MLE)	30.3				nu star (bla	s corrected)	29.78
177		Appr	Aujusteu L	ever of Sign	(20.79  c)	10 22		٨	divoted Chi (	Square Valu	0 (20 79 8)	19.05
178	05	Approved and a common of the c			e(29.70, 0)	1 57/		95% Com	ma Adjusto		(29.70, p)	1 509
179	90	Gamina /	Approximate	UCL (use w	nen n>=30)	1.374		95 % Gam	ma Aujuste	I OCL (USE	witer in 50)	1.596
180				Esti	mates of Ga	mma Parar	neters using	KM Estim	ates			
182					Mean (KM)	1.176					SD (KM)	1,469
102				Vai	riance (KM)	2.159				SE of	Mean (KM)	0.215
184					k hat (KM)	0.64					k star (KM)	0.614
185				1	nu hat (KM)	62.72				r	nu star (KM)	60.22
186				the	ta hat (KM)	1.837				the	ta star (KM)	1.913
187			80%	gamma perc	entile (KM)	1.937			90%	gamma per	centile (KM)	3.041
188			95%	gamma perc	entile (KM)	4.194	· · · · · · · · · · · · · · · · · · ·		99%	gamma pero	centile (KM)	6.976
189												
190					Gamma	Kaplan-Me	eier (KM) St	atistics				
191		Appro	oximate Chi S	Square Value	e (60.22, α)	43.37		Ac	justed Chi S	Square Valu	ie (60.22, β)	42.94
192	95% G	iamma Appr	oximate KM-	UCL (use w	hen n>=50)	1.632	95	% Gamma /	Adjusted KN	I-UCL (use	when n<50)	1.649
193												
194				Log	normal GOF	Test on D	etected Obs	ervations C	Dnly			2
195			Sha	apiro Wilk Te	est Statistic	0.94			Shapiro Wil	k GOF Tes	t	
196			5% Sha	ipiro Wilk Cr	itical Value	0.914	Detec	ted Data ap	pear Logno	mal at 5% S	Significance L	_evel
197				Lilliefors Te	est Statistic	0.154			Lilliefors	GOF Test		
198			5%	Lilliefors Cr	itical Value	0.18	Detec	ted Data ap	pear Logno	mal at 5% S	Significance L	_evel
199				Detect	ed Data app	ear Lognor	mal at 5% S	Significance	Level			
200												
201				Logr	normal ROS	Statistics l	Jsing Impute	ed Non-Det	ects			
202				Mean in Ori	ginal Scale	1.074				Mean i	n Log Scale	-0.78
203				SD in Ori	ginal Scale	1.544				SD i	n Log Scale	1.379
204		95% t UC	L (assumes	normality of	ROS data)	1.444			95% Pe	ercentile Boo	otstrap UCL	1.452
205			95	BCA BOC		1.517				95% BOOI	strap t UCL	1.574
206			· · · · ·	95% H-UCL	(LOG RUS)	2.063						
207			Statiatia	o uning KM	ontimatan a			ouming Loc	normal Dia	tribution		
208			Statistic		estimates of		Jata aliu AS	Summy LO				0 745
209						-0.294			05% Cr	r\r Itical H \alu		0.745
210		L	(M Standard	Error of Me	an (logged)	0.123		-	90 % CI			1 385
211			(W Stanuaru	KMS		0.123			95% Cr	itical H Valu		2 178
212		ŀ	M Standard	Error of Me	an (logged)	0.123			3070 01		ic (Itm-Log)	2.170
213			an olandara		un (logged)	0.120						
214						DL/2 St	atistics					
215			DI /2 N	lormal		2020			DL/2 Log-T	ransformed		
210				Mean in Ori	ginal Scale	1.069				Mean i	n Log Scale	-0.662
217				SD in Ori	ginal Scale	1.543				SD i	n Log Scale	1.146
210			95% t UC	L (Assume	s normality)	1.439				95%	H-Stat UCL	1.505
220			DL/2 is r	iot a recomi	mended met	hod, provid	led for com	parisons an	d historical	reasons		
220					-							

1	A	В		С	D	E	F	G	Н	1	J	K	L
221													
222						Nonparamet	ric Distribu	tion Free U	CL Statisti	cs			
223					Detected D	ata appear L	ognormal I	Distributed a	at 5% Sign	ificance Lev	/el		
224													
225							Suggested	UCL to Use	e				
226						KM H-UCL	1.385						-
227								1					
228	No	te: Sugges	stions	regarding	g the selecti	on of a 95%	UCL are pr	ovided to he	elp the use	r to select th	e most appr	opriate 95%	UCL.
229				Re	commendat	tions are base	ed upon dat	a size, data	distribution	n, and skew	ness.		
230	T	nese recor	nmen	dations a	re based up	on the result	s of the sim	nulation stud	dies summa	arized in Sir	igh, Maichle,	and Lee (20	06).
231	Howe	ever, simu	lations	s results v	will not cove	er all Real Wo	orld data se	ts; for additi	ional insigh	t the user m	ay want to c	onsult a stati	stician.
232													
233	Chromiur	n											
234													
235							General	Statistics					
236				Total I	Number of C	bservations	49			Number	of Distinct O	bservations	34
237					Numbe	er of Detects	48				Number of N	Non-Detects	1
238				Nu	mber of Dist	tinct Detects	33			Numbe	r of Distinct N	Non-Detects	1
239					Mini	mum Detect	5.4				Minimum	Non-Detect	5
240					Maxi	mum Detect	88				Maximum	Non-Detect	5
241					Varia	nce Detects	363.8				Percent N	Non-Detects	2.041%
242					М	ean Detects	22.84					SD Detects	19.07
243					Med	dian Detects	17					CV Detects	0.835
244					Skewn	ess Detects	2.074				Kurto	osis Detects	4.284
245			~ ~	P	Mean of Log	ged Detects	2.87				SD of Log	ged Detects	0.706
246													
247						Norma	I GOF Tes	t on Detects	s Only				
248				Sh	apiro Wilk T	est Statistic	0.753			Shapiro W	ilk GOF Tes	t	
249				5% Sh	apiro Wilk C	ritical Value	0.947	D	etected Da	ta Not Norm	al at 5% Sigr	nificance Lev	el
250					Lilliefors T	est Statistic	0.208			Lilliefors	GOF Test		
251				5%	Lilliefors C	ritical Value	0.127	D	etected Da	ta Not Norm	al at 5% Sigr	nificance Lev	el
252					De	etected Data	Not Norma	I at 5% Sig	nificance L	evel			
253													
254			K	aplan-Me	eier (KM) St	atistics using	) Normal C	ritical Value	es and othe	er Nonparai	metric UCLs		
255						KM Mean	22.48			KN	Standard Er	ror of Mean	2.721
256						KM SD	18.85				95% KM	(BCA) UCL	27.1
257					95%	KM (t) UCL	27.04			95% KM (P	ercentile Boo	tstrap) UCL	27.09
258					95%	KM (z) UCL	26.96			ę	5% KM Boot	tstrap t UCL	28.33
259				90	0% KM Chel	oyshev UCL	30.64			9	5% KM Chet	oyshev UCL	34.34
260				97.5	5% KM Chel	oyshev UCL	39.47			9	9% KM Cheb	oyshev UCL	49.56
261													
262					Ga	amma GOF T	ests on De	etected Obs	ervations (	Only			
263					A-D T	est Statistic	0.919		А	nderson-Da	rling GOF T	est	
264					5% A-D C	ritical Value	0.761	Detecte	d Data Not	Gamma Dis	stributed at 59	% Significanc	e Level
265					K-S T	est Statistic	0.115		ł	Kolmogorov	-Smirnov GC	)F	
266					5% K-S C	ritical Value	0.129	Detected	data appea	r Gamma D	istributed at	5% Significar	nce Level
267				D	etected dat	a follow App	r. Gamma I	Distribution	at 5% Sig	nificance Le	vel		
268													
269						Gamma S	tatistics on	Detected [	Data Only				
270						k hat (MLE)	2.083			ks	tar (bias c <mark>orr</mark>	ected MLE)	1.967
271					Thet	a hat (MLE)	10.97			Theta s	tar (bias <mark>corr</mark>	ected MLE)	11.62
272					n	u hat (MLE)	200				nu star (bia:	s corrected)	188.8
273					Me	an (detects)	22.84						
274													
275	-				Ga	amma ROS S	Statistics us	sing Impute	d Non-Dete	ects			

1	A	В	С	D		E	F	G	Н	1	J		К	L
276		G	ROS may r	not be used	d wher	n data se	et has > 50%	NDs with r	many tied	observatio	ns at multip	le DLs	6	
277	GR	OS may no	ot be used v	vhen kstar	of det	ects is s	mall such a	s <1.0, <b>esp</b>	ecially whe	en the sam	ple size is s	small (	e.g., <15-2	20)
278			For	such situa	itions,	GROS n	nethod may	yield incorr	ect values	of UCLs a	nd BTVs			
279					This is	s especia	ally true whe	n the samp	le size is s	mall.				
280		For gamm	a distribute	d detected	data,	BTVs ar	nd UCLs ma	y be compu	uted using	gamma di	stribution or	n KM e	estimates	
281					N	linimum	0.01						Mean	22.38
282					M	aximum	88						Median	16
283						SD	19.15						CV	0.856
284					k ha	at (MLE)	1.423				k star (bias	correc	ted MLE)	1.35
285				Th	neta ha	at (MLE)	15.72			Theta	a star (bias	correct	ted MLE)	16.58
286					nu ha	at (MLE)	139.5				nu star (	(bias c	corrected)	132.3
287			Adjusted	Level of S	ignifica	ance (β)	0.0451							
288		Approx	timate Chi S	Square Val	ue (13	2.26, α)	106.7		А	djusted Ch	ni Square Va	alue (1	32.26, β)	106
289	95%	6 Gamma A	Approximate	UCL (use	when	n>=50)	27.74		95% Ga	amma Adju	sted UCL (I	use wh	ien n<50)	27.92
290														
291				E	stimat	es of Ga	amma Parar	meters usin	g KM Esti	mates				
292					Mea	an (KM)	22.48						SD (KM)	18.85
293				\	Varian	ce (KM)	355.3				SI	∃ of M∉	ean (KM)	2.721
294					k h	at (KM)	1.422					k s	star (KM)	1.349
295					nu h	at (KM)	139.4					nu s	star (KM)	132.2
296				1	theta h	at (KM)	15.81					theta s	star (KM)	16.67
297			80%	gamma pe	ercent	ile (KM)	35.18			90	)% gamma	percer	ntile (KM)	48.08
298			95%	gamma pe	ercent	ile (KM)	60.7			99	€% gamma	percer	ntile (KM)	89.39
299														
300						Gamma	a Kaplan-Me	eier (KM) S	tatistics					
301		Approx	imate Chi S	quare Val	ue (13	2.17, α)	106.6		A	djusted Ch	ni Square Va	alue (1	32.17, β)	105.9
302	95% Ga	mma Appro	oximate KM	-UCL (use	when	n>=50)	27.87	95	5% Gamm	a Adjusted	KM-UCL (L	ise wh	en n<50)	28.05
303	_													
304				L	ognor	mal GOI	Test on D	etected Ob	servations	Only	-			
305			Sh	apiro Wilk	Test	Statistic	0.96	_		Shapiro	Wilk GOF 1	Fest		
306			5% Sh	apiro Wilk	Critica	al Value	0.947	Detec	cted Data	appear Log	normal at 5	% Sig	nificance L	_evel
307			=	Lillietors	e l'est s	Statistic	0.08	<b>D</b> .		Lillieto	ors GOF Te	st		
308			5%	6 Lilliefors	Critica	al Value	0.127	Detec	cted Data	appear Log	normal at 5	,% Sigi	nificance L	_evel
309				Det	ected	Data ap	bear Lognol	mai at 5%	Significan	ce Level				
310							Otatiatian	laina luonus	had Nam D	ala ala				
311		h		Lu Moon in (	Origina			using impu	ted Non-D	elects	Ma	an in t	an Casta	0.000
312				SD in (	Origina		22.44				Mea		og Scale	2.832
313		05% + 110	L (accumor	SUIN			19.09			05%	Doroontilo	Pooto	trop UCL	0.740
314		93%t0C					27.01			90%		DOUIS		27.2
315			9	05% H-H			27.94				90% E	SOOISI	aptocc	28.70
316				3378 H-OC		y 103)	20.07		_					
317			Statisti	e usina K	M octi	imatos c		)ata and Ac	seumina l	ognormal	Distribution			
318			Statistic		loon (	Indles (			ssuming L	ognormal	DISTIDUTION	KMG	on Moon	17 10
319						logged)	0.714			05%	Critical H \			2.040
320		k	M Standar		Moon (	logged)	0.714			90%			KM Log)	2.049
321		r.	IN Stanuar			logged)	0.103			05%	Critical H		KM-Log)	27.39
322		k	M Standar		Acon (	logged)	0.714			90%		/aiue (	(KWI-LOY)	2.049
323		r	IVI Stanuart		wearr (	ioggeu)	0.103							
324								atistics						
325			DI /2	Normal			002 31	ausucs			a Transform	nod		
326				Mean in (	Origina	al Scale	22 12				y-riansio(II Ma	an in L	og Scolo	2.62
327				SD in (	Origina	al Scale	10 1							2.03
328			95% +14			rmality	27				0	5% н (	Stat LICI	28.2
329			DI /2 ie		mmer	nded me	47 thod provid	led for com	narisons	and histori	eal reasons	570 F1-0		20.2
330			DUZ IS	not a reco	annet	ideu me	alou, provit	iou ior com	parisons	and motori	Cal 10a5011	2		

	А		В	С	D	E	F	G	Н	I	J	К	L
331													
332						Nonparame	tric Distribu	tion Free U	CL Statistic	s			
333				Detec	ted Data ap	pear Appro	ximate Gan	nma Distrib	uted at 5%	Significanc	e Level		
334													
335							Suggested	UCL to Use	e				
336				95% KN	1 Adjusted G	iamma UCL	28.05			95% GRO	S Adjusted C	Jamma UCL	27.92
337					_								
338				When a dat	a set follows	s an approxi	mate (e.g., i	normal) dist	ribution pas	sing one of	the GOF tes	st	
339	\	Vhen	applica	ble, it is sug	gested to us	se a UCL ba	sed upon a	distribution	(e.g., gamr	ma) passing	both GOF t	ests in ProU	CL
340													
341	Not	e: Sug	ggestion	ns regarding	the selection	on of a 95%	UCL are pr	ovided to he	elp the user	to select th	e most appr	opriate 95%	UCL.
342				Re	commendati	ons are bas	ed upon dat	a size, data	distribution	, and skewr	ness.		
343	Th	ese re	ecomme	endations ar	re based up	on the result	s of the sim	nulation stud	dies summa	rized in Sin	gh, Maichle,	and Lee (20	06).
344	Howe	ver, s	imulatic	ons results v	vill not cover	all Real Wo	orld data se	ts; for additi	ional insight	the user m	ay want to c	onsult a stati	stician.
345													
346	Copper												
347							0	o					
348							General	Statistics			1		
349				Iotal N	umber of O	bservations	49			Number	of Distinct C	bservations	35
350					Numbe	r of Detects	39				Number of I	von-Detects	10
351				Nur	nber of Disti	nct Detects	34			Number	r of Distinct I	von-Detects	1
352					Minir	num Detect	5.2				Minimum	Non-Detect	5
353					Maxir	num Detect	190		_		Maximum	Non-Detect	5
354					variar		2194				Percent	NON-Detects	20.41%
355					Mod	ian Detects	49.9					SD Detects	40.84
356					Skown		40			_	1/ unter		0.939
357				N		and Detects	3.42				SD of Log	and Detects	1.097
358				19	lean or Logg	jeu Delecis	5.42				SD OF LOG	yeu Delecis	1.007
359						Norm	al GOE Tes	t on Detecte	s Only				
360				Sh	aniro Wilk Tr	est Statistic	0.829	I ON DOLOCI	3 Only	Shaniro Wi	ilk GOF Tes	÷	
361				5% Sha	aniro Wilk Cr	ritical Value	0.020	D	etected Dat	a Not Norm:	al at 5% Sig	nificance Lev	
262				ent ent	Lilliefors Te	est Statistic	0.17			Lilliefors	GOF Test		
364				5%	Lilliefors Cr	itical Value	0.14	D	etected Dat	a Not Norma	al at 5% Sig	nificance Lev	el
365					De	tected Data	Not Norma	l at 5% Sig	nificance Le	evel	J		
366					1.000.000								
367				Kaplan-Me	ier (KM) Sta	atistics using	g Normal C	ritical Value	es and othe	er Nonparan	netric UCLs		
368						KM Mean	40.74			KM	Standard E	rror of Mean	6.518
369						KM SD	45.04				95% KM	(BCA) UCL	51.73
370					95%	KM (t) UCL	51.67			95% KM (Pe	ercentile Boo	otstrap) UCL	51.67
371					95% ł	KM (z) UCL	51.46			9	5% KM Boo	tstrap t UCL	54.25
372				90	% KM Cheb	yshev UCL	60.29			9	5% KM Chel	oyshev UCL	69.15
373				97.5	% KM Cheb	yshev UCL	81.45			99	9% KM Chel	oyshev UCL	105.6
374													
375					Ga	mma GOF 1	Fests on De	etected Obs	ervations C	Dnly			
376					A-D Te	est Statistic	0.862		A	nderson-Da	rling GOF T	est	
377					5% A-D Cr	itical Value	0.774	Detecte	d Data Not	Gamma Dis	tributed at 5	% Significand	ce Level
378					K-S Te	est Statistic	0.124		k	olmogorov-	Smirnov GO	)F	
379					5% K-S Cr	itical Value	0.145	Detected	data appea	r Gamma Di	istributed at	5% Significar	nce Level
380				D	etected data	a follow App	r. Gamma I	Distribution	at 5% Sign	ificance Le	vel		
381													
382						Gamma S	Statistics on	Detected [	Data Only				
383					ŀ	(MLE)	1.159			k si	tar (bias cori	rected MLE)	1.087
384					Theta	a hat (MLE)	43.04			Theta st	tar (bias cori	ected MLE)	45.9
385					nu	u hat (MLE)	90.43				nu star (bia	s corrected)	84.81

	А	В	С	D	E	F	G	Н	1	1	J		К	L
386				M	ean (detects)	49.9								
387														
388		0		(	amma ROS	Statistics u	sing Imput	ed Non-De	etects					
389		G	RUS may n	iot be used	when data se	t nas > 50%	6 NDS with	many tied	observa	tions	at multipl	e DLs	45.4	
390	GF	RUS may no	t be used v	vnen kstar (		mail such a	s <1.0, esp	becially wh	en the sa	ample	SIZE IS S	mall (e	e.g., <15-2	20)
391			FOI	such situat	ions, GROS II	llu truo who	yield incor			sand	BIVS			
392		For gamme	dictributor	hotootob t	tils is especia	d UCL e me	en the sam	pie size is s	small.	diatri	hution on	KM o	timotee	
393		i or gamma		delected (	Minimum	0.01	ay be comp	uteu using	yannna	uistii	DULION ON	KIVI es	Maan	20.72
394					Maximum	190							Modian	21
395					SD	46.36							CV	1 167
390					k hat (MLE)	0.353				k st	ar (bias c	orrecto	ed MLF)	0.345
308				The	eta hat (MLE)	112.4			Th	eta st	ar (bias c	orrect	ed MLE)	115
300					nu hat (MLE)	34.64				0.0	nu star (l	bias cc	prrected)	33.85
400			Adjusted	Level of Sig	nificance (B)	0.0451								
401		Appro	ximate Chi	Square Val	ue (33.85, α)	21.55			Adjusted	d Chi	Square V	alue (3	33.85, B)	21.25
402	95%	% Gamma A	pproximate	UCL (use	when n>=50)	62.41		95% G	amma Ac	djuste	d UCL (u	se whe	en n<50)	63.28
403														
404				Es	timates of Ga	mma Parai	meters usi	ng KM Est	imates					
405					Mean (KM)	40.74						ę	SD (KM)	45.04
406				V	ariance (KM)	2029					SE	of Me	an (KM)	6.518
407					k hat (KM)	0.818		_				k s	tar (KM)	0.782
408					nu hat (KM)	80.18						nu sʻ	tar (KM)	76.6
409				th	eta hat (KM)	49.8					t	heta s	tar (KM)	52.12
410			80%	gamma pe	rcentile (KM)	66.66				90%	gamma p	ercent	ile (KM)	99.61
411			95%	gamma pe	rcentile (KM)	133.3				99%	gamma p	ercent	ile (KM)	212.9
412											2			
413					Gamma	Kaplan-Me	eier (KM) S	Statistics						
414	0.50/ 0	Approx	ximate Chi	Square Val	ue (76.60, α)	57.44			Adjusted	1 Chi S	Square V	alue (7	'6.60, β)	56.94
415	95% Ga	amma Appro	ximate KM-	-UCL (use v	when n>=50)	54.33	g	5% Gamm	a Adjust	ed KN	И-UCL (u	se whe	en n<50)	54.81
416					anormol COE	Toot on D	atacted O		Only					
41/			Sh	aniro Wilk	Toet Statistic	0.012	elected OI	Servations	Shapi	ro Wil		ost		
418			5% Sh	apiro Wilk (	Critical Value	0.912	De	tected Dat	a Not Lo	anorn	nal at 5%	Signifi	cance I e	vel
419			070 011	Lilliefors	Test Statistic	0.333	DC			efors	GOF Tes	t		vei
420			5%	Lilliefors (	Critical Value	0.14	De	etected Dat	a Not Lo	anorn	nal at 5%	Signifi	cance Le	vel
421				De	tected Data N	ot Lognorm	nal at 5% S	Significanc	e Level	3				
423														
424				Log	gnormal ROS	Statistics I	Jsing Impu	ted Non-D	etects					
425				Mean in O	riginal Scale	40.33					Mea	n in Lo	g Scale	2.921
426		-		SD in O	riginal Scale	45.85					SI	D in Lo	g Scale	1.409
427		95% t UCI	_ (assumes	normality of	of ROS data)	51.31			95	5% Pe	ercentile I	Bootstr	ap UCL	50.87
428			9	5% BCA Bo	otstrap UCL	52.43					95% B	ootstra	p t UCL	53.48
429				95% H-UC	L (Log ROS)	88.84								
430														
431			Statistic	s using KN	I estimates o	n Logged [	Data and A	ssuming L	ognorma	al Dis	tribution			
432				KM M	ean (logged)	3.051						KM Ge	o Mean	21.13
433				KM	SD (logged)	1.204			95	5% Cr	itical H V	alue (K	(M-Log)	2.568
434		K	M Standard	Error of M	ean (logged)	0.174					95% H-L	JCL (K	M -Log)	68.12
435				KM	SD (logged)	1.204			95	5% Cr	itical H V	alue (K	(M-Log)	2.568
436		К	M Standard	Error of M	ean (logged)	0.174								
437						DL/2 C	atlation							
438				lormal		DL/2 St	austics			07 T	ronoferre	od		
439			DL/2 ľ	Moon in O	riginal Scale	40.22			UL/2 L	Log-1	anstorm	ea nint-	a Casta	2.000
440				wean in O	nginal Scale	40.23					меа	n in Lo	g Scale	2.909

	А	В	С	D	E	F	G	Н	-	J	K	L
441			05% + 11			45.95				SD II 05%		1.405
442			DI /2 is	not a recom	mended me	thod provid	ted for com	parisons ar	ad historical	9576	n-Stat UCL	07.13
443			DUZIS	not a recon	intended me	uiou, provid		ipansons ai	iu nistoricai	Teasons		
444					Nonnaramet	ric Distribut	tion Free LI	CL Statistic	2			
445			Deter	ted Data ar		vimate Gam	uon nee oo	uted at 5%	Significance			
446			Deter	cicu Data a		and Can			olymilicance	Level		
447						Sunnested	UCL to Use					
448			95% K	Adjusted G	amma UCI	54.81	002 10 000		95% GROS	Adjusted G	amma LICI	63.28
449			007010			04.01	-		3378 GROO	Aujusteu u		00.20
450			When a da	ta set follow	s an approxir	nate (e.a. r	ormal) distr	ribution pass	sing one of t	ne GOE test		
451	W	hen applica	ble, it is su	agested to u	se a UCL ba	sed upon a	distribution	(e.g. gamm	na) passing l	ooth GOF te	sts in ProUC	21
452			,	55				(**3., 3*****	, passing ,			
453	Note	: Suagestio	ns regardin	a the selection	on of a 95%	UCL are pro	ovided to he	elp the user	to select the	most appro	opriate 95% I	ICI
455			Re	commendat	ions are base	ed upon data	a size, data	distribution.	and skewne	ess.		
455	The	se recomm	endations a	re based up	on the result	s of the sim	ulation stud	lies summar	ized in Sina	h. Maichle.	and Lee (20(	06).
457	Howev	er, simulatio	ons results	will not cove	r all Real Wo	orld data set	s; for addition	onal insight	the user ma	y want to co	onsult a statis	stician.
458								Ĭ				
459												-
460	Lead											
461												
462					1	General	Statistics					
463			Total I	Number of O	bservations	49			Number o	f Distinct Ol	bservations	40
464									Number o	f Missing Ol	bservations	0
465					Minimum	5.6					Mean	149.1
466					Maximum	1400					Median	48
467					SD	271.4				Std. Er	ror of Mean	38.77
468				Coefficient	of Variation	1.821					Skewness	3.46
469											0	
470						Normal G	OF Test					
471			Sh	apiro Wilk T	est Statistic	0.542			Shapiro Will	k GOF Test		
472			5% Sh	apiro Wilk C	ritical Value	0.947		Data Not	Normal at 5	% Significar	nce Level	
473				Lilliefors T	est Statistic	0.299			Lilliefors (	GOF Test		
474			5%	6 Lilliefors C	ritical Value	0.126		Data Not	Normal at 5	% Significar	ice Level	
475					Data Not I	Normal at 5	% Significa	nce Level				
476												
477					Ass	uming Norn	nal Distribut	tion				
478			95% No	ormal UCL				95% (	UCLs (Adjus	sted for Ske	wness)	
479				95% Stud	lent's-t UCL	214.1		95	% Adjusted-		Chen-1995)	233.3
480								9:	5% Modified	-t UCL (Johi	nson-1978)	217.3
481	:t:					Commo						
482					oct Statistia	2 204	JOP Test	Andore	on Darling (	Commo CO	E Toot	
483				A-D T	ritical Value	0.802	Dat	Anuers	Distributo	d at 5% Sig	r iest	
484				3% A-D C	est Statistic	0.802	Dat	Kolmogo		u at 5 % Siy		/61
485				5% K-S C	ritical Value	0.100	Dat	a Not Gam	na Distribute	d at 5% Sig	nificance Lev	
486	-			Dat	a Not Gamm	a Distribute	d at 5% Sir	mificance I		a at 578 Oly		
487				Du								
488						Gamma	Statistics					
409					k hat (MLE)	0.635	Judiolog		k sta	ar (bias corre	ected MLE)	0.61
490				Thet	a hat (MLF)	234.6			Theta sta	r (bias corre	ected MI F)	244.4
491				n	u hat (MLE)	62.26				nu star (hias	corrected)	59.78
492			MU	E Mean (bia	s corrected)	149.1			M	LE Sd (hias	corrected)	190.9
493				(	)			An	proximate C	hi Square V	'alue (0.05)	43
494			Adiust	ed Level of S	Significance	0.0451		· 1	Adiu	sted Chi Sa	uare Value	42.57
-30										U		

- 2	A B		С		D		E	F	G	Н	1	J	К	L
496							<b>A</b> = =							
497	050/ 4	. ture				. de ave	ASS	suming Gan	ima Distribu					200.2
498	95% Appro	xima	te Gamn	na UC	L (use v	when	n>=50))	207.2		95% Adji	usted Gamm	ia UCL (use wr	1en n<50)	209.3
499								Lognormo						
500				Shani	ro Mille	Toot	Statiatio	Lognonna	IGOF Test	Shor	viro Wilk Lo		Toot	
501			5%	Shapi		Critic	Statistic	0.947				unt 5% Signific	ance Lovo	
502			576	Shapii		Test	Statistic	0.347			liefore Logn		ance Leve	
503				5% Li	lliefors	Critic		0.139		Data Not		official GOI Te		
504				070 LI	Data a	annea	ar Annro	vimate Log	normal at 5º	% Significat	nce i evel	it 070 Olgrinical	ICC LEVEI	
505					Data c	.ppoc	an rippio	and Log	ionnai at o	o olgriniou				
500								Loanorma	I Statistics					
508				Minir	num of	Logo	ed Data	1.723				Mean of log	ged Data	4.04
500				Maxir	num of	Logo	, jed Data	7.244				SD of log	ged Data	1.34
510														
511							Assu	ming Logn	ormal Distrit	oution				
512						95%	6 H-UCL	236.7			90% (	Chebyshev (MV	/UE) UCL	234
513			95%	6 Cheł	oyshev	(MVL	JE) UCL	278.8			97.5% (	Chebyshev (M∖	/UE) UCL	341.1
514			99%	6 Cheb	oyshev	(MVL	JE) UCL	463.4	1					
515														
516						Nor	nparame	tric Distribu	tion Free U	CL Statistic	s			
517				Data	appea	r to f	ollow a l	Discernible	Distribution	at 5% Sigr	hificance Le	vel		
518														
519		95%							tribution Fre	e UCLs				
520	23				9	5% C	CLT UCL	212.8				95% Jack	knife UCL	214.1
521			959	% Star	idard B	ootst	rap UCL	213.7				95% Bootst	rap-t UCL	266.4
522				95% I	Hall's B	ootst	rap UCL	509.3			95% F	ercentile Boots	strap UCL	216.7
523		_		95%	BCA B	ootst	rap UCL	238.8						
524			90% (	Chebys	shev(Me	ean, S	Sd) UCL	265.4			95% Ch	ebyshev(Mean,	, Sd) UCL	318.1
525			97.5% C	Chebys	shev(Me	ean, S	Sd) UCL	391.2			99% Che	ebyshev(Mean,	, Sd) UCL	534.8
526						_		Quesested						
527		_				05%		236 7	UCL IO USE	;				
528						337	UTI-OOL	200.7	l					
529	Note: Sugge	estion	s regard	lina th	e selec	tion c	of a 95%	UCL are pr	ovided to he	In the user	to select th	e most appropi	riate 95% I	ICI
530	itotor eugge		orogaro	Recon	nmenda	ations	are bas	ed upon da	ta size. data	distribution	. and skewr	ess.		
532	These reco	mme	ndations	s are b	ased u	pon t	the resul	ts of the sin	nulation stud	lies summa	rized in Sin	gh, Maichle, ar	nd Lee (20	06).
533	However, simu	ulatio	ns resul	ts will	not cov	er all	Real W	orld data se	ts; for additi	onal insight	the user m	ay want to con	sult a statis	stician.
534														
535			Pro	UCL o	compute	es ar	nd outpu	ts H-statisti	c based UC	Ls for histo	orical reaso	ns only.		
536	H-statistic	ofte	n result	s in ur	nstable	(bot	h high ai	nd low) valu	ues of UCLS	95 as show	n in exampl	es in the Tech	nical Guic	le.
537			ľ	t is the	erefore	reco	mmende	d to avoid	the use of H	-statistic ba	ased 95% L	ICLs.		
538	Use of nonpar	ame	tric meth	nods a	re pref	erred	to com	pute UCL9	o for skewed	d data sets	which do n	ot follow a gai	mma distri	bution.
539														
540	Mercury													
541														
542						_		General	Statistics					
543			Tota	al Num	ber of (	Obse	ervations	49			Number	of Distinct Obs	ervations	2
544					Numb	per of	Detects	2				Number of No	n-Detects	47
545				Numbe	er of Dis	stinct	Detects	2			Numbe	of Distinct No	n-Detects	1
546					Min	nimun	n Detect	0.1				Minimum No	on-Detect	0.1
547					Max	kimun	n Detect	0.3				Maximum No	on-Detect	0.1
548					vari	ance	Detects	0.02				Percent Noi	Detects	95.92%
549					N	viean	Detects	0.2				SI	Detects	0.141
550					Me	aian	Detects	0.2				C	v Detects	0.707

2	А	В	С	D	E	F	G	Н	- I	J	K Sis Dotosta	L
551			8		ad Detects	1 7E2				CD of Logg	ad Detects	N/A
552				lean of Loge	Jed Delects	-1.755				SD OI LOGG	ed Delects	0.777
553					Norning: Do	to oot hoo	ophy 2 De	tested \/olu				
554			Thio	le not onou	wanning. Da	uto moonin	offul or rol	lichle statio	ies.	ataa		
555			THIS	is not enou	igh to comp	ute meanin	giui or rei	liable statis	ucs and esun	idles.		
556												
557					Norm		t on Doto	ote Only				
558					Not Eno	ugh Data to	Perform					
559					NOTENO	ugii Data te	or chomi	doi rest				
560			Kaplan-Me	ier (KM) Sta	atistics usin	n Normal C	ritical Va	lues and of	her Nonnarar	netric LICLs		
561			naplan me	ior (run) ou	KM Mean	0 104	naoar va		KM	Standard Err	or of Mean	0.00571
562					KM SD	0.0283				95% KM (	BCA) UCI	N/A
503				95%	KM (t) UCL	0.114			95% KM (Pe	ercentile Boot	stran) UCI	N/A
504				95%	(m) (r) UCL	0.113			g	5% KM Boots	strant UCI	N/A
505			90	% KM Cheb	vshev UCL	0.121			9	5% KM Cheby	vshev UCL	0.129
567			97.5	% KM Cheb	vshev UCL	0.14			9	9% KM Cheby	vshev UCL	0.161
568					,				-			
569				Ga	mma GOF 1	Tests on De	etected OI	bservations	Only			
570					Not Eno	ugh Data to	Perform	GOF Test				
571												
572					Gamma S	Statistics on	Detected	d Data Only				
573				I	(hat (MLE)	3.634			k s	tar (bias corre	ected MLE)	N/A
574				Theta	a hat (MLE)	0.055			Theta s	tar (bias corre	ected MLE)	N/A
575				กเ	hat (MLE)	14.54				nu star (bias	corrected)	N/A
576				Меа	n (detects)	0.2						
577											11	
578				Esti	mates of Ga	mma Parar	neters us	ing KM Est	imates			
579					Mean (KM)	0.104					SD (KM)	0.0283
580				Var	iance (KM)	7.9967E-4				SE of I	Mean (KM)	0.00571
581					k hat (KM)	13.55				ł	k star (KM)	12.73
582				r	nu hat (KM)	1328				nı	u star (KM)	1248
583				the	ta hat (KM)	0.00768				theta	a star (KM)	0.00818
584			80%	gamma perc	entile (KM)	0.128			90%	gamma perce	entile (KM)	0.143
585			95%	gamma perc	entile (KM)	0.156			99%	gamma perce	entile (KM)	0.184
586												
587					Gamma	Kaplan-Me	eier (KM)	Statistics				
588									Adjusted	Level of Signi	ficance (β)	0.0451
589	050/ 0	Арр	roximate Ch	I Square Val	ue (N/A, α)	1167		050/ 0	Adjusted Cl	n Square Vali	ue (N/A, β)	1164
590	95% Ga	amma Appro	oximate KM-	UCL (use wi	nen n>=50)	0.111		95% Gamm	a Adjusted Kr	A-UCL (use w	/hen n<50)	0.112
591				Loc		Toot on D	atastad O	booncation	Only			
592				LOG	Not Eng	- Test on De			s Only			
593					NOL ENO	ugn Data to	Penonn	GOF Test				
594				Logr		Statistics I	leina Imn	uted Non-F	)otocte			
595				Mean in Ori	ainal Scale	0 00052	Joing imp	uteu Non-L	Jelecis	Mean in	Log Scale	0.607
596				SD in Ori	ginal Scale	0.00352				SD in	Log Scale	3.681
231		95% t UC	L (assumes	normality of	ROS data)	0.0203			95% P	ercentile Boot	tstran LICI	0.0216
298			_ (SOUTHOS GF	5% BCA Boo	tstran UCI	0.0303			00701	95% Boots	strap t UCI	0 118
099				95% H-UCI	(Log ROS)	1.374				2270 20010		0.110
601					((							
602			Statistic	s usina KM	estimates o	n Loaaed r	Data and	Assumina I	ognormal Dis	stribution		
603				KM Mea	an (logged)	-2.28				KM	Geo Mean	0.102
604				KMS	SD (logged)	0.155			95% C	ritical H Value	(KM-Loa)	1.768
605		k	M Standard	Error of Mea	an (logged)	0.0314				95% H-UCL	(KM -Loa)	0.108
000					( - 33)							

	А	В	С	D	Е	F	G	Н	I	J	К	L
606				KMS	SD (logged)	0.155			95% Cr	itical H Value (	(KM-Log)	1.768
607		ĸ	M Standard	Error of Me	an (logged)	0.0314						
608												
609			51.00			DL/2 S	tatistics					
610			DL/2 N	lormal					DL/2 Log-T	ransformed		
611				Mean in Or	ginal Scale	0.0561				Mean in L	og Scale	-2.945
612			0504 + 146	SD in Ori	ginal Scale	0.0363				SD in Li	og Scale	0.273
613			95% t UC	CL (Assume:	s normality)	0.0648				95% H-8	Stat UCL	0.0586
614			DL/2 IS I	not a recom	mended me	thoa, provi	ded for com	iparisons ar	nd historical	reasons		
615						de Distat						
616				l Data da nat	tollour o Dia	ric Distribu		L Statistics	5			
617					IONOW a Dis	cernible D	istribution a	t 5% Signii	cance Leve			
618						Suggested						_
619			05%	KM (Chob)	(choy) LICI		UCL IO USE					
620			33 /	S KW (Cheb)	(SILEV) UCL	0.129						
621	Note	Suggestion	e regarding	the selection	n of a 95% I		ovided to be	In the upor	to coloct the	most appropri	into 05% L	
622	Note.	ouggestion	Per	commendatio	one are base	d upon dat	a ciza data	distribution	and skown			CL.
623	The	se recomme	indations ar		on the result	s of the sim	a size, uata	lies summar	ized in Sing	h Maichle an	d Lee (200	16)
624	Howeve	er simulation	ns results w	vill not cover	all Real Wo	rld data set	ts: for additi	onal insight	the user ma	v want to cons	ult a statis	tician
625	TIOWEV	si, simulatio						onar maight	are user ma	y want to cons	uit a statis	ucian.
627	Nickel					N						
627												
620						General	Statistics					
620			Total N	umber of Ol	servations	49			Number o	of Distinct Obse	ervations	26
631				Number	of Detects	35				Number of Non	-Detects	14
632			Nun	nber of Disti	nct Detects	26			Number	of Distinct Non	-Detects	1
633				Minin	num Detect	5				Minimum No	n-Detect	5
634				Maxin	num Detect	120				Maximum No	n-Detect	5
635				Variar	ce Detects	751.2				Percent Non	-Detects	28.57%
636				Me	an Detects	23.19				SD	Detects	27.41
637				Medi	an Detects	14				CV	Detects	1.182
638				Skewne	ess Detects	2.749				Kurtosis	Detects	7.855
639			M	lean of Logg	ed Detects	2.722				SD of Logged	Detects	0.866
640												
641					Norma	I GOF Tes	t on Detects	Only				
642			Sha	apiro Wilk Te	est Statistic	0.632			Shapiro Wil	k GOF Test		
643			5% Sha	piro Wilk Cr	itical Value	0.934	De	etected Data	Not Norma	l at 5% Signific	ance Leve	1
644				Lilliefors Te	est Statistic	0.253			Lilliefors (	GOF Test		
645			5%	Lilliefors Cr	itical Value	0.148	De	etected Data	Not Norma	at 5% Signific	ance Leve	el 🛛
646				De	tected Data	Not Norma	l at 5% Sigr	hificance Le	vel			
647												
648			Kaplan-Mei	er (KM) Sta	tistics using	Normal C	ritical Value	es and other	Nonparam	etric UCLs		
649					KM Mean	18			KMS	Standard Error	of Mean	3.517
650					KM SD	24.27				95% KM (BC	CA) UCL	24.1
651				95%	KM (t) UCL	23.89		9	5% KM (Per	centile Bootstra	ap) UCL	23.93
652				95% k	(M (z) UCL	23.78			95	% KM Bootstra	ap t UCL	28.83
653			90	% KM Cheb	yshev UCL	28.55			95	% KM Chebysh	hev UCL	33.33
654			97.5	% KM Cheb	yshev UCL	39.96			99	% KM Chebysł	hev UCL	52.99
655												
656				Ga	mma GOF T	ests on De	etected Obs	ervations O	nly			
657				A-D Te	est Statistic	1.423		An	derson-Dar	ing GOF Test		
658				5% A-D Cr	itical Value	0.77	Detected	d Data Not C	amma Distr	ibuted at 5% S	Significance	e Level
659				K-S Te	est Statistic	0.143		Ke	olmogorov-S	Smirnov GOF		
660				5% K-S Cr	itical Value	0.152	Detected	data appear	Gamma Dis	tributed at 5%	Significan	ce Level

1	A B C D E	F	G H		J K	L
661	Detected data follow App	r. Gamma D	istribution at 5%	Significance Le	vel	
662						
663	Gamma S	Statistics on	Detected Data O	nly		
664	k hat (MLE)	1.328		k st	ar (bias corrected MLE)	1.233
665	Theta hat (MLE)	17.47		Theta st	ar (bias corrected MLE)	18.81
666	nu hat (MLE)	92.96			nu star (bias corrected)	86.32
667	Mean (detects)	23.19				
668						
669	Gamma ROS S	Statistics us	ing Imputed Non-	Detects		
670	GROS may not be used when data se	t has > 50%	NDs with many ti	ed observations	at multiple DLs	
671	GROS may not be used when kstar of detects is si	mall such as	<1.0, especially \	when the sample	size is small (e.g., <15-2	20)
672	For such situations, GROS m	lethod may y	the comple size	les of UCLs and	BIVS	
673	For commo distributed detected data, BTV(a an	d UCLo mo	the sample size	is small.	bution on KM actimates	
674	For gamma distributed detected data, BTVs an	u UCLS may	be computed usi	ng gamma distri	bution on KIM estimates	10 57
675	Minimum	120			Mean	16.57
676	Maximum	25.29		1	Median	1.7
6/7	SD bat (MLE)	0.314		k et	UV	0.200
678	Theta bat (MLE)	52 75		Theta et	ar (bias corrected MLE)	53 71
679	nu hat (MLE)	30.78		Theta St	nu star (bias corrected MEE)	30.23
080	Adjusted Level of Significance (R)	0.0451			na star (bias corrected)	50.25
081	Approximate Chi Square Value (30.23, q)	18.68		Adjusted Chi	Square Value (30.23, ß)	18.4
692	95% Gamma Approximate UCI (use when n>=50)	26.82	95%	Gamma Adjuste	d UCL (use when $n < 50$ )	27.23
604		20.02				27.20
685	Estimates of Ga	mma Param	eters using KM E	stimates		
686	Mean (KM)	18	eren grung run E		SD (KM)	24.27
687	Variance (KM)	588.8			SE of Mean (KM)	3.517
688	k hat (KM)	0.55			k star (KM)	0.53
689	nu hat (KM)	53.9			nu star (KM)	51.94
690	theta hat (KM)	32.72			theta star (KM)	33.96
691	80% gamma percentile (KM)	29.62		90%	gamma percentile (KM)	48.1
692	95% gamma percentile (KM)	67.71		99%	gamma percentile (KM)	115.7
693						
694	Gamma	Kaplan-Me	ier (KM) Statistics	5		
695	Approximate Chi Square Value (51.94, $\alpha$ )	36.38		Adjusted Chi	Square Value (51.94, β)	35.99
696	95% Gamma Approximate KM-UCL (use when n>=50)	<mark>25</mark> .69	95% Gan	nma Adjusted KN	N-UCL (use when n<50)	25.97
697						
698	Lognormal GOF	Test on De	tected Observation	ons Only		
699	Shapiro Wilk Test Statistic	0.922		Shapiro Wil	k GOF Test	
700	5% Shapiro Wilk Critical Value	0.934	Detected D	ata Not Lognorn	nal at 5% Significance Le	vel
701	Lilliefors Test Statistic	0.136		Lilliefors	GOF Test	
702	5% Lilliefors Critical Value	0.148	Detected Da	ta appear Logno	rmal at 5% Significance L	evel
703	Detected Data appear Ap	proximate L	ognormal at 5%	Significance Lev	el	
704						
705	Lognormal ROS	Statistics U	sing Imputed Nor	-Detects		
706	Mean in Original Scale	17.18			Mean in Log Scale	2.127
707	SD in Original Scale	24.99			SD in Log Scale	1.233
708	95% t UCL (assumes normality of ROS data)	23.17		95% Pe	ercentile Bootstrap UCL	23.58
709	95% BCA Bootstrap UCL	25.65			95% Bootstrap t UCL	28.02
710	95% H-UCL (Log ROS)	28.53				
711					A. 14. AT	
712	Statistics using KM estimates of	n Logged D	ata and Assuming	g Lognormal Dis	tribution	
713	KM Mean (logged)	2.404		0001 0	KM Geo Mean	11.07
714	KM SD (logged)	0.88		95% Cr	itical H Value (KM-Log)	2.215
715	KM Standard Error of Mean (logged)	0.127			95% H-UCL (KM -Log)	21.59

- 3		A	В		С	D	Е	F	G	Н	I		J	к	L
716						KM	SD (logged)	0.88			95	5% Cr	itical H Valu	e (KM-Log)	2.215
717				K١	A Standard	d Error of Me	an (logged)	0.127							
718															
719								DL/2 St	tatistics						
720					DL/2	Normal					DL/2 l	_og-T	ransformed		
721						Mean in Or	iginal Scale	17.28					Mean ir	i Log Scale	2.206
722						SD in Or	iginal Scale	24.93					SD in	Log Scale	1.101
723					95% t U	CL (Assume	s normality)	23.25					95% I	H-Stat UCL	24.56
724					DL/2 is	not a recom	mended me	thod, provid	ded for com	nparisons a	nd hist	orical	reasons		
725															
726							Nonparamet	ric Distribu	tion Free U	CL Statistic	s				
727					Detec	ted Data ap	pear Approx	kimate Gan	nma Distrib	uted at 5%	Signific	cance	e Level		
728															
729								Suggested	UCL to Use	)					
730					95% KM	Adjusted G	amma UCL	25.97			95% 0	GROS	Adjusted G	amma UCL	27.23
731															
732				V	/hen a da	a set follows	s an approxir	mate (e.g., r	normal) dist	ribution pas	sing on	e of t	he GOF test		
733		W	hen appl	licabl	e, it is sug	gested to us	se a UCL ba	sed upon a	distribution	(e.g., gamr	na) pas	sing	both GOF te	sts in ProUC	CL
734															_
735		Note	: Sugges	stions	regarding	the selection	on of a 95%	UCL are pro	ovided to he	elp the user	to sele	ct the	most appro	priate 95% I	JCL.
736					Re	commendati	ons are base	ed upon dat	a size, data	distribution	, and sl	kewn	ess.		
737		The	se recon	nmer	ndations a	re based up	on the result	s of the sim	ulation stud	dies summa	rized in	Sing	h, Maichle, a	and Lee (20	06).
738	ŀ	lowev	er, simul	ation	s results v	will not cove	r all Real Wo	orld data set	t <mark>s; for additi</mark>	ional insight	the use	er ma	y want to co	nsult a statis	stician.
739															
740															
741	Zinc														
742															
743								General	Statistics						
744					Total I	Number of O	bservations	49			Nun	nber o	of Distinct Ob	servations	44
745											Num	nber c	of Missing Ob	servations	0
746							Minimum	7.5						Mean	299.2
747							Maximum	1400						Median	140
748							SD	365.4					Std. Err	or of Mean	52.2
749				_		Coefficient	of Variation	1.221						Skewness	1.601
750															
751								Normal C	GOF Test						
752	_				Sh	apiro Wilk T	est Statistic	0.757			Shapir	'o Wil	k GOF Test		
753			_		5% Sh	apiro Wilk C	ritical Value	0.947		Data No	t Norma	al at 5	% Significan	ce Level	
754		_				Lilliefors T	est Statistic	0.271			Lillie	efors	GOF Test		
755					5%	Lilliefors C	ritical Value	0.126		Data No	t Norma	al at 5	% Significan	ce Level	
756	_		5				Data Not	Normal at 5	% Significa	Ince Level					
757															
758							Ass	uming Norr	nal Distribu	ition					
759					95% No	ormal UCL				95%	UCLs (	(Adju	sted for Skev	wness)	
760						95% Stud	ent's-t UCL	386.8		9	5% Adji	usted	-CLT UCL (C	Chen-1995)	397.8
761										ç	95% Mo	odified	I-t UCL (Johr	1son-1978)	388.8
762															
763								Gamma (	GOF Test						
764						A-D T	est Statistic	0.879		Ander	son-Da	irling	Gamma GO	FTest	
765						5% A-D C	ritical Value	0.794	Da	ta Not Gam	ma Dist	tribute	ed at 5% Sig	nificance Le	vel
766						K-S T	est Statistic	0.136	_	Kolmog	orov-Sr	mirno	v Gamma G	OF Test	
767						5% K-S C	ritical Value	0.132	Da	ta Not Gam	ma Dis	tribute	ed at 5% Sig	nificance Le	vel
768	-9					Data	a Not Gamm	a Distribute	ed at 5% Si	gnificance	Level				
769															
770								Gamma	Statistics						

57	А	В	С	D	E	F	G	Н	1	J	К	L
771					k hat (MLE)	0.734			ks	tar (bias c	corrected MLE)	0.702
772				The	ta hat (MLE)	407.8			Theta s	tar (bias c	corrected MLE)	426
773				r	nu hat (MLE)	71.91				nu star (l	bias corrected)	68.84
774			MLE	Mean (bia	as corrected)	299.2				MLE Sd (I	pias corrected)	357
775								Ap	oproximate	Chi Squa	re Value (0.05)	50.74
776			Adjuste	d Level of	Significance	0.0451			Adj	justed Ch	i Square Value	50.27
777												
778					Ass	uming Gam	ma Distribut	ion				
779	95%	Approximat	te Gamma U	ICL (use w	hen n>=50))	406		95% Adju	sted Gamm	a UCL (u	se when n<50)	409.8
780												
781						Lognormal	GOF Test					
782			Sha	piro Wilk 1	Fest Statistic	0.958		Shapi	iro Wilk Log	normal C	OF Test	
783			5% Sha	piro Wilk C	Critical Value	0.947	D	ata appear	Lognormal	at 5% Sig	gnificance Leve	
784				Lilliefors 7	Fest Statistic	0.106		Lilli	efors Logn	ormal GO	F Test	
785			5%	Lilliefors C	Critical Value	0.126	D	ata appear	Lognormal	at 5% Sig	gnificance Leve	
786				[	Data appear	Lognormal a	at 5% Signifi	icance Lev	el			
787												
788						Lognormal	Statistics					
789			Mi	nimum of L	ogged Data	2.015				Mean	of logged Data	4.883
790			Ma	ximum of L	ogged Data	7.244				SD	of logged Data	1.41
791					A							
792					Assur	ning Lognoi	mai Distribi	ution	000/ 0			010
793	a		05% 05	abuahau /i	95% H-UCL	033.0			90% C	nebysne\		613
794			95% Ch	ebysnev (I		1027			97.5% C	nebysnev	/ (MIVUE) UCL	904.6
795			99% CH	lebysnev (i	WVUE) UCL	1237						
796					Nonnaramet	ric Distributi	on Free UC	Statistics	2			
797			Da	ita appear	to follow a D	iscernible E	istribution a	at 5% Signi	ificance Le	vel		
790												
800	-				Nonpara	metric Dist	ibution Free	UCLs				
801				95	% CLT UCL	385.1				95%	Jackknife UCL	386.8
802			95% St	andard Bo	otstrap UCL	384.3				95% Bo	ootstrap-t UCL	404.9
803			95%	6 Hall's Bo	otstrap UCL	399.2			95% P	ercentile I	Bootstrap UCL	388.7
804			95	% BCA Bo	otstrap UCL	390.6						
805			90% Cheb	yshev(Mea	an, Sd) UCL	455.8			95% Che	byshev(N	lean, Sd) UCL	526.8
806			97. <mark>5%</mark> Cheb	yshev(Mea	an, Sd) UCL	625.2			99% Che	byshev(M	lean, Sd) UCL	818.6
807												
808					5	Suggested L	JCL to Use					
809					95% H-UCL	633.6						
810												
811	Note:	Suggestion	s regarding	the selecti	on of a 95% I	JCL are pro	vided to hel	p the user t	to select the	e most ap	propriate 95% (	JCL.
812			Reco	ommendat	ions are base	ed upon data	size, data c	listribution,	and skewn	ess.		
813	The	se recomme	ndations are	based up	on the results	s of the simu	ulation studie	es summar	ized in Sing	jh, Maichl	e, and Lee (20	06) <mark>.</mark>
814	Howeve	er, simulation	ns results wi	Il not cove	r all Real Wo	rid data sets	s; for additio	nal insight	the user ma	ay want to	consult a statis	stician.
815			B 110				to a statement			-		
816		and the first	ProUCL	_ compute	s and outputs	s H-statistic	based UCL	s for histor	rical reasor	ns only.		
817	H-s	statistic ofte		unstable (	doth nigh an	a low) value	es of UCL95	as shown	in example	es in the	rechnical Guid	le.
818	Line of	nonnoromot	It IS I		red to com	uto LICLOF	e use of H-	data ante	sea 95% U	ULS.	o comme diet	butica
819	Use of	nonparamet	are methods	are prete	neu to comp	ule UCL95	IOI SKewed	uata sets l	which do n	UL IOHOW :	a yamma distri	pution.
820												

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