DETAILED SITE INVESTIGATION REPORT

600 Macleay Valley Way
South Kempsey, NSW 2400

Spectrum Retail Group Pty Ltd– April 2018

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DETAILED SITE INVESTIGATION REPORT

600 Macleay Valley Way,
South Kempsey, NSW, 2400

PREPARED FOR

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Report reference: 1801032Rpt01FinalV01_17Apr18

Date: 17 April 2018

DISTRIBUTION AND REVISION REGISTER

Revision Number	Date	Description	Recipient	Deliverables
V01	17/4/2018	Final Report 1801032Rpt01FinalV01_17Apr18	Geo-Logix Pty Ltd	1 Electronic Copy
V01	17/4/2018	Final Report 1801032Rpt01FinalV01_17Apr18	Spectrum Retail Group Pty Ltd	1 Electronic Copy

Issued by: Geo-Logix Pty Ltd

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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^2) 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^2)
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^2) 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	1 in 20 samples
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	
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_{16}-C_{34} 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).

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

Report #	Analysis Within Holding Time	Surrogate Recovery	Lab. Duplicate RPD %	Lab Matrix Spike Recovery	Lab. Control Sample	Lab Method Blank
592301-S	✓	X	X	X	✓	✓
592301-W	✓	✓	✓	✓	✓	✓
592301-AID	n/a	n/a	n/a	n/a	n/a	n/a
592314-S	✓	X	✓	✓	✓	✓
✓ = Pass X = Fail						

Quality Assurance Criteria	Quality Control Criteria
Holding Times	**Accuracy**
VOCs 14 days soil / water SVOCs 7 days water, 14 days soil	Surrogate, matrix spike, control sample 70-130% and 30-130% for Phenols. Surrogate recovery 50-150% and 20-130% for Phenols.
Pesticides 7 days water, 14 days soil	**Precision**
Metals 6 months, Mercury 28 days	Method Blank Not detected Duplicate - No limit (<10xLOR), 0-50% (10-20xLOR), 0-200% (>20xLOR)

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 4-bromoflourobenzene. 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.

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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.

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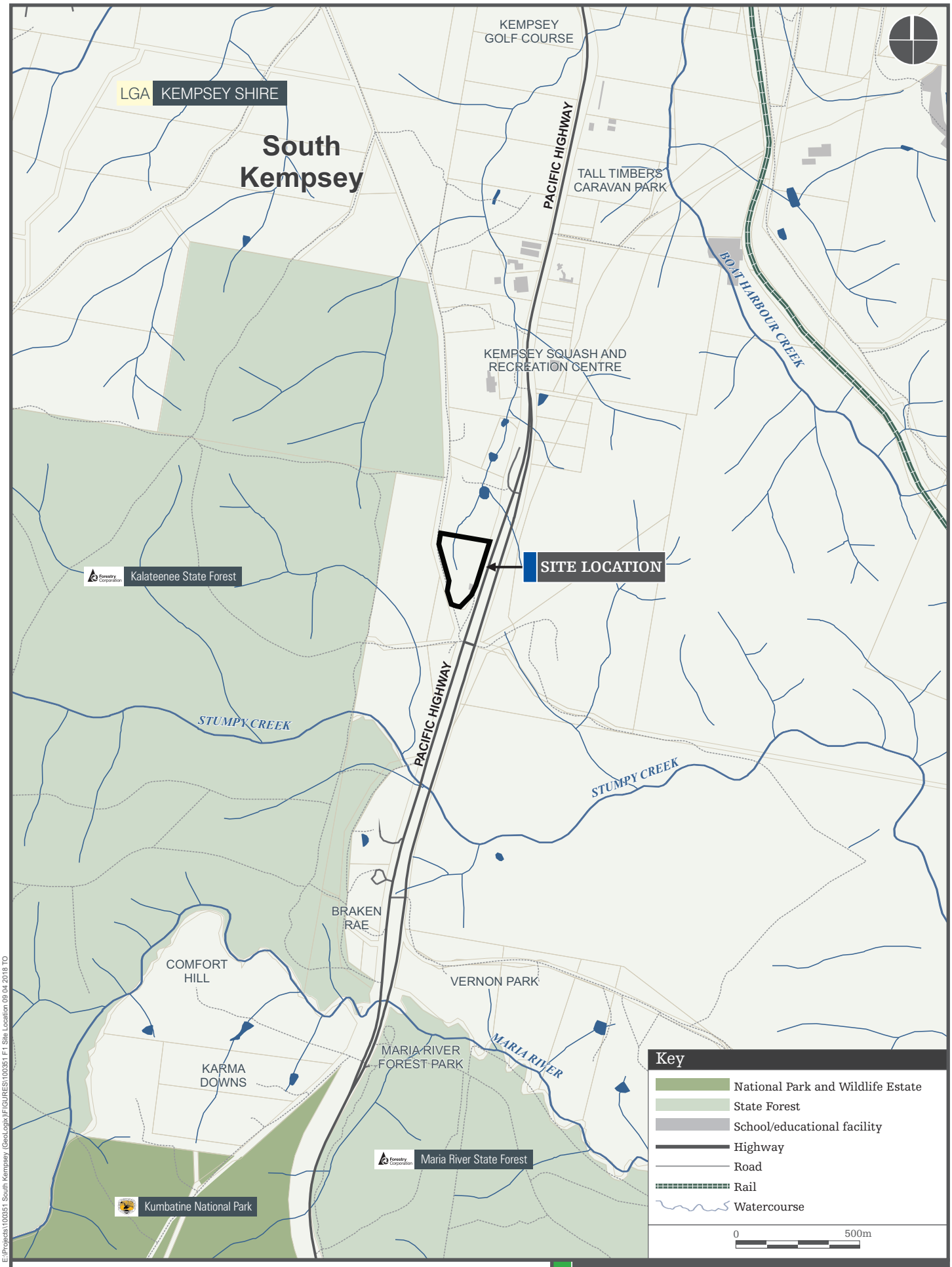
Geological Survey of New South Wales (1966) Hastings 1:250,000 Geological Series, NSW Department of Mineral Resources, Sydney.

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



E:\Projects\100351 South Kempsey (GeoLogix)\FIGURES\100351 F1 Site Location 09 04 2018 TO

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SITE LOCATION

Detailed Site Investigation
600 Macleay Valley Way, South Kempsey, NSW 2440

Project No. 1801032

Figure 1

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
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

Macleay Valley Way

PACIFIC HIGHWAY

ACM Sheeting

Key

- Site boundary
- Fenceline
- Scrap metal carparts (6)

0 50m

E:\Projects\1003S1 South Kempsey (GeoLogix)\FIGURES\1003S1 F2 Site Features Map 16.04.2018 TO Rev. C

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SITE FEATURES MAP

Detailed Site Investigation
600 Macleay Valley Way, South Kempsey, NSW 2440

Project No. 1801032

Figure 2

SS1
SS2
SS13
SS3
SS4
SS12
SS6
SS11
SS5
SS10
SS15
SS14
SS9
SS8
SS16
SS7
SS17
SS18
SS26
SS19
SS25
SS20
SS24
SS23
SS27
SS28
SS22
SS21
SS27A
SS28A
SS29
SS30
SS31
SS32
SS37
SS36
SS35
SS33/A1
SS38
SS34/A2
ACM Sheeting
SS39
A4
SS40
SS41
SS45
SS44
A3
SS43/A5
SS42
SS46
A6
SS47
SS48
SS50
SS49

Macleay Valley Way

PACIFIC HIGHWAY

Key

Site boundary

Surface sample location (Geo-Logix, 2018)

0 50m

E:\Projects\1100351 South Kempsey (GeoLogix)\FIGURES\1100351 F3 Sample Location Map 16 04 2018 TO

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SAMPLE LOCATION MAP

Detailed Site Investigation
600 Macleay Valley Way, South Kempsey, NSW 2440

Project No. 1801032

Figure 3

TABLES

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	Sand	Sand	-	Sand	-
	Comm/Ind	0 to <1 m	Date	27-Mar-18	27-Mar-18	-	27-Mar-18	-
TRH C_6-C_{10}	700	-		< 20	< 20	*nc*	< 20	*nc*
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	*nc*	< 20	*nc*
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	*nc*	84	*nc*
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	*nc*	84	*nc*
TRH >C_{16}-C_{34}	3,500	-		320	700	*75%*	580	*58%*
TRH >C_{34}-C_{40}	10,000	-		< 100	170	*nc*	180	*nc*
Benzene	-	3		< 0.1	< 0.1	*nc*	< 0.1	*nc*
Toluene	-	NL		< 0.1	< 0.1	*nc*	< 0.1	*nc*
Ethylbenzene	-	NL		< 0.1	< 0.1	*nc*	< 0.1	*nc*
m&p-Xylenes	-	-		< 0.2	< 0.2	*nc*	< 0.2	*nc*
o-Xylene	-	-		< 0.1	< 0.1	*nc*	< 0.1	*nc*
Xylenes - Total	-	230		< 0.3	< 0.3	*nc*	< 0.3	*nc*
Naphthalene (MAH method)	-	NL		< 0.5	< 0.5	*nc*	< 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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		170	200	< 50	87	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		170	200	< 50	87	< 50
TRH >C_{16}-C_{34}	3,500	-		770	1,300	230	610	100
TRH >C_{34}-C_{40}	10,000	-		300	500	< 100	290	< 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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	< 50	61	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	< 50	61	< 50
TRH >C_{16}-C_{34}	3,500	-		190	< 100	< 100	340	500
TRH >C_{34}-C_{40}	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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	-	Sand	-	Sand	Sand
	Comm/Ind	0 to <1 m	Date	-	27-Mar-18	-	27-Mar-18	27-Mar-18
TRH C_6-C_{10}	700	-		*nc*	< 20	*nc*	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		*nc*	< 20	*nc*	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		*nc*	83	*31%*	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		*nc*	83	*31%*	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		*38%*	440	*26%*	< 100	130
TRH >C_{34}-C_{40}	10,000	-		*34%*	160	*29%*	< 100	< 100
Benzene	-	3		*nc*	< 0.1	*nc*	< 0.1	< 0.1
Toluene	-	NL		*nc*	< 0.1	*nc*	< 0.1	< 0.1
Ethylbenzene	-	NL		*nc*	< 0.1	*nc*	< 0.1	< 0.1
m&p-Xylenes	-	-		*nc*	< 0.2	*nc*	< 0.2	< 0.2
o-Xylene	-	-		*nc*	< 0.1	*nc*	< 0.1	< 0.1
Xylenes - Total	-	230		*nc*	< 0.3	*nc*	< 0.3	< 0.3
Naphthalene (MAH method)	-	NL		*nc*	< 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
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Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		86	< 50	< 50	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		86	< 50	< 50	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		1,200	< 100	260	< 100	320
TRH >C_{34}-C_{40}	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.
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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
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Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	*nc*
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	*nc*
TRH >C_{10}-C_{16}	1,000	-		65	< 50	130	90	*36%*
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		65	< 50	130	90	*36%*
TRH >C_{16}-C_{34}	3,500	-		300	< 100	1,300	970	*29%*
TRH >C_{34}-C_{40}	10,000	-		110	< 100	530	410	*26%*
Benzene	-	3		< 0.1	< 0.1	< 0.1	< 0.1	*nc*
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.
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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

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Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

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	Type	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_6-C_{10}	700	-		< 20	*nc*	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	*nc*	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		140	*7%*	< 50	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		140	*7%*	< 50	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		800	*48%*	250	160	130
TRH >C_{34}-C_{40}	10,000	-		400	*28%*	140	< 100	< 100
Benzene	-	3		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
Toluene	-	NL		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
Ethylbenzene	-	NL		< 0.1	*nc*	< 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	*nc*	< 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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	64	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	64	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		< 100	< 100	430	1,000	120
TRH >C_{34}-C_{40}	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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	< 50	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	< 50	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		820	< 100	< 100	< 100	210
TRH >C_{34}-C_{40}	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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

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
	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	Type	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 C_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	52	**2,700**	190	100
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	52	2,700	190	100
TRH >C_{16}-C_{34}	3,500	-		320	450	**6,800**	1,900	570
TRH >C_{34}-C_{40}	10,000	-		180	120	210	520	140
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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		82	< 50	< 50	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		82	< 50	< 50	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		630	130	130	400	370
TRH >C_{34}-C_{40}	10,000	-		230	< 100	< 100	160	270
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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	**8,300**	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	8,300	< 50	< 50
TRH >C_{16}-C_{34}	3,500	-		880	230	**110,000**	280	760
TRH >C_{34}-C_{40}	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
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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_6-C_{10}	700	-		< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-	260		< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	1,000	-		< 50	< 50	< 50	**1,500**
TRH >C_{10}-C_{16} less Naphthalene (F2)	-	NL		< 50	< 50	< 50	1,500
TRH >C_{16}-C_{34}	3,500	-		430	3,000	470	**51,000**
TRH >C_{34}-C_{40}	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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

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

Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

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
	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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

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	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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

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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	Type	-	Sand	-	Sand	Sand
	0 to <1 m		Date	-	27-Mar-18	-	27-Mar-18	27-Mar-18
Acenaphthene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Acenaphthylene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Anthracene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Benz(a)anthracene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Benzo(a)pyrene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-		*nc*	< 1	*nc*	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Chrysene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-		*nc*	< 1	*nc*	< 0.5	< 0.5
Fluoranthene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Fluorene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-		*nc*	< 1	*nc*	< 0.5	< 0.5
Naphthalene (PAH method)	NL	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Phenanthrene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Pyrene	-	-		*nc*	< 0.5	*nc*	< 0.5	< 0.5
Benzo(a)pyrene TEQ	-	40		*0%*	0.9	*40%*	0.6	0.6
Total PAH	-	4,000		*nc*	< 1	*nc*	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m.
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

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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

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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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

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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	Type	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	*nc*

Notes:

Criteria 1 = NEPC (1999) Amended, 'D' Commercial/industrial Soil Health Screening Levels for vapour intrusion, sand 0 to <1m.
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
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
Bold/red indicates exceedance of assessment criteria

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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	Type	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	*nc*	< 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.
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
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
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Bold/red indicates exceedance of assessment criteria

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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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

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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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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.
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
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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		5.8	< 5	*nc*	< 5	*nc*
Copper	240,000		< 5	< 5	*nc*	< 5	*nc*
Lead	1,500		9.1	7.7	*17%*	< 5	*nc*
Mercury	730		< 0.1	< 0.1	*nc*	< 0.1	*nc*
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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		< 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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

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600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	-	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	3,600[1]		*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		*nc*	< 0.1	*nc*	< 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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

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Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

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	Type	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[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

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	Type	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	3,600[1]		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
[1]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
Bold/red indicates exceedance of assessment criteria

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	Type	Fill	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
Bold/red indicates exceedance of assessment criteria

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	Type	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 (g)	-		ND	ND	ND	ND	ND
Mass Asbestos in ACM (g)	-		ND	ND	ND	ND	ND
Asbestos from ACM in Soil (%w/w)	0.05		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
	HSLs - D	Depth (m)	0.0-0.1
	Asbestos	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
		Type	Water	Water
		Date	27/03/2018	28/03/2018
TRH C_6-C_{10}	-		< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	-		< 20	< 20
TRH >C_{10}-C_{16}	-		< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	-		< 50	< 50
TRH >C_{16}-C_{34}	-		< 100	< 100
TRH >C_{34}-C_{40}	-		< 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
Bold/red indicates exceedance of assessment criteria

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
		Type	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
Bold/red indicates exceedance of assessment criteria

Table 8 : Summary of QA/QC Analytical Data - Heavy Metals

Detailed Site Investigation

Project No.: 1801031

600 Macleay Valley Way
South Kempsey NSW

	Criteria 1			
		Sample ID	R1	R2
		Type	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
Bold/red indicates exceedance of assessment criteria

ATTACHMENT A

REV	AMENDMENT DETAILS	BY	DATE
A	PRELIMINARY ISSUE	TC	23-10-17
P1	PRELIMINARY ISSUE	TC	19-10-17

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RBP No. DP-AD1689

PROJECT
PROPOSED
HIGHWAY SERVICE CENTRE

PROJECT ADDRESS
600 MACLEAY VALLEY WAY

SOUTH KEMPSEY
NSW 2440

DRAWING TITLE
CONCEPT SITE PLAN

CLIENT
SPECTRUM RETAIL GROUP

DATE	SCALE @ A1	NORTH
OCT '17	1:500	
DRAWN	CHECKED	
HJS	AB	
ISSUE		
PRELIMINARY		

PROJECT No.	DRAWING No.	REVISION No.	SHEET
17223	SK03	A	01of 01

ATTACHMENT B

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

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

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

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

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

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 8: 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 10: Oil staining on surface at sample location SS44.

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

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

Plate 13: View north adjacent to the dwellings.

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

Plate 15: Metal clad shed north of the dwellings.

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

Plate 17: Stockpiles of scrap metal, drums, plastic and other waste on the northern side of the dwellings demountable 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 20: Stockpiles of scrap metal and other waste in the central eastern boundary of site looking east.

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

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

Plate 23: Scrap metal and car parts located in the eastern 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 26: Cleared area of vegetation for soil sample collection.

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

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 32: Example of surface soil sampling.

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

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

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

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

ATTACHMENT C

Department of Primary Industries
Office of Water

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All Groundwater
find a site
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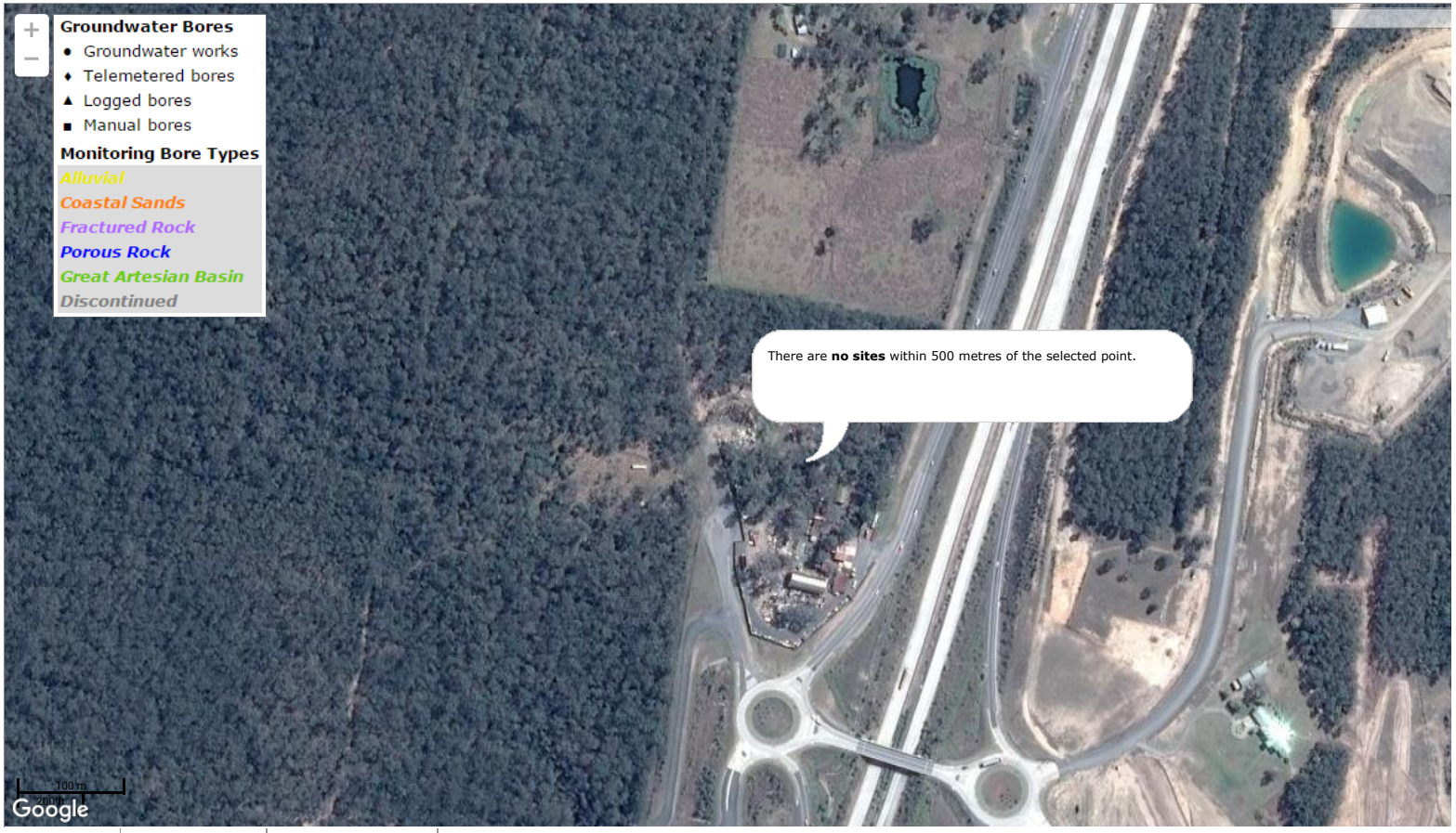
Map Info



Scale = 1 : 3385 | 152.832, -31.123 | 483982, 6556754, 56

ATTACHMENT D

Geo-Logix

Soil Boring Logs
Detailed Site Investigation
Project No: 1801031
600 Maclaey Valley Way
South Kempsey, NSW 2400

Location	Depth	Description
SS1	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.
	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.
SS9	0.0-0.15	Fill - moderate reddish orange (10R6/6), 20% clay, 70% sand, 10% gravel, damp, loose, no odour.
	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.
SS12	0.0-0.02	Fill - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.
	0.02-0.3	Sandy Clay (CL) - moderate brown (5YR4/4), 60% clay, 25% sand, 15% gravel, moist, soft, no odour.
SS13	0.0-0.1	Fill - moderate brown (5YR4/4), 20% clay, 80% sand, damp, loose, no odour.SS13
	0.1-0.3	Clayey Sand (SC) - pale brown (5YR5/2), 60% clay, 20% sand, 20% gravel, moist, soft, no odour.
SS14	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour.
	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 20% sand, 20% gravel, moist, soft, no odour.
SS15	0.0-0.1	Clayey Sand (SC) - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour.
	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.
SS20	0.0-0.15	Clayey Sand (SC) - moderate brown (5YR4/4), 80% clay, 60% sand, damp, loose, no odour.
	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.
SS28A	0.0-0.25	Fill - moderate brown (5YR4/4), 10% clay, 60% sand, 40% gravel, damp, loose, no odour.
	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.

Geo-Logix

Soil Boring Logs
Detailed Site Investigation
Project No: 1801031
600 Maclaey Valley Way
South Kempsey, NSW 2400

Location	Depth	Description
SS34	0.0-0.2	Fill - moderate brown (5YR4/4), 40% clay, 60% sand, damp, loose, no odour.
	0.2-0.35	Sandy Clay (CL) - moderate reddish brown (10R4/6), 55% clay, 45% sand, damp, soft, low plasticity, no odour.
SS35	0.0-0.3	Fill - greyish brown (5YR3/2), 10% clay, 10% sand, 80% gravel, damp, loose, no odour.
SS36	0.0-0.1	Fill - greyish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour.
	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 70% clay, 30% sand, damp, soft, low plasticity, no odour.
SS37	0.0-0.1	Fill - greyish brown (5YR3/2), 35% clay, 60% sand, 5% gravel, damp, loose, no odour.
	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 70% clay, 30% sand, damp, soft, low plasticity, no odour.
SS38	0.0-0.1	Fill - pale yellowish brown (10YR6/2), 40% clay, 60% gravel, damp, dense, medium plasticity, no odour.
	0.1-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 40% sand, damp, soft, low plasticity, no odour.
SS39	0.0-0.15	Fill - pale yellowish brown (10YR6/2), 40% clay, 60% gravel, damp, dense, medium plasticity, no odour.
	0.15-0.3	Sandy Clay (CL) - pale brown (5YR5/2), 60% clay, 40% sand, damp, soft, low plasticity, no odour.
SS40	0.0-0.2	Fill - moderate brown (5YR3/4), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
	0.2-0.35	Sandy Clay (CL) - modrate yellowish brown (10YR5/4), 60% clay, 40% sand, damp, soft, medium plasticity, no odour.
SS41	0.0-0.1	Fill - moderate brown (5YR4/4), 20% sand, 80% gravel, damp, loose, no odour.SS41
	0.1-0.3	Fill - moderate brown (5YR3/4), 10% clay, 10% sand, 80% gravel, damp, loose, no odour.
SS42	0.0-0.25	Fill - moderate brown (5YR4/4), 20% clay, 55% sand, 25% gravel, damp, loose, no odour.
	0.25-0.3	Lean Clay (CL) - light brown (5YR5/6), 80% clay, 20% sand, damp, firm, medium plasticity, no odour.
SS43	0.0-0.2	Fill - moderate brown (5YR3/4), 20% clay, 60% silt, 20% sand, 20% gravel, damp, loose, no odour.
	0.2-0.35	Sandy Clay (CL) - modrate yellowish brown (10YR5/4), 60% clay, 40% sand, damp, soft, low plasticity, no odour.
SS44	0.0-0.3	Fill - dusky brown (5YR2/2), 60% clay, 30% sand, 10% gravel, damp, soft, medium plasticity, slight odour.
SS45	0.0-0.35	Fill - light brown (5YR5/6), 60% clay, 20% sand, 20% gravel, damp, soft, low plasticity, no odour.
SS46	0.0-0.1	Fill - moderate brown (5YR4/4), 40% clay, 60% sand, moist, loose, no odour.
	0.1-0.4	Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, stiff, medium plasticity, no odour.
SS47	0.0-0.35	Fill - moderate brown (5YR4/4), 60% clay, 20% sand, 20% gravel, damp, soft, medium plasticity, no odour.
SS48	0.0-0.25	Fill - dusky brown (5YR2/2), 30% silt, 50% sand, 20% gravel, damp, loose, no odour.
	0.25-0.35	Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, firm, medium plasticity, no odour.
SS49	0.0-0.2	Fill - dusky brown (5YR2/2), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
	0.2-0.3	Lean Clay (CL) - moderate reddish orange (10R6/6), 80% clay, 20% sand, damp, soft, low plasticity, no odour.
SS50	0.0-0.2	Fill - dusky brown (5YR2/2), 20% clay, 60% sand, 20% gravel, damp, loose, no odour.
	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

Attention: **Ben Pearce**

Report **592301-S-V2**
Project name KEMPSEY
Project ID 1801031
Received Date Mar 29, 2018

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**
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				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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 Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	170	200	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			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
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						
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			SS5/0.0-0.1	SS6/0.0-0.1	SS7/0.0-0.1	SS8/0.0-0.1
Sample Matrix			Soil	Soil	Soil	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 Fractions						
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			SS5/0.0-0.1	SS6/0.0-0.1	SS7/0.0-0.1	SS8/0.0-0.1
Sample Matrix			Soil	Soil	Soil	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 - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	87	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	87	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	610	100	190	< 100
TRH >C34-C40	100	mg/kg	290	< 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[N07]	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
% 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
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	62	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	300	< 50	79
TRH C29-C36	50	mg/kg	< 50	200	< 50	77
TRH C10-36 (Total)	50	mg/kg	< 50	562	< 50	156
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	66	74	68
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	61	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			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
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 Fractions						
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
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	%	67	56	59	53
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	86	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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 Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SS13/0.0-0.1 Soil M18-Ap02714 Mar 27, 2018	SS14/0.0-0.1 Soil M18-Ap02715 Mar 27, 2018	SS15/0.0-0.1 Soil M18-Ap02716 Mar 27, 2018	SS16/0.0-0.1 Soil M18-Ap02717 Mar 27, 2018
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 Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SS17/0.0-0.1 Soil M18-Ap02718 Mar 27, 2018	SS18/0.0-0.1 Soil M18-Ap02719 Mar 27, 2018	SS19/0.0-0.1 Soil M18-Ap02720 Mar 27, 2018	SS20/0.0-0.1 Soil M18-Ap02721 Mar 27, 2018
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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 Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	65	< 50	130
TRH >C10-C16 less Naphthalene (F2)[N01]	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 Fractions						
TRH >C16-C34	100	mg/kg	320	300	< 100	1300
TRH >C34-C40	100	mg/kg	< 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[N07]	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			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				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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						
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	%	56	54	62	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	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	%	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
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	59	< 20	31
TRH C15-C28	50	mg/kg	< 50	390	780	490
TRH C29-C36	50	mg/kg	< 50	200	610	620
TRH C10-36 (Total)	50	mg/kg	< 50	649	1390	1141
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	71	79	61
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	64	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			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**
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 Fractions						
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
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	%	71	69	63	64
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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 Fractions						
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			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 - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	52	2700	190	100
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	52	2700	190	100
TRH >C16-C34	100	mg/kg	450	6800	1900	570
TRH >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[N07]	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	1	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	68	77	100	96
p-Terphenyl-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
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	39	< 20	< 20	30
TRH C15-C28	50	mg/kg	490	< 50	< 50	290
TRH C29-C36	50	mg/kg	350	100	100	260
TRH C10-36 (Total)	50	mg/kg	879	100	100	580
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	63	64	51
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	82	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			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**
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 Fractions						
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
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	%	64	61	55	73
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	8300
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			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				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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			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	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	%	77	73	84	91
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	280	760	430	3000
TRH >C34-C40	100	mg/kg	< 100	170	120	510
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	< 0.5	32
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	0.6	32
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	32
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	1.8
Anthracene	0.5	mg/kg	< 0.5	< 0.5	0.9	3.7
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.6	32
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	16
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	32
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	10
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	25
Chrysene	0.5	mg/kg	< 0.5	< 0.5	0.6	60
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	5.1
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	0.8	40
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	0.7
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	12
Naphthalene	0.5	mg/kg	< 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	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	%	-	-	-	105
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	82

Client 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				
% Moisture	1	%	20	34	14	11
Heavy Metals						
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 Fractions						
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 Fractions						
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	1500	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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 Fractions					
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 Fractions					
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	90	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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
% Moisture	1	%	31	8.3	7.8

Client Sample ID Sample Matrix Eurofins | mgt Sample No. Date Sampled Test/Reference	LOR	Unit	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
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
- Method: LTM-GEN-7080 Moisture			

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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.: PO2507
Report #: 592301
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	X				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		Soil	M18-Ap02704							X		X
4	SS4/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02705							X		X
5	SS5/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02706							X		X
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
9	SS9/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02710							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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	SS12/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02713							X		X
13	SS13/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02714							X		X
14	SS14/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02715							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							X		X
19	SS19/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02720							X		X
20	SS20/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02721							X		X
21	SS21/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02722							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS24/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02725							X		X
25	SS25/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02726							X		X
26	SS26/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02727							X		X
27	SS27/0.0-0.1	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							X		X
31	SS31/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02732	X				X		X	X	X
32	SS32/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02733							X		X
33	SS33/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02734							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
34	SS34/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02735							X		X
35	SS35/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02736							X		X
36	SS36/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02737							X		X
37	SS37/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02738							X		X
38	SS38/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02739							X		X
39	SS39/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02740							X		X
40	SS40/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02741							X		X
41	SS41/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02742							X		X
42	SS42/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02743							X		X
43	SS43/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02744							X		X
44	SS44/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02745						X	X		X
45	SS45/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02746							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
46	SS46/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02747							X		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						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	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							
57	A1/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02758			X						

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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						
62	SS27A/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02763							X		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				X					
65	SS2/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02766				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				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				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
70	SS7/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02771				X					
71	SS8/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02772				X					
72	SS9/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02773				X					
73	SS10/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02774				X					
74	SS11/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02775				X					
75	SS12/0.2-0.3	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				X					
79	SS16/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02780				X					
80	SS17/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02781				X					
81	SS18/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02782				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS21/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02785				X					
85	SS22/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02786				X					
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				X					
88	SS25/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02789				X					
89	SS26/0.2-0.3	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				X					
93	SS32/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02794				X					

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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.: PO2507
Report #: 592301
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
94	SS33/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02795				X					
95	SS34/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02796				X					
96	SS35/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02797				X					
97	SS36/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02798				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				X					
101	SS40/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02802				X					
102	SS41/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02803				X					
103	SS42/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02804				X					
104	SS43/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02805				X					
105	SS44/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02806				X					

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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									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
106	SS45/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02807				X					
107	SS46/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02808				X					
108	SS47/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02809				X					
109	SS48/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02810				X					
110	SS49/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02811				X					
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. 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
CP	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

1. 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/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							
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							
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							
% 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							
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							
Cation Exchange Capacity							
Cation Exchange Capacity	meq/100g	0.05			0.05	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	113			70-130	Pass	
TRH C10-C14	%	87			70-130	Pass	
LCS - % Recovery							
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							
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							
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							
Polychlorinated Biphenyls							
Aroclor-1260	%	113			70-130	Pass	
LCS - % Recovery							
% Clay	%	93			70-130	Pass	
LCS - % Recovery							
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									
Polycyclic Aromatic Hydrocarbons				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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Ap02709	CP	%	107			70-130	Pass	
Spike - % Recovery									
BTEX				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									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-Ap02709	CP	%	92			70-130	Pass	
TRH C6-C10	M18-Ap02709	CP	%	115			70-130	Pass	
Spike - % Recovery									
Heavy Metals				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									
Polycyclic Aromatic Hydrocarbons				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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Ap02721	CP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Ap02721	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Ap02722	CP	%	85			70-130	Pass	
Spike - % Recovery									
BTEX				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									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				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				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				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	CP	%	95			70-130	Pass	
Benzo(a)pyrene	M18-Ap02736	CP	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02736	CP	%	125			70-130	Pass	
Benzo(g.h.i)perylene	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									
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	
Lead	M18-Ap02739	CP	%	89			75-125	Pass	
Mercury	M18-Ap02739	CP	%	94			70-130	Pass	
Nickel	M18-Ap02739	CP	%	120			75-125	Pass	
Zinc	M18-Ap02739	CP	%	90			75-125	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	M18-Ap02741	CP	%	91			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	M18-Ap02741	CP	%	86			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					
Aroclor-1260	M18-Ap02314	NCP	%	98			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M18-Ap02746	CP	%	102			70-130	Pass	
Acenaphthylene	M18-Ap02746	CP	%	103			70-130	Pass	
Anthracene	M18-Ap02746	CP	%	109			70-130	Pass	
Benz(a)anthracene	M18-Ap02746	CP	%	101			70-130	Pass	
Benzo(a)pyrene	M18-Ap02746	CP	%	99			70-130	Pass	
Benzo(b&j)fluoranthene	M18-Ap02746	CP	%	94			70-130	Pass	
Benzo(g.h.i)perylene	M18-Ap02746	CP	%	91			70-130	Pass	
Benzo(k)fluoranthene	M18-Ap02746	CP	%	96			70-130	Pass	
Chrysene	M18-Ap02746	CP	%	113			70-130	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 Fractions				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	CP	%	90			70-130	Pass	
m&p-Xylenes	M18-Ap02752	CP	%	90			70-130	Pass	
o-Xylene	M18-Ap02752	CP	%	88			70-130	Pass	
Xylenes - Total	M18-Ap02752	CP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				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				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	CP	%	96			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
% Clay	B18-Ma11420	NCP	%	3.8	3.8	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				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									
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02707	CP	%	14	16	13	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02708	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				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	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				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									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02708	CP	mg/kg	10	6.0	53	30%	Fail	Q15
Cadmium	M18-Ap02708	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-Ap02708	CP	mg/kg	11	12	9.0	30%	Pass	
Copper	M18-Ap02708	CP	mg/kg	7.8	9.0	15	30%	Pass	
Lead	M18-Ap02708	CP	mg/kg	200	200	2.0	30%	Pass	
Mercury	M18-Ap02708	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02708	CP	mg/kg	6.3	6.5	4.0	30%	Pass	
Zinc	M18-Ap02708	CP	mg/kg	170	180	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02709	CP	mg/kg	7.4	7.5	1.0	30%	Pass	
Cadmium	M18-Ap02709	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M18-Ap02709	CP	mg/kg	11	11	<1	30%	Pass	
Copper	M18-Ap02709	CP	mg/kg	8.8	8.9	1.0	30%	Pass	
Lead	M18-Ap02709	CP	mg/kg	120	130	1.0	30%	Pass	
Mercury	M18-Ap02709	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02709	CP	mg/kg	6.2	6.2	1.0	30%	Pass	
Zinc	M18-Ap02709	CP	mg/kg	85	87	2.0	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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 Fractions				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				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									
Heavy Metals				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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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 Fractions				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 Fractions				Result 1	Result 2	RPD			
TRH C6-C9	M18-Ap02721	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-Ap02721	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-Ap02721	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M18-Ap02721	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-Ap02721	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-Ap02721	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	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	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	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	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02725	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(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	< 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	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M18-Ap02727	CP	%	14	15	6.0	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
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	
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	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02728	CP	mg/kg	30	28	6.0	30%	Pass	
Zinc	M18-Ap02728	CP	mg/kg	370	340	10	30%	Pass	
Duplicate									
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	< 0.1	< 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	1.0	30%	Pass	

Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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 Fractions				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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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 Fractions				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				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									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C as rec.)	M18-Ap02732	CP	uS/cm	23	22	4.9	30%	Pass	
pH (1:5 Aqueous extract at 25°C as rec.)	M18-Ap02732	CP	pH Units	6.1	5.9	pass	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				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				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 Fractions				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	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M18-Ap02738	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M18-Ap02738	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M18-Ap02738	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M18-Ap02738	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M18-Ap02738	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M18-Ap02738	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M18-Ap02739	CP	mg/kg	12	12	1.0	30%	Pass	
Cadmium	M18-Ap02739	CP	mg/kg	0.5	0.5	7.0	30%	Pass	
Chromium	M18-Ap02739	CP	mg/kg	18	18	1.0	30%	Pass	
Copper	M18-Ap02739	CP	mg/kg	25	25	1.0	30%	Pass	
Lead	M18-Ap02739	CP	mg/kg	48	48	<1	30%	Pass	
Mercury	M18-Ap02739	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02739	CP	mg/kg	8.7	8.7	<1	30%	Pass	
Zinc	M18-Ap02739	CP	mg/kg	140	140	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C15-C28	M18-Ap02745	CP	mg/kg	120000	140000	16	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C16-C34	M18-Ap02745	CP	mg/kg	110000	130000	15	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02745	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				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	CP	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	
Mercury	M18-Ap02748	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M18-Ap02748	CP	mg/kg	27	24	12	30%	Pass	
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	
Nickel	M18-Ap02749	CP	mg/kg	70	70	1.0	30%	Pass	
Zinc	M18-Ap02749	CP	mg/kg	1300	1300	1.0	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M18-Ap02763	CP	mg/kg	< 0.5	< 0.5	<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
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)

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.

eurofins | mgt

30 years Testing For Life 1987–2017
Celebrating 30 years Testing and Protecting Human Health

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: **Ben Pearce**

Report **592301-W-V2**
Project name KEMPSEY
Project ID 1801031
Received Date Mar 29, 2018

Client Sample ID			**R1**	**R2**
Sample Matrix			**Water**	**Water**
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 Fractions				
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 Fractions				
Naphthalene[N02]	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)[N04]	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)[N01]	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[N07]	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			R1	R2
Sample Matrix			**Water**	**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			

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Perth
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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

Project Name: KEMPSEY
Project ID: 1801031

Order No.: PO2507
Report #: 592301
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	X				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		Soil	M18-Ap02704							X		X
4	SS4/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02705							X		X
5	SS5/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02706							X		X
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
9	SS9/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02710							X		X

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Company Name: Geo-Logix P/L
Address: Bld Q2 Level 3, 2309/4 Daydream St
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Project Name: KEMPSEY
Project ID: 1801031

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Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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	SS12/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02713							X		X
13	SS13/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02714							X		X
14	SS14/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02715							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							X		X
19	SS19/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02720							X		X
20	SS20/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02721							X		X
21	SS21/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02722							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS24/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02725							X		X
25	SS25/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02726							X		X
26	SS26/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02727							X		X
27	SS27/0.0-0.1	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							X		X
31	SS31/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02732	X				X		X	X	X
32	SS32/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02733							X		X
33	SS33/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02734							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
34	SS34/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02735							X		X
35	SS35/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02736							X		X
36	SS36/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02737							X		X
37	SS37/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02738							X		X
38	SS38/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02739							X		X
39	SS39/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02740							X		X
40	SS40/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02741							X		X
41	SS41/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02742							X		X
42	SS42/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02743							X		X
43	SS43/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02744							X		X
44	SS44/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02745						X	X		X
45	SS45/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02746							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
46	SS46/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02747							X		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						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	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							
57	A1/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02758			X						

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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						
62	SS27A/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02763							X		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				X					
65	SS2/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02766				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				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				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
70	SS7/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02771				X					
71	SS8/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02772				X					
72	SS9/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02773				X					
73	SS10/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02774				X					
74	SS11/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02775				X					
75	SS12/0.2-0.3	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				X					
79	SS16/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02780				X					
80	SS17/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02781				X					
81	SS18/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02782				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS21/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02785				X					
85	SS22/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02786				X					
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				X					
88	SS25/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02789				X					
89	SS26/0.2-0.3	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				X					
93	SS32/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02794				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
94	SS33/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02795				X					
95	SS34/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02796				X					
96	SS35/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02797				X					
97	SS36/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02798				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				X					
101	SS40/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02802				X					
102	SS41/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02803				X					
103	SS42/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02804				X					
104	SS43/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02805				X					
105	SS44/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02806				X					

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Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
106	SS45/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02807				X					
107	SS46/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02808				X					
108	SS47/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02809				X					
109	SS48/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02810				X					
110	SS49/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02811				X					
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. 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
CP	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

1. 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							
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							
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							
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							
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							
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							
BTEX							
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 Fractions							
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 Fractions				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			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									
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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	M18-Ap02756	CP	%	113			70-130	Pass	
Spike - % Recovery									
BTEX				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									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M18-Ap02756	CP	%	99			70-130	Pass	
TRH C6-C10	M18-Ap02756	CP	%	113			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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	0.38	25	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	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	M18-Ap02755	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	M18-Ap02755	CP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	M18-Ap02755	CP	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 Fractions				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	< 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				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-Ma32033	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	
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.

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. *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.*
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, June 2011.*

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

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Site # 23736

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Project Name: KEMPSEY
Project ID: 1801031

Order No.: PO2507
Report #: 592301
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271				X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217		X	X						
Brisbane Laboratory - NATA Site # 20794	X								
Perth Laboratory - NATA Site # 23736									
External Laboratory									

No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	SS1/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02702	X				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		Soil	M18-Ap02704							X		X
4	SS4/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02705							X		X
5	SS5/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02706							X		X
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
9	SS9/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02710							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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	SS12/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02713							X		X
13	SS13/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02714							X		X
14	SS14/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02715							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							X		X
19	SS19/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02720							X		X
20	SS20/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02721							X		X
21	SS21/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02722							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS24/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02725							X		X
25	SS25/0.0-0.1	Mar 27, 2018		Soil	M18-Ap02726							X		X
26	SS26/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02727							X		X
27	SS27/0.0-0.1	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							X		X
31	SS31/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02732	X				X		X	X	X
32	SS32/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02733							X		X
33	SS33/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02734							X		X

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
34	SS34/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02735							X		X
35	SS35/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02736							X		X
36	SS36/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02737							X		X
37	SS37/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02738							X		X
38	SS38/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02739							X		X
39	SS39/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02740							X		X
40	SS40/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02741							X		X
41	SS41/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02742							X		X
42	SS42/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02743							X		X
43	SS43/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02744							X		X
44	SS44/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02745						X	X		X
45	SS45/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02746							X		X

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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									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
46	SS46/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02747							X		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						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	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							
57	A1/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02758			X						

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA 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						
62	SS27A/0.0-0.1	Mar 28, 2018		Soil	M18-Ap02763							X		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				X					
65	SS2/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02766				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				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				X					

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Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
70	SS7/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02771				X					
71	SS8/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02772				X					
72	SS9/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02773				X					
73	SS10/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02774				X					
74	SS11/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02775				X					
75	SS12/0.2-0.3	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				X					
79	SS16/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02780				X					
80	SS17/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02781				X					
81	SS18/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02782				X					

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NSW 2102

Project Name: KEMPSEY
Project ID: 1801031

Order No.: PO2507
Report #: 592301
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
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	SS21/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02785				X					
85	SS22/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02786				X					
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				X					
88	SS25/0.2-0.3	Mar 27, 2018		Soil	M18-Ap02789				X					
89	SS26/0.2-0.3	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				X					
93	SS32/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02794				X					

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web : www.eurofins.com.au

Melbourne
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NATA # 1261
Site # 1254 & 14271

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Phone : +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
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

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

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Project ID: 1801031

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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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
94	SS33/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02795				X					
95	SS34/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02796				X					
96	SS35/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02797				X					
97	SS36/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02798				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				X					
101	SS40/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02802				X					
102	SS41/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02803				X					
103	SS42/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02804				X					
104	SS43/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02805				X					
105	SS44/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02806				X					

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Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

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
Melbourne Laboratory - NATA Site # 1254 & 14271									X	X	X	X	X	X
Sydney Laboratory - NATA Site # 18217							X	X						
Brisbane Laboratory - NATA Site # 20794						X								
Perth Laboratory - NATA Site # 23736														
106	SS45/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02807				X					
107	SS46/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02808				X					
108	SS47/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02809				X					
109	SS48/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02810				X					
110	SS49/0.2-0.3	Mar 28, 2018		Soil	M18-Ap02811				X					
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

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.

Units

% w/w: weight for weight 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 result 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 more than 1% asbestos and comprises asbestos-containing-material which is in sound condition, although possibly broken or fragmented, and where the asbestos is bound in a matrix such as cement or resin. Common examples of ACM include but are not limited to: pipe and boiler insulation, sprayed-on fireproofing, troweled-on acoustical plaster, floor tile and mastic, floor linoleum, transite shingles, roofing materials, wall and ceiling plaster, ceiling tiles, and gasket materials. This term is restricted to material that cannot pass a 7 mm x 7 mm sieve. This sieve size is selected because it approximates the thickness of common asbestos cement sheeting and for fragments to be smaller than this would imply a high degree of damage and hence potential for fibre release.
FA	FA comprises friable asbestos material and includes severely weathered cement sheet, insulation products and woven asbestos material. This type of friable asbestos is defined here as asbestos material that is in a degraded condition such that it can be broken or crumbled by hand pressure. This material is typically unbonded or was previously bonded and is now significantly degraded (crumbling).
PACM	Presumed Asbestos-Containing Material means thermal system insulation and surfacing material found in buildings, vessels, and vessel sections constructed no later than 1980 that are assumed to contain greater than one percent asbestos 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, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 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

Code	Description
N/A	Not 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

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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**

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.

☑ Appropriate sample containers have been used.

☑ Sample containers for volatile analysis received with zero headspace.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Notes

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.

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CHAIN OF CUSTODY

Page 1 of 1

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 Date Submitted: 29/3/18

Purchase Order No: PO2507
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH	Clay Content	Cation Exchange (CEC)	Hold	SUITE
	SS1/0.0-0.1	27/03/2018	X					Suite B7 + pH, Clay, CEC		X	X		X	X					X								X	X	X		B7
	SS1/0.2-0.3	27/03/2018	X																											X	
	SS2/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS2/0.2-0.3	27/03/2018	X																											X	
	SS3/0.0-0.1	27/03/2018	X							X	X		Y	X					X												B7
	SS3/0.2-0.3	27/03/2018	X																											X	
	SS4/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS4/0.2-0.3	27/03/2018	X																											X	
	SS5/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS5/0.2-0.3	27/03/2018	X																											X	
	SS6/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS6/0.2-0.3	27/03/2018	X																											X	
	SS7/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS7/0.2-0.3	27/03/2018	X																											X	
	SS8/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS8/0.2-0.3	27/03/2018	X																											X	
	SS9/0.0-0.1	27/03/2018	X							X	X		X	X					X												B7
	SS9/0.2-0.3	27/03/2018	X																											X	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sara L Evans Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:48PM Signature:

Amp EF/MCK 4/4/18 9:13 592301

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CHAIN OF CUSTODY

Page 2 of 7

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 **Date Submitted:** 29/3/18

Purchase Order No: PO2807
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH			Hold	SUITE
	SS10/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS10/0.2-0.3	27/03/2018	X																											X	
	SS11/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS11/0.2-0.3	27/03/2018	X																											X	1
	SS12/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS12/0.2-0.3	27/03/2018	X																											X	
	SS13/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS13/0.2-0.3	27/03/2018	X																											X	
	SS14/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS14/0.2-0.3	27/03/2018	X																											X	
	SS15/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS15/0.2-0.3	27/03/2018	X																											X	
	SS16/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS16/0.2-0.3	27/03/2018	X																											X	
	SS17/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS17/0.2-0.3	27/03/2018	X																											X	
	SS18/0.0-0.1	27/03/2018	X							X	X			X					X											B7
	SS18/0.2-0.3	27/03/2018	X																											X	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Evans Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:48PM Signature:

Amy EF/MCOT 4/4/18 9:13 592801

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CHAIN OF CUSTODY

Page 3 of 7

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031
Date Submitted: 29/3/18

Purchase Order No: PO2507
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH			Hold	SUITE
	SS19/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS19/0.2-0.3	27/03/2018	X																											X	
	SS20/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS20/0.2-0.3	27/03/2018	X																											X	
	SS21/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS21/0.2-0.3	27/03/2018	X																											X	
	SS22/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS22/0.2-0.3	27/03/2018	X																											X	
	SS23/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS23/0.2-0.3	27/03/2018	X																											X	
	SS24/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS24/0.2-0.3	27/03/2018	X																											X	
	SS25/0.0-0.1	27/03/2018	X							X	X		X	X					X											B7
	SS25/0.2-0.3	27/03/2018	X																											X	
	SS26/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS26/0.2-0.3	28/03/2018	X																											X	
	SS27/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	~~SS27/0.2-0.3~~	~~28/03/2018~~	~~X~~																											~~X~~	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Evans Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:48PM Signature:

Amy EF/MGT 4/4/18 9:13 592301

Geo-Logix Pty Ltd
Building Q2, Level 3
2309/4 Daydream St
Warriewood, NSW 2102
ABN: 86 116 892 936
P: (02) 9979 1722
F: (02) 9979 1222

CHAIN OF CUSTODY

Page 4 of 7

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 **Date Submitted:** 29/3/18

Purchase Order No: PO2507
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH	Clay Content	Cation Exchange(CEC)	Hold	SUITE
	SS28/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	~~SS28/0.2-0.3~~	~~28/03/2018~~	~~X~~																											~~X~~	
	SS29/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS29/0.2-0.3	28/03/2018	X																											X	
	SS30/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS30/0.2-0.3	28/03/2018	X																											X	
	SS31/0.0-0.1	28/03/2018	X					Suite B7 + pH, CEC & Clay		X	X		X	X					X								X	X	X		B7
	SS31/0.2-0.3	28/03/2018	X																											X	
	SS32/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS32/0.2-0.3	28/03/2018	X																											X	
	SS33/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS33/0.2-0.3	28/03/2018	X																											X	
	SS34/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS34/0.2-0.3	28/03/2018	X																											X	
	SS35/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS35/0.2-0.3	28/03/2018	X																											X	
	SS36/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS36/0.2-0.3	28/03/2018	X																											X	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Elias Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:43PM Signature:

Amy EP/MGT 4/4/18 9:13 592301

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Warriewood, NSW 2102
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CHAIN OF CUSTODY

Page 5 of 7

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 **Date Submitted:** 29/3/18

Purchase Order No: P02307
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH			Hold	SUITE
	SS37/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS37/0.2-0.3	28/03/2018	X																											X	
	SS38/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS38/0.2-0.3	28/03/2018	X																											X	
	SS39/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS39/0.2-0.3	28/03/2018	X																											X	
	SS40/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS40/0.2-0.3	28/03/2018	X																											X	
	SS41/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS41/0.2-0.3	28/03/2018	X																											X	
	SS42/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS42/0.2-0.3	28/03/2018	X																											X	
	SS43/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS43/0.2-0.3	28/03/2018	X																											X	
	SS44/0.0-0.1	28/03/2018	X					suite B7 + PCB		X	X		X	X	X				X											B7
	SS44/0.2-0.3	28/03/2018	X																											X	
	SS45/0.0-0.1	28/03/2018	X							X	X		X	X					X											B7
	SS45/0.2-0.3	28/03/2018	X																											X	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Evans Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:48PM Signature:

Amy EF/MCT 4/4/18 9:13 592301

Geo-Logix Pty Ltd
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Warriewood, NSW 2102
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CHAIN OF CUSTODY

Page 6 of 7

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 **Date Submitted:** 29/3/18

Purchase Order No: PO2507
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH	Clay Content	Cation Exchange	Hold	SUITE
	SS46/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS46/0.2-0.3	28/03/2018	X																											X	
	SS47/0.0-0.1	28/03/2018	X							X	X		X	X					X												B7
	SS47/0.2-0.3	28/03/2018	X																											X	
	SS48/0.0-0.1	28/03/2018	X					Suite B7 + PCB		X	X		X	X	X				X												B7
	SS48/0.2-0.3	28/03/2018	X																											X	
	SS49/0.0-0.1	28/03/2018	X					Suite B7 + pH, CEC, Clay		X	X		X	X					X								X	X	X		B7
	SS49/0.2-0.3	28/03/2018	X																											X	
	SS50/0.0-0.1	28/03/2018	X					Suite B7 + PCB		X	X		X	X	X				X												B7
	SS50/0.2-0.3	28/03/2018	X																											X	
	DS1	27/03/2018	X							X	X		X	X					X												B7
	DS2	27/03/2018	X							X	X		X	X					X												B7
	DS3	27/03/2018	X							X	X		X	X					X												B7
	DS4	28/03/2018	X																											X	
	DS5	28/03/2018	X																											X	
	R1	27/03/2018	X							X	X		X	X					X												B7
	R2	28/03/2018	X							X	X		X	X					X												B7
	SS41A/0.0-0.1	28/3/18	X																						X						

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Evans Date/Time: 29/3/18 Signature:

Received by: Elvis D Date/Time: 29/3/18 12:48 PM Signature:

Amy EF/MGT 4/4/18 9:13 592301

Geo-Logix Pty Ltd
Building Q2, Level 3
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Warriewood, NSW 2102
ABN: 86 116 892 936
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CHAIN OF CUSTODY

Page 7 of 7

Project Manager: Ben Pearce
Purchase Order No: PO2507
Contact email: bpearce@geo-logix.com.au
Quote Reference:
Project Name: Kempsey
Send Invoice to: accounts@geo-logix.com.au
Project Number: 1801031
Date Submitted: 29/3/18
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH			Hold	SUITE
	SS44A/0.0-0.1	28/3/18	X					Asbestos WA DOH																X							
	SS33/0.0-0.1	28/3/18	X					↓																X							
	SS43/0.0-0.1		X																					X							
	SS43A/0.0-0.1		X																					X							
	SS34/0.0-0.1		X																					X							
	SS40A/0.0-0.1	↓	X					↓																X							
	SS27A/0.0-0.1		X					B7		X	X		X	X					X											B7	
	SS27A/0.2-0.3		X																										X		
	SS28A/0.2-0.3		X																										X		
	SS28A/0.0-0.1	↓	X					B7		X	X		X	X					X											B7	
								1																							

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: [signature] Date/Time: 29/3/18 Signature: [signature]
Received by: Elvis D Date/Time 29/3/18 12:48PM Signature: [signature]

Amy EF/MGT 4/4/18 9:13 592309

Enviro Sample Vic

From: Sarah Evans <sevans@geo-logix.com.au>
Sent: Thursday, 5 April 2018 8:16 AM
To: 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: www.geo-logix.com.au

Geo-Logix
environment • geotech
Sydney | Brisbane | Canberra

From: bpearce [mailto:bpearce@geo-logix.com.au]
Sent: Wednesday, 4 April 2018 8:52 PM
To: Sarah Evans <sevans@geo-logix.com.au>
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: Envirosamplevic@eurofins.com
Website:environment.eurofins.com.au
EnviroNote 1076 - PFAS Biota
EnviroNote 1074 - Passive Samplers for VOCs in Air

Enviro Sample NSW

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

Hey Ursula – Use this instead.

Kind Regards,

Nibha Vaidya
Phone : +61 2 9900 8415
Mobile : +61 499 900 805
Email : NibhaVaidya@eurofins.com

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 ☺

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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ScannedByWebsenseForEurofins

Certificate of Analysis

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

Attention: **Ben Pearce**

Report **592314-S**
Project name KEMPSEY
Project ID 1801031
Received Date Mar 29, 2018

Client Sample ID			**TS1**	**TS2**	**TS3**
Sample Matrix			**Soil**	**Soil**	**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			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
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 Fractions					
Naphthalene[N02]	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)[N04]	20	mg/kg	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	84	83	140
TRH >C10-C16 less Naphthalene (F2)[N01]	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[N07]	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			TS1	TS2	TS3
Sample Matrix			Soil	Soil	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			

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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
Project ID: 1801031

Order No.: PO2506
Report #: 592314
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Mar 29, 2018 12:48 PM
Due: Apr 9, 2018
Priority: 5 Day
Contact Name: Ben Pearce

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
Perth Laboratory - NATA Site # 23736								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	TS1	Mar 27, 2018		Soil	M18-Ap02845		X	X
2	TS2	Mar 27, 2018		Soil	M18-Ap02846		X	X
3	TS3	Mar 27, 2018		Soil	M18-Ap02847		X	X
4	TS4	Mar 27, 2018		Soil	M18-Ap02848	X		
5	TS5	Mar 27, 2018		Soil	M18-Ap02849	X		
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
COC	Chain of Custody
SRA	Sample Receipt Advice
QSM	Quality Systems Manual ver 5.1 US Department of Defense
CP	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

1. 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/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							
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							
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							
BTEX							
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							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	111			70-130	Pass	
TRH C6-C10	%	96			70-130	Pass	
TRH >C10-C16	%	80			70-130	Pass	
LCS - % Recovery							
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							
Heavy Metals							
Arsenic	%	94			70-130	Pass	
Cadmium	%	92			70-130	Pass	
Chromium	%	96			70-130	Pass	
Copper	%	95			70-130	Pass	
Lead	%	94			70-130	Pass	
Mercury	%	97			70-130	Pass	
Nickel	%	94			70-130	Pass	
Zinc	%	94			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S18-Ap00524	NCP	%	83			70-130	Pass	
TRH C10-C14	S18-Ap03941	NCP	%	77			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S18-Ap00524	NCP	%	92			70-130	Pass	
Toluene	S18-Ap00524	NCP	%	94			70-130	Pass	
Ethylbenzene	S18-Ap00524	NCP	%	92			70-130	Pass	
m&p-Xylenes	S18-Ap00524	NCP	%	95			70-130	Pass	
o-Xylene	S18-Ap00524	NCP	%	95			70-130	Pass	

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 Fractions				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									
Polycyclic Aromatic Hydrocarbons				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									
Heavy Metals				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									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				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									
BTEX				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 Fractions				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
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

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.

Melbourne
3-5 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
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NATA # 1261 Site # 20794

Perth
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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: **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.

☑ Appropriate sample containers have been used.

☒ Split sample sent to requested external lab.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

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.

Geo-Logix Pty Ltd
Building Q2, Level 3
2309/4 Daydream St
Warriewood, NSW 2102

ABN: 86 116 892 936

P: (02) 9979 1722
F: (02) 9979 1222

CHAIN OF CUSTODY

Page 1 of 1

Project Manager: Ben Pearce
Contact email: bpearce@geo-logix.com.au
Project Name: Kempsey
Project Number: 1801031 **Date Submitted:** 29/3/18

Purchase Order No: PO 2506
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
TAT required: Standard

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: 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	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH			Hold	SUITE
	TS1	27/03/2018	X					send to other Lab		X	X		X	X					X												B7
	TS2	27/03/2018	X							X	X		X	X					X												B7
	TS3	27/03/2018	X							X	X		X	X					X												B7
	TS4	28/03/2018	X																											X	
	TS5	28/03/2018	X																											X	

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Ma/Na/K

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

Chain of Custody

Relinquished by: Sarah Gras Date/Time: 29/3/18 Signature:

Received by: Elvis P Date/Time: 28/3/18 12:48 PM Signature:

Amy EF/MGT 4/4/18 9:13 592314

ATTACHMENT F

UCL Statistics for Data Sets with Non-Detects

User Selected Options	
Date/Time of Computation	ProUCL 5.112-Apr-18 10:27:36 AM
From File	Heavy Metals ProUCL Datafile.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Arsenic

General Statistics

Total Number of Observations	49	Number of Distinct Observations	35
Number of Detects	48	Number of Non-Detects	1
Number of Distinct Detects	34	Number of Distinct Non-Detects	1
Minimum Detect	2.5	Minimum Non-Detect	2
Maximum Detect	36	Maximum Non-Detect	2
Variance Detects	43.62	Percent Non-Detects	2.041%
Mean Detects	10.41	SD Detects	6.605
Median Detects	8.15	CV Detects	0.635
Skewness Detects	1.698	Kurtosis Detects	3.644
Mean of Logged Detects	2.173	SD of Logged Detects	0.584

Normal GOF Test on Detects Only

Shapiro Wilk Test Statistic	0.843	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.947	Detected Data Not Normal at 5% Significance Level
Lilliefors Test Statistic	0.192	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.127	Detected Data Not Normal at 5% Significance Level

Detected Data Not Normal at 5% Significance Level

Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs

KM Mean	10.23	KM Standard Error of Mean	0.949
KM SD	6.577	95% KM (BCA) UCL	11.79
95% KM (t) UCL	11.83	95% KM (Percentile Bootstrap) UCL	11.85
95% KM (z) UCL	11.8	95% KM Bootstrap t UCL	12.13
90% KM Chebyshev UCL	13.08	95% KM Chebyshev UCL	14.37
97.5% KM Chebyshev UCL	16.16	99% KM Chebyshev UCL	19.68

Gamma GOF Tests on Detected Observations Only

A-D Test Statistic	0.826	**Anderson-Darling GOF Test**
5% A-D Critical Value	0.756	Detected Data Not Gamma Distributed at 5% Significance Level
K-S Test Statistic	0.127	**Kolmogorov-Smirnov GOF**
5% K-S Critical Value	0.129	Detected data appear Gamma Distributed at 5% Significance Level

Detected data follow Appr. Gamma Distribution at 5% Significance Level

Gamma Statistics on Detected Data Only

k hat (MLE)	3.114	k star (bias corrected MLE)	2.934
Theta hat (MLE)	3.341	Theta star (bias corrected MLE)	3.547
nu hat (MLE)	299	nu star (bias corrected)	281.6
Mean (detects)	10.41		

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

56	This is especially true when the sample size is small.											
57	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
58					Minimum	0.01				Mean	10.19	
59					Maximum	36				Median	8	
60					SD	6.702				CV	0.657	
61					k hat (MLE)	1.893				k star (bias corrected MLE)	1.791	
62					Theta hat (MLE)	5.385				Theta star (bias corrected MLE)	5.692	
63					nu hat (MLE)	185.5				nu star (bias corrected)	175.5	
64					Adjusted Level of Significance (β)	0.0451						
65					Approximate Chi Square Value (175.50, α)	145.9				Adjusted Chi Square Value (175.50, β)	145	
66					95% Gamma Approximate UCL (use when n>=50)	12.27				95% Gamma Adjusted UCL (use when n<50)	12.33	
67												
68	Estimates of Gamma Parameters using KM Estimates											
69					Mean (KM)	10.23				SD (KM)	6.577	
70					Variance (KM)	43.25				SE of Mean (KM)	0.949	
71					k hat (KM)	2.422				k star (KM)	2.287	
72					nu hat (KM)	237.3				nu star (KM)	224.1	
73					theta hat (KM)	4.226				theta star (KM)	4.475	
74					80% gamma percentile (KM)	15.08				90% gamma percentile (KM)	19.29	
75					95% gamma percentile (KM)	23.28				99% gamma percentile (KM)	32.06	
76												
77	Gamma Kaplan-Meier (KM) Statistics											
78					Approximate Chi Square Value (224.13, α)	190.5				Adjusted Chi Square Value (224.13, β)	189.5	
79					95% Gamma Approximate KM-UCL (use when n>=50)	12.04				95% Gamma Adjusted KM-UCL (use when n<50)	12.1	
80												
81	Lognormal GOF Test on Detected Observations Only											
82					Shapiro Wilk Test Statistic	0.974				Shapiro Wilk GOF Test		
83					5% Shapiro Wilk Critical Value	0.947				Detected Data appear Lognormal at 5% Significance Level		
84					Lilliefors Test Statistic	0.0879				Lilliefors GOF Test		
85					5% Lilliefors Critical Value	0.127				Detected Data appear Lognormal at 5% Significance Level		
86	Detected Data appear Lognormal at 5% Significance Level											
87												
88	Lognormal ROS Statistics Using Imputed Non-Detects											
89					Mean in Original Scale	10.23				Mean in Log Scale	2.143	
90					SD in Original Scale	6.647				SD in Log Scale	0.617	
91					95% t UCL (assumes normality of ROS data)	11.83				95% Percentile Bootstrap UCL	11.73	
92					95% BCA Bootstrap UCL	11.9				95% Bootstrap t UCL	12.32	
93					95% H-UCL (Log ROS)	12.29						
94												
95	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
96					KM Mean (logged)	2.143				KM Geo Mean	8.526	
97					KM SD (logged)	0.609				95% Critical H Value (KM-Log)	1.97	
98					KM Standard Error of Mean (logged)	0.088				95% H-UCL (KM -Log)	12.21	
99					KM SD (logged)	0.609				95% Critical H Value (KM-Log)	1.97	
100					KM Standard Error of Mean (logged)	0.088						
101												
102	DL/2 Statistics											
103					DL/2 Normal					DL/2 Log-Transformed		
104					Mean in Original Scale	10.21				Mean in Log Scale	2.129	
105					SD in Original Scale	6.672				SD in Log Scale	0.656	
106					95% t UCL (Assumes normality)	11.81				95% H-Stat UCL	12.61	
107	DL/2 is not a recommended method, provided for comparisons and historical reasons											
108												
109	Nonparametric Distribution Free UCL Statistics											
110	Detected Data appear Approximate Gamma Distributed at 5% Significance Level											

	A	B	C	D	E	F	G	H	I	J	K	L
111												
112						Suggested UCL to Use						
113					95% KM Adjusted Gamma UCL	12.1				95% GROS Adjusted Gamma UCL		12.33
114												
115					When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test							
116					When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL							
117												
118					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
119					Recommendations are based upon data size, data distribution, and skewness.							
120					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
121					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
122												
123	Cadmium											
124												
125						General Statistics						
126					Total Number of Observations	49				Number of Distinct Observations		18
127					Number of Detects	23				Number of Non-Detects		26
128					Number of Distinct Detects	17				Number of Distinct Non-Detects		1
129					Minimum Detect	0.5				Minimum Non-Detect		0.4
130					Maximum Detect	7.3				Maximum Non-Detect		0.4
131					Variance Detects	3.294				Percent Non-Detects		53.06%
132					Mean Detects	2.052				SD Detects		1.815
133					Median Detects	1.3				CV Detects		0.884
134					Skewness Detects	1.634				Kurtosis Detects		2.216
135					Mean of Logged Detects	0.41				SD of Logged Detects		0.777
136												
137						Normal GOF Test on Detects Only						
138					Shapiro Wilk Test Statistic	0.786				Shapiro Wilk GOF Test		
139					5% Shapiro Wilk Critical Value	0.914				Detected Data Not Normal at 5% Significance Level		
140					Lilliefors Test Statistic	0.272				Lilliefors GOF Test		
141					5% Lilliefors Critical Value	0.18				Detected Data Not Normal at 5% Significance Level		
142						Detected Data Not Normal at 5% Significance Level						
143												
144						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
145					KM Mean	1.176				KM Standard Error of Mean		0.215
146					KM SD	1.469				95% KM (BCA) UCL		1.559
147					95% KM (t) UCL	1.535				95% KM (Percentile Bootstrap) UCL		1.541
148					95% KM (z) UCL	1.529				95% KM Bootstrap t UCL		1.676
149					90% KM Chebyshev UCL	1.819				95% KM Chebyshev UCL		2.111
150					97.5% KM Chebyshev UCL	2.516				99% KM Chebyshev UCL		3.311
151												
152						Gamma GOF Tests on Detected Observations Only						
153					A-D Test Statistic	0.9				Anderson-Darling GOF Test		
154					5% A-D Critical Value	0.757				Detected Data Not Gamma Distributed at 5% Significance Level		
155					K-S Test Statistic	0.207				Kolmogorov-Smirnov GOF		
156					5% K-S Critical Value	0.184				Detected Data Not Gamma Distributed at 5% Significance Level		
157						Detected Data Not Gamma Distributed at 5% Significance Level						
158												
159						Gamma Statistics on Detected Data Only						
160					k hat (MLE)	1.766				k star (bias corrected MLE)		1.565
161					Theta hat (MLE)	1.162				Theta star (bias corrected MLE)		1.311
162					nu hat (MLE)	81.25				nu star (bias corrected)		71.99
163					Mean (detects)	2.052						
164												
165						Gamma ROS Statistics using Imputed Non-Detects						

166	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
167	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
168	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
169	This is especially true when the sample size is small.											
170	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
171					Minimum	0.01				Mean	0.969	
172					Maximum	7.3				Median	0.01	
173					SD	1.603				CV	1.655	
174					k hat (MLE)	0.309				k star (bias corrected MLE)	0.304	
175					Theta hat (MLE)	3.133				Theta star (bias corrected MLE)	3.187	
176					nu hat (MLE)	30.3				nu star (bias corrected)	29.78	
177					Adjusted Level of Significance (β)	0.0451						
178					Approximate Chi Square Value (29.78, α)	18.32				Adjusted Chi Square Value (29.78, β)	18.05	
179					95% Gamma Approximate UCL (use when n>=50)	1.574				95% Gamma Adjusted UCL (use when n<50)	1.598	
180												
181	Estimates of Gamma Parameters using KM Estimates											
182					Mean (KM)	1.176				SD (KM)	1.469	
183					Variance (KM)	2.159				SE of Mean (KM)	0.215	
184					k hat (KM)	0.64				k star (KM)	0.614	
185					nu hat (KM)	62.72				nu star (KM)	60.22	
186					theta hat (KM)	1.837				theta star (KM)	1.913	
187					80% gamma percentile (KM)	1.937				90% gamma percentile (KM)	3.041	
188					95% gamma percentile (KM)	4.194				99% gamma percentile (KM)	6.976	
189												
190	Gamma Kaplan-Meier (KM) Statistics											
191					Approximate Chi Square Value (60.22, α)	43.37				Adjusted Chi Square Value (60.22, β)	42.94	
192					95% Gamma Approximate KM-UCL (use when n>=50)	1.632				95% Gamma Adjusted KM-UCL (use when n<50)	1.649	
193												
194	Lognormal GOF Test on Detected Observations Only											
195					Shapiro Wilk Test Statistic	0.94				Shapiro Wilk GOF Test		
196					5% Shapiro Wilk Critical Value	0.914				Detected Data appear Lognormal at 5% Significance Level		
197					Lilliefors Test Statistic	0.154				Lilliefors GOF Test		
198					5% Lilliefors Critical Value	0.18				Detected Data appear Lognormal at 5% Significance Level		
199	Detected Data appear Lognormal at 5% Significance Level											
200												
201	Lognormal ROS Statistics Using Imputed Non-Detects											
202					Mean in Original Scale	1.074				Mean in Log Scale	-0.78	
203					SD in Original Scale	1.544				SD in Log Scale	1.379	
204					95% t UCL (assumes normality of ROS data)	1.444				95% Percentile Bootstrap UCL	1.452	
205					95% BCA Bootstrap UCL	1.517				95% Bootstrap t UCL	1.574	
206					95% H-UCL (Log ROS)	2.063						
207												
208	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
209					KM Mean (logged)	-0.294				KM Geo Mean	0.745	
210					KM SD (logged)	0.842				95% Critical H Value (KM-Log)	2.178	
211					KM Standard Error of Mean (logged)	0.123				95% H-UCL (KM -Log)	1.385	
212					KM SD (logged)	0.842				95% Critical H Value (KM-Log)	2.178	
213					KM Standard Error of Mean (logged)	0.123						
214												
215	DL/2 Statistics											
216	DL/2 Normal									DL/2 Log-Transformed		
217					Mean in Original Scale	1.069				Mean in Log Scale	-0.662	
218					SD in Original Scale	1.543				SD in Log Scale	1.146	
219					95% t UCL (Assumes normality)	1.439				95% H-Stat UCL	1.505	
220	DL/2 is not a recommended method, provided for comparisons and historical reasons											

	A	B	C	D	E	F	G	H	I	J	K	L
221												
222					Nonparametric Distribution Free UCL Statistics							
223					Detected Data appear Lognormal Distributed at 5% Significance Level							
224												
225					Suggested UCL to Use							
226					KM H-UCL	1.385						
227												
228					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
229					Recommendations are based upon data size, data distribution, and skewness.							
230					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
231					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
232												
233	Chromium											
234												
235					General Statistics							
236					Total Number of Observations	49			Number of Distinct Observations	34		
237					Number of Detects	48			Number of Non-Detects	1		
238					Number of Distinct Detects	33			Number of Distinct Non-Detects	1		
239					Minimum Detect	5.4			Minimum Non-Detect	5		
240					Maximum Detect	88			Maximum Non-Detect	5		
241					Variance Detects	363.8			Percent Non-Detects	2.041%		
242					Mean Detects	22.84			SD Detects	19.07		
243					Median Detects	17			CV Detects	0.835		
244					Skewness Detects	2.074			Kurtosis Detects	4.284		
245					Mean of Logged Detects	2.87			SD of Logged Detects	0.706		
246												
247					Normal GOF Test on Detects Only							
248					Shapiro Wilk Test Statistic	0.753			Shapiro Wilk GOF Test			
249					5% Shapiro Wilk Critical Value	0.947			Detected Data Not Normal at 5% Significance Level			
250					Lilliefors Test Statistic	0.208			Lilliefors GOF Test			
251					5% Lilliefors Critical Value	0.127			Detected Data Not Normal at 5% Significance Level			
252					Detected Data Not Normal at 5% Significance Level							
253												
254					Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
255					KM Mean	22.48			KM Standard Error of Mean	2.721		
256					KM SD	18.85			95% KM (BCA) UCL	27.1		
257					95% KM (t) UCL	27.04			95% KM (Percentile Bootstrap) UCL	27.09		
258					95% KM (z) UCL	26.96			95% KM Bootstrap t UCL	28.33		
259					90% KM Chebyshev UCL	30.64			95% KM Chebyshev UCL	34.34		
260					97.5% KM Chebyshev UCL	39.47			99% KM Chebyshev UCL	49.56		
261												
262					Gamma GOF Tests on Detected Observations Only							
263					A-D Test Statistic	0.919			Anderson-Darling GOF Test			
264					5% A-D Critical Value	0.761			Detected Data Not Gamma Distributed at 5% Significance Level			
265					K-S Test Statistic	0.115			Kolmogorov-Smirnov GOF			
266					5% K-S Critical Value	0.129			Detected data appear Gamma Distributed at 5% Significance Level			
267					Detected data follow Appr. Gamma Distribution at 5% Significance Level							
268												
269					Gamma Statistics on Detected Data Only							
270					k hat (MLE)	2.083			k star (bias corrected MLE)	1.967		
271					Theta hat (MLE)	10.97			Theta star (bias corrected MLE)	11.62		
272					nu hat (MLE)	200			nu star (bias corrected)	188.8		
273					Mean (detects)	22.84						
274												
275					Gamma ROS Statistics using Imputed Non-Detects							

276	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs											
277	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)											
278	For such situations, GROS method may yield incorrect values of UCLs and BTVs											
279	This is especially true when the sample size is small.											
280	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates											
281					Minimum	0.01			Mean	22.38		
282					Maximum	88			Median	16		
283					SD	19.15			CV	0.856		
284					k hat (MLE)	1.423			k star (bias corrected MLE)	1.35		
285					Theta hat (MLE)	15.72			Theta star (bias corrected MLE)	16.58		
286					nu hat (MLE)	139.5			nu star (bias corrected)	132.3		
287					Adjusted Level of Significance (β)	0.0451						
288					Approximate Chi Square Value (132.26, α)	106.7			Adjusted Chi Square Value (132.26, β)	106		
289					95% Gamma Approximate UCL (use when n>=50)	27.74			95% Gamma Adjusted UCL (use when n<50)	27.92		
290												
291	Estimates of Gamma Parameters using KM Estimates											
292					Mean (KM)	22.48			SD (KM)	18.85		
293					Variance (KM)	355.3			SE of Mean (KM)	2.721		
294					k hat (KM)	1.422			k star (KM)	1.349		
295					nu hat (KM)	139.4			nu star (KM)	132.2		
296					theta hat (KM)	15.81			theta star (KM)	16.67		
297					80% gamma percentile (KM)	35.18			90% gamma percentile (KM)	48.08		
298					95% gamma percentile (KM)	60.7			99% gamma percentile (KM)	89.39		
299												
300	Gamma Kaplan-Meier (KM) Statistics											
301					Approximate Chi Square Value (132.17, α)	106.6			Adjusted Chi Square Value (132.17, β)	105.9		
302					95% Gamma Approximate KM-UCL (use when n>=50)	27.87			95% Gamma Adjusted KM-UCL (use when n<50)	28.05		
303												
304	Lognormal GOF Test on Detected Observations Only											
305					Shapiro Wilk Test Statistic	0.96			Shapiro Wilk GOF Test			
306					5% Shapiro Wilk Critical Value	0.947			Detected Data appear Lognormal at 5% Significance Level			
307					Lilliefors Test Statistic	0.08			Lilliefors GOF Test			
308					5% Lilliefors Critical Value	0.127			Detected Data appear Lognormal at 5% Significance Level			
309	Detected Data appear Lognormal at 5% Significance Level											
310												
311	Lognormal ROS Statistics Using Imputed Non-Detects											
312					Mean in Original Scale	22.44			Mean in Log Scale	2.832		
313					SD in Original Scale	19.09			SD in Log Scale	0.746		
314					95% t UCL (assumes normality of ROS data)	27.01			95% Percentile Bootstrap UCL	27.2		
315					95% BCA Bootstrap UCL	27.94			95% Bootstrap t UCL	28.76		
316					95% H-UCL (Log ROS)	28.07						
317												
318	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution											
319					KM Mean (logged)	2.844			KM Geo Mean	17.19		
320					KM SD (logged)	0.714			95% Critical H Value (KM-Log)	2.049		
321					KM Standard Error of Mean (logged)	0.103			95% H-UCL (KM -Log)	27.39		
322					KM SD (logged)	0.714			95% Critical H Value (KM-Log)	2.049		
323					KM Standard Error of Mean (logged)	0.103						
324												
325	DL/2 Statistics											
326	DL/2 Normal								DL/2 Log-Transformed			
327					Mean in Original Scale	22.43			Mean in Log Scale	2.83		
328					SD in Original Scale	19.1			SD in Log Scale	0.752		
329					95% t UCL (Assumes normality)	27			95% H-Stat UCL	28.2		
330	DL/2 is not a recommended method, provided for comparisons and historical reasons											

331												
332						Nonparametric Distribution Free UCL Statistics							
333						Detected Data appear Approximate Gamma Distributed at 5% Significance Level							
334												
335						Suggested UCL to Use							
336					95% KM Adjusted Gamma UCL	28.05				95% GROS Adjusted Gamma UCL	27.92	
337												
338						When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test						
339						When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL						
340												
341						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
342						Recommendations are based upon data size, data distribution, and skewness.						
343						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
344						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
345												
346	Copper											
347												
348						General Statistics						
349					Total Number of Observations	49				Number of Distinct Observations	35	
350					Number of Detects	39				Number of Non-Detects	10	
351					Number of Distinct Detects	34				Number of Distinct Non-Detects	1	
352					Minimum Detect	5.2				Minimum Non-Detect	5	
353					Maximum Detect	190				Maximum Non-Detect	5	
354					Variance Detects	2194				Percent Non-Detects	20.41%	
355					Mean Detects	49.9				SD Detects	46.84	
356					Median Detects	45				CV Detects	0.939	
357					Skewness Detects	1.47				Kurtosis Detects	2.064	
358					Mean of Logged Detects	3.42				SD of Logged Detects	1.087	
359												
360						Normal GOF Test on Detects Only						
361					Shapiro Wilk Test Statistic	0.829				Shapiro Wilk GOF Test		
362					5% Shapiro Wilk Critical Value	0.939				Detected Data Not Normal at 5% Significance Level		
363					Lilliefors Test Statistic	0.17				Lilliefors GOF Test		
364					5% Lilliefors Critical Value	0.14				Detected Data Not Normal at 5% Significance Level		
365						Detected Data Not Normal at 5% Significance Level						
366												
367						Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs						
368					KM Mean	40.74				KM Standard Error of Mean	6.518	
369					KM SD	45.04				95% KM (BCA) UCL	51.73	
370					95% KM (t) UCL	51.67				95% KM (Percentile Bootstrap) UCL	51.67	
371					95% KM (z) UCL	51.46				95% KM Bootstrap t UCL	54.25	
372					90% KM Chebyshev UCL	60.29				95% KM Chebyshev UCL	69.15	
373					97.5% KM Chebyshev UCL	81.45				99% KM Chebyshev UCL	105.6	
374												
375						Gamma GOF Tests on Detected Observations Only						
376					A-D Test Statistic	0.862				Anderson-Darling GOF Test		
377					5% A-D Critical Value	0.774				Detected Data Not Gamma Distributed at 5% Significance Level		
378					K-S Test Statistic	0.124				Kolmogorov-Smirnov GOF		
379					5% K-S Critical Value	0.145				Detected data appear Gamma Distributed at 5% Significance Level		
380						Detected data follow Appr. Gamma Distribution at 5% Significance Level						
381												
382						Gamma Statistics on Detected Data Only						
383					k hat (MLE)	1.159				k star (bias corrected MLE)	1.087	
384					Theta hat (MLE)	43.04				Theta star (bias corrected MLE)	45.9	
385					nu hat (MLE)	90.43				nu star (bias corrected)	84.81	

Mean (detects)	49.9	

Gamma ROS Statistics using Imputed Non-Detects

GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs

GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)

For such situations, GROS method may yield incorrect values of UCLs and BTVs

This is especially true when the sample size is small.

For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates

Minimum	0.01	Mean	39.72
Maximum	190	Median	21
SD	46.36	CV	1.167
k hat (MLE)	0.353	k star (bias corrected MLE)	0.345
Theta hat (MLE)	112.4	Theta star (bias corrected MLE)	115
nu hat (MLE)	34.64	nu star (bias corrected)	33.85
Adjusted Level of Significance (β)	0.0451		
Approximate Chi Square Value (33.85, α)	21.55	Adjusted Chi Square Value (33.85, β)	21.25
95% Gamma Approximate UCL (use when n>=50)	62.41	95% Gamma Adjusted UCL (use when n<50)	63.28

Estimates of Gamma Parameters using KM Estimates

Mean (KM)	40.74	SD (KM)	45.04
Variance (KM)	2029	SE of Mean (KM)	6.518
k hat (KM)	0.818	k star (KM)	0.782
nu hat (KM)	80.18	nu star (KM)	76.6
theta hat (KM)	49.8	theta star (KM)	52.12
80% gamma percentile (KM)	66.66	90% gamma percentile (KM)	99.61
95% gamma percentile (KM)	133.3	99% gamma percentile (KM)	212.9

Gamma Kaplan-Meier (KM) Statistics

Approximate Chi Square Value (76.60, α)	57.44	Adjusted Chi Square Value (76.60, β)	56.94
95% Gamma Approximate KM-UCL (use when n>=50)	54.33	95% Gamma Adjusted KM-UCL (use when n<50)	54.81

Lognormal GOF Test on Detected Observations Only

Shapiro Wilk Test Statistic	0.912	**Shapiro Wilk GOF Test**
5% Shapiro Wilk Critical Value	0.939	Detected Data Not Lognormal at 5% Significance Level
Lilliefors Test Statistic	0.179	**Lilliefors GOF Test**
5% Lilliefors Critical Value	0.14	Detected Data Not Lognormal at 5% Significance Level

Detected Data Not Lognormal at 5% Significance Level

Lognormal ROS Statistics Using Imputed Non-Detects

Mean in Original Scale	40.33	Mean in Log Scale	2.921
SD in Original Scale	45.85	SD in Log Scale	1.409
95% t UCL (assumes normality of ROS data)	51.31	95% Percentile Bootstrap UCL	50.87
95% BCA Bootstrap UCL	52.43	95% Bootstrap t UCL	53.48
95% H-UCL (Log ROS)	88.84		

Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution

KM Mean (logged)	3.051	KM Geo Mean	21.13
KM SD (logged)	1.204	95% Critical H Value (KM-Log)	2.568
KM Standard Error of Mean (logged)	0.174	95% H-UCL (KM -Log)	68.12
KM SD (logged)	1.204	95% Critical H Value (KM-Log)	2.568
KM Standard Error of Mean (logged)	0.174		

DL/2 Statistics

DL/2 Normal		DL/2 Log-Transformed	
Mean in Original Scale	40.23	Mean in Log Scale	2.909

441				SD in Original Scale	45.93					SD in Log Scale		1.405
442				95% t UCL (Assumes normality)	51.23					95% H-Stat UCL		87.13
443	DL/2 is not a recommended method, provided for comparisons and historical reasons											
444												
445	Nonparametric Distribution Free UCL Statistics											
446	Detected Data appear Approximate Gamma Distributed at 5% Significance Level											
447												
448	Suggested UCL to Use											
449				95% KM Adjusted Gamma UCL	54.81					95% GROS Adjusted Gamma UCL		63.28
450												
451	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
452	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
453												
454	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
455	Recommendations are based upon data size, data distribution, and skewness.											
456	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
457	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
458												
459												
460	Lead											
461												
462	General Statistics											
463				Total Number of Observations	49					Number of Distinct Observations		40
464										Number of Missing Observations		0
465				Minimum	5.6					Mean		149.1
466				Maximum	1400					Median		48
467				SD	271.4					Std. Error of Mean		38.77
468				Coefficient of Variation	1.821					Skewness		3.46
469												
470	Normal GOF Test											
471				Shapiro Wilk Test Statistic	0.542					Shapiro Wilk GOF Test		
472				5% Shapiro Wilk Critical Value	0.947					Data Not Normal at 5% Significance Level		
473				Lilliefors Test Statistic	0.299					Lilliefors GOF Test		
474				5% Lilliefors Critical Value	0.126					Data Not Normal at 5% Significance Level		
475	Data Not Normal at 5% Significance Level											
476												
477	Assuming Normal Distribution											
478				95% Normal UCL						95% UCLs (Adjusted for Skewness)		
479				95% Student's-t UCL	214.1					95% Adjusted-CLT UCL (Chen-1995)		233.3
480										95% Modified-t UCL (Johnson-1978)		217.3
481												
482	Gamma GOF Test											
483				A-D Test Statistic	2.294					Anderson-Darling Gamma GOF Test		
484				5% A-D Critical Value	0.802					Data Not Gamma Distributed at 5% Significance Level		
485				K-S Test Statistic	0.185					Kolmogorov-Smirnov Gamma GOF Test		
486				5% K-S Critical Value	0.133					Data Not Gamma Distributed at 5% Significance Level		
487	Data Not Gamma Distributed at 5% Significance Level											
488												
489	Gamma Statistics											
490				k hat (MLE)	0.635					k star (bias corrected MLE)		0.61
491				Theta hat (MLE)	234.6					Theta star (bias corrected MLE)		244.4
492				nu hat (MLE)	62.26					nu star (bias corrected)		59.78
493				MLE Mean (bias corrected)	149.1					MLE Sd (bias corrected)		190.9
494										Approximate Chi Square Value (0.05)		43
495				Adjusted Level of Significance	0.0451					Adjusted Chi Square Value		42.57

496											
497						Assuming Gamma Distribution						
498					95% Approximate Gamma UCL (use when n>=50))	207.2		95% Adjusted Gamma UCL (use when n<50)			209.3
499											
500						Lognormal GOF Test					
501					Shapiro Wilk Test Statistic	0.947		Shapiro Wilk Lognormal GOF Test			
502					5% Shapiro Wilk Critical Value	0.947		Data appear Lognormal at 5% Significance Level			
503					Lilliefors Test Statistic	0.139		Lilliefors Lognormal GOF Test			
504					5% Lilliefors Critical Value	0.126		Data Not Lognormal at 5% Significance Level			
505						Data appear Approximate Lognormal at 5% Significance Level					
506											
507						Lognormal Statistics					
508					Minimum of Logged Data	1.723		Mean of logged Data			4.04
509					Maximum of Logged Data	7.244		SD of logged Data			1.34
510											
511						Assuming Lognormal Distribution					
512					95% H-UCL	236.7		90% Chebyshev (MVUE) UCL			234
513					95% Chebyshev (MVUE) UCL	278.8		97.5% Chebyshev (MVUE) UCL			341.1
514					99% Chebyshev (MVUE) UCL	463.4					
515											
516						Nonparametric Distribution Free UCL Statistics					
517						Data appear to follow a Discernible Distribution at 5% Significance Level					
518											
519						Nonparametric Distribution Free UCLs					
520					95% CLT UCL	212.8		95% Jackknife UCL			214.1
521					95% Standard Bootstrap UCL	213.7		95% Bootstrap-t UCL			266.4
522					95% Hall's Bootstrap UCL	509.3		95% Percentile Bootstrap UCL			216.7
523					95% BCA Bootstrap UCL	238.8					
524					90% Chebyshev(Mean, Sd) UCL	265.4		95% Chebyshev(Mean, Sd) UCL			318.1
525					97.5% Chebyshev(Mean, Sd) UCL	391.2		99% Chebyshev(Mean, Sd) UCL			534.8
526											
527						Suggested UCL to Use					
528					95% H-UCL	236.7					
529											
530						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.					
531						Recommendations are based upon data size, data distribution, and skewness.					
532						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).					
533						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.					
534											
535						ProUCL computes and outputs H-statistic based UCLs for historical reasons only.					
536						H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.					
537						It is therefore recommended to avoid the use of H-statistic based 95% UCLs.					
538						Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.					
539											
540	Mercury										
541											
542						General Statistics					
543					Total Number of Observations	49		Number of Distinct Observations			2
544					Number of Detects	2		Number of Non-Detects			47
545					Number of Distinct Detects	2		Number of Distinct Non-Detects			1
546					Minimum Detect	0.1		Minimum Non-Detect			0.1
547					Maximum Detect	0.3		Maximum Non-Detect			0.1
548					Variance Detects	0.02		Percent Non-Detects			95.92%
549					Mean Detects	0.2		SD Detects			0.141
550					Median Detects	0.2		CV Detects			0.707

551				Skewness Detects		N/A				Kurtosis Detects		N/A
552				Mean of Logged Detects		-1.753				SD of Logged Detects		0.777
553												
554				Warning: Data set has only 2 Detected Values.								
555				This is not enough to compute meaningful or reliable statistics and estimates.								
556												
557												
558				Normal GOF Test on Detects Only								
559				Not Enough Data to Perform GOF Test								
560												
561				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs								
562				KM Mean		0.104				KM Standard Error of Mean		0.00571
563				KM SD		0.0283				95% KM (BCA) UCL		N/A
564				95% KM (t) UCL		0.114				95% KM (Percentile Bootstrap) UCL		N/A
565				95% KM (z) UCL		0.113				95% KM Bootstrap t UCL		N/A
566				90% KM Chebyshev UCL		0.121				95% KM Chebyshev UCL		0.129
567				97.5% KM Chebyshev UCL		0.14				99% KM Chebyshev UCL		0.161
568												
569				Gamma GOF Tests on Detected Observations Only								
570				Not Enough Data to Perform GOF Test								
571												
572				Gamma Statistics on Detected Data Only								
573				k hat (MLE)		3.634				k star (bias corrected MLE)		N/A
574				Theta hat (MLE)		0.055				Theta star (bias corrected MLE)		N/A
575				nu hat (MLE)		14.54				nu star (bias corrected)		N/A
576				Mean (detects)		0.2						
577												
578				Estimates of Gamma Parameters using KM Estimates								
579				Mean (KM)		0.104				SD (KM)		0.0283
580				Variance (KM)		7.9967E-4				SE of Mean (KM)		0.00571
581				k hat (KM)		13.55				k star (KM)		12.73
582				nu hat (KM)		1328				nu star (KM)		1248
583				theta hat (KM)		0.00768				theta star (KM)		0.00818
584				80% gamma percentile (KM)		0.128				90% gamma percentile (KM)		0.143
585				95% gamma percentile (KM)		0.156				99% gamma percentile (KM)		0.184
586												
587				Gamma Kaplan-Meier (KM) Statistics								
588										Adjusted Level of Significance (β)		0.0451
589				Approximate Chi Square Value (N/A, α)		1167				Adjusted Chi Square Value (N/A, β)		1164
590				95% Gamma Approximate KM-UCL (use when n>=50)		0.111				95% Gamma Adjusted KM-UCL (use when n<50)		0.112
591												
592				Lognormal GOF Test on Detected Observations Only								
593				Not Enough Data to Perform GOF Test								
594												
595				Lognormal ROS Statistics Using Imputed Non-Detects								
596				Mean in Original Scale		0.00952				Mean in Log Scale		-9.697
597				SD in Original Scale		0.0448				SD in Log Scale		3.681
598				95% t UCL (assumes normality of ROS data)		0.0203				95% Percentile Bootstrap UCL		0.0216
599				95% BCA Bootstrap UCL		0.0303				95% Bootstrap t UCL		0.118
600				95% H-UCL (Log ROS)		1.374						
601												
602				Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution								
603				KM Mean (logged)		-2.28				KM Geo Mean		0.102
604				KM SD (logged)		0.155				95% Critical H Value (KM-Log)		1.768
605				KM Standard Error of Mean (logged)		0.0314				95% H-UCL (KM -Log)		0.108

606				KM SD (logged)	0.155				95% Critical H Value (KM-Log)		1.768
607			KM Standard Error of Mean (logged)		0.0314						
608											
609				DL/2 Statistics							
610			DL/2 Normal					DL/2 Log-Transformed			
611			Mean in Original Scale		0.0561			Mean in Log Scale			-2.945
612			SD in Original Scale		0.0363			SD in Log Scale			0.273
613			95% t UCL (Assumes normality)		0.0648			95% H-Stat UCL			0.0586
614				DL/2 is not a recommended method, provided for comparisons and historical reasons							
615											
616				Nonparametric Distribution Free UCL Statistics							
617				Data do not follow a Discernible Distribution at 5% Significance Level							
618											
619				Suggested UCL to Use							
620				95% KM (Chebyshev) UCL	0.129						
621											
622				Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
623				Recommendations are based upon data size, data distribution, and skewness.							
624				These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
625				However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
626											
627	Nickel										
628											
629				General Statistics							
630			Total Number of Observations		49			Number of Distinct Observations			26
631			Number of Detects		35			Number of Non-Detects			14
632			Number of Distinct Detects		26			Number of Distinct Non-Detects			1
633			Minimum Detect		5			Minimum Non-Detect			5
634			Maximum Detect		120			Maximum Non-Detect			5
635			Variance Detects		751.2			Percent Non-Detects			28.57%
636			Mean Detects		23.19			SD Detects			27.41
637			Median Detects		14			CV Detects			1.182
638			Skewness Detects		2.749			Kurtosis Detects			7.855
639			Mean of Logged Detects		2.722			SD of Logged Detects			0.866
640											
641				Normal GOF Test on Detects Only							
642			Shapiro Wilk Test Statistic		0.632			Shapiro Wilk GOF Test			
643			5% Shapiro Wilk Critical Value		0.934			Detected Data Not Normal at 5% Significance Level			
644			Lilliefors Test Statistic		0.253			Lilliefors GOF Test			
645			5% Lilliefors Critical Value		0.148			Detected Data Not Normal at 5% Significance Level			
646				Detected Data Not Normal at 5% Significance Level							
647											
648				Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs							
649			KM Mean		18			KM Standard Error of Mean			3.517
650			KM SD		24.27			95% KM (BCA) UCL			24.1
651			95% KM (t) UCL		23.89			95% KM (Percentile Bootstrap) UCL			23.93
652			95% KM (z) UCL		23.78			95% KM Bootstrap t UCL			28.83
653			90% KM Chebyshev UCL		28.55			95% KM Chebyshev UCL			33.33
654			97.5% KM Chebyshev UCL		39.96			99% KM Chebyshev UCL			52.99
655											
656				Gamma GOF Tests on Detected Observations Only							
657			A-D Test Statistic		1.423			Anderson-Darling GOF Test			
658			5% A-D Critical Value		0.77			Detected Data Not Gamma Distributed at 5% Significance Level			
659			K-S Test Statistic		0.143			Kolmogorov-Smirnov GOF			
660			5% K-S Critical Value		0.152			Detected data appear Gamma Distributed at 5% Significance Level			

661	Detected data follow Appr. Gamma Distribution at 5% Significance Level										
662											
663	Gamma Statistics on Detected Data Only										
664					k hat (MLE)	1.328		k star (bias corrected MLE)	1.233		
665					Theta hat (MLE)	17.47		Theta star (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 Statistics using Imputed Non-Detects										
670	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
671	GROS may not be used when kstar of detects is small such as <1.0, especially when the sample size is small (e.g., <15-20)										
672	For such situations, GROS method may yield incorrect values of UCLs and BTVs										
673	This is especially true when the sample size is small.										
674	For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
675					Minimum	0.01		Mean	16.57		
676					Maximum	120		Median	7.7		
677					SD	25.38		CV	1.532		
678					k hat (MLE)	0.314		k star (bias corrected MLE)	0.308		
679					Theta hat (MLE)	52.75		Theta star (bias corrected MLE)	53.71		
680					nu hat (MLE)	30.78		nu star (bias corrected)	30.23		
681					Adjusted Level of Significance (β)	0.0451					
682					Approximate Chi Square Value (30.23, α)	18.68		Adjusted Chi Square Value (30.23, β)	18.4		
683					95% Gamma Approximate UCL (use when n>=50)	26.82		95% Gamma Adjusted UCL (use when n<50)	27.23		
684											
685	Estimates of Gamma Parameters using KM Estimates										
686					Mean (KM)	18		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-Meier (KM) Statistics										
695					Approximate Chi Square Value (51.94, α)	36.38		Adjusted Chi Square Value (51.94, β)	35.99		
696					95% Gamma Approximate KM-UCL (use when n>=50)	25.69		95% Gamma Adjusted KM-UCL (use when n<50)	25.97		
697											
698	Lognormal GOF Test on Detected Observations Only										
699					Shapiro Wilk Test Statistic	0.922		Shapiro Wilk GOF Test			
700					5% Shapiro Wilk Critical Value	0.934		Detected Data Not Lognormal at 5% Significance Level			
701					Lilliefors Test Statistic	0.136		Lilliefors GOF Test			
702					5% Lilliefors Critical Value	0.148		Detected Data appear Lognormal at 5% Significance Level			
703	Detected Data appear Approximate Lognormal at 5% Significance Level										
704											
705	Lognormal ROS Statistics Using Imputed Non-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% Percentile 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											
712	Statistics using KM estimates on Logged Data and Assuming Lognormal Distribution										
713					KM Mean (logged)	2.404		KM Geo Mean	11.07		
714					KM SD (logged)	0.88		95% Critical H Value (KM-Log)	2.215		
715					KM Standard Error of Mean (logged)	0.127		95% H-UCL (KM -Log)	21.59		

716				KM SD (logged)	0.88			95% Critical H Value (KM-Log)			2.215
717			KM Standard Error of Mean (logged)		0.127							
718												
719					DL/2 Statistics							
720			DL/2 Normal					DL/2 Log-Transformed				
721			Mean in Original Scale		17.28			Mean in Log Scale			2.206	
722			SD in Original Scale		24.93			SD in Log Scale			1.101	
723			95% t UCL (Assumes normality)		23.25			95% H-Stat UCL			24.56	
724					DL/2 is not a recommended method, provided for comparisons and historical reasons							
725												
726					Nonparametric Distribution Free UCL Statistics							
727					Detected Data appear Approximate Gamma Distributed at 5% Significance Level							
728												
729					Suggested UCL to Use							
730			95% KM Adjusted Gamma UCL		25.97			95% GROS Adjusted Gamma UCL			27.23	
731												
732					When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test							
733					When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL							
734												
735					Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.							
736					Recommendations are based upon data size, data distribution, and skewness.							
737					These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).							
738					However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.							
739												
740												
741	Zinc											
742												
743					General Statistics							
744				Total Number of Observations		49			Number of Distinct Observations			44
745									Number of Missing Observations			0
746				Minimum		7.5			Mean			299.2
747				Maximum		1400			Median			140
748				SD		365.4			Std. Error of Mean			52.2
749				Coefficient of Variation		1.221			Skewness			1.601
750												
751					Normal GOF Test							
752				Shapiro Wilk Test Statistic		0.757			Shapiro Wilk GOF Test			
753				5% Shapiro Wilk Critical Value		0.947			Data Not Normal at 5% Significance Level			
754				Lilliefors Test Statistic		0.271			Lilliefors GOF Test			
755				5% Lilliefors Critical Value		0.126			Data Not Normal at 5% Significance Level			
756						Data Not Normal at 5% Significance Level						
757												
758					Assuming Normal Distribution							
759			95% Normal UCL					95% UCLs (Adjusted for Skewness)				
760				95% Student's-t UCL		386.8			95% Adjusted-CLT UCL (Chen-1995)			397.8
761									95% Modified-t UCL (Johnson-1978)			388.8
762												
763					Gamma GOF Test							
764				A-D Test Statistic		0.879			Anderson-Darling Gamma GOF Test			
765				5% A-D Critical Value		0.794			Data Not Gamma Distributed at 5% Significance Level			
766				K-S Test Statistic		0.136			Kolmogorov-Smirnov Gamma GOF Test			
767				5% K-S Critical Value		0.132			Data Not Gamma Distributed at 5% Significance Level			
768						Data Not Gamma Distributed at 5% Significance Level						
769												
770					Gamma Statistics							

771					k hat (MLE)	0.734				k star (bias corrected MLE)		0.702
772					Theta hat (MLE)	407.8				Theta star (bias corrected MLE)		426
773					nu hat (MLE)	71.91				nu star (bias corrected)		68.84
774					MLE Mean (bias corrected)	299.2				MLE Sd (bias corrected)		357
775										Approximate Chi Square Value (0.05)		50.74
776					Adjusted Level of Significance	0.0451				Adjusted Chi Square Value		50.27
777												
778						Assuming Gamma Distribution						
779			95% Approximate Gamma UCL (use when n>=50))			406			95% Adjusted Gamma UCL (use when n<50)			409.8
780												
781						Lognormal GOF Test						
782					Shapiro Wilk Test Statistic	0.958			Shapiro Wilk Lognormal GOF Test			
783					5% Shapiro Wilk Critical Value	0.947			Data appear Lognormal at 5% Significance Level			
784					Lilliefors Test Statistic	0.106			Lilliefors Lognormal GOF Test			
785					5% Lilliefors Critical Value	0.126			Data appear Lognormal at 5% Significance Level			
786						Data appear Lognormal at 5% Significance Level						
787												
788						Lognormal Statistics						
789					Minimum of Logged Data	2.015				Mean of logged Data		4.883
790					Maximum of Logged Data	7.244				SD of logged Data		1.41
791												
792						Assuming Lognormal Distribution						
793					95% H-UCL	633.6				90% Chebyshev (MVUE) UCL		613
794					95% Chebyshev (MVUE) UCL	735.1				97.5% Chebyshev (MVUE) UCL		904.6
795					99% Chebyshev (MVUE) UCL	1237						
796												
797						Nonparametric Distribution Free UCL Statistics						
798						Data appear to follow a Discernible Distribution at 5% Significance Level						
799												
800						Nonparametric Distribution Free UCLs						
801					95% CLT UCL	385.1				95% Jackknife UCL		386.8
802					95% Standard Bootstrap UCL	384.3				95% Bootstrap-t UCL		404.9
803					95% Hall's Bootstrap UCL	399.2				95% Percentile Bootstrap UCL		388.7
804					95% BCA Bootstrap UCL	390.6						
805					90% Chebyshev(Mean, Sd) UCL	455.8				95% Chebyshev(Mean, Sd) UCL		526.8
806					97.5% Chebyshev(Mean, Sd) UCL	625.2				99% Chebyshev(Mean, Sd) UCL		818.6
807												
808						Suggested UCL to Use						
809					95% H-UCL	633.6						
810												
811						Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.						
812						Recommendations are based upon data size, data distribution, and skewness.						
813						These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).						
814						However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.						
815												
816						ProUCL computes and outputs H-statistic based UCLs for historical reasons only.						
817						H-statistic often results in unstable (both high and low) values of UCL95 as shown in examples in the Technical Guide.						
818						It is therefore recommended to avoid the use of H-statistic based 95% UCLs.						
819						Use of nonparametric methods are preferred to compute UCL95 for skewed data sets which do not follow a gamma distribution.						
820												

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