

230 Sixth Avenue Austral NSW 2179

Austral 1 Pty Ltd – February 2017





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PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

230 Sixth Avenue Austral, NSW 2179

PREPARED FOR

Austral 1 Pty Ltd C/- Vantage Property Pty Ltd Suite 205, 12 O'Connell Street Sydney NSW 2000

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EXECUTIVE SUMMARY

Geo-Logix Pty Ltd (Geo-Logix) was commissioned by Vantage Property Pty Ltd (Vantage) of Austral 1 Pty Ltd to conduct a Phase 2 Environmental Site Assessment (ESA) of the property located at 230 Sixth Avenue, Austral NSW. It is understood the property is currently subject to a development application for residential subdivision.

The site is located within a rural residential area on the southern side of Sixth Avenue, Austral NSW. The site, accessed via Sixth Avenue, consists of one rectangular lot encompassing an area of 12,140 m². At the time of Geo-Logix investigation the site was occupied by a residential dwelling with landscaped gardens, a tennis court and swimming pool as well as numerous outbuildings and sheds. A fenced paddock is located in the southern portion of the site.

Geo-Logix completed a Phase I ESA for the subject site in September 2016. The Phase I ESA identified a number of historical activities that occurred onsite which had the potential to result in contamination of the land, including:

- Hazardous building materials;
- Fill of unknown origin;
- · Vehicle / equipment maintenance; and
- Application of pesticides and herbicides.

The objective of the Phase 2 ESA was to conduct an investigation to assess the presence or otherwise of contamination to the land associated with the above identified historical activities and determine the suitability of the site for the proposed residential subdivision.

Given the site history it was concluded there was a potential for contamination of the site. Contaminants of potential concern (COPC) include pesticides, heavy metals, petroleum, polyaromatic hydrocarbons (PAHs) phenols, volatile organic compounds (VOCs) and asbestos.

Possible market gardening was identified in the northeast corner and a vegetable garden in the central portion of the site. While no other evidence of market garden activities was observed, it could not be ruled out for other areas of the site, particularly given the regional history of market gardening. A systematic based sampling plan was undertaken consisting of the following scope of works:

- Sampling at 26 locations on a 24 m spaced sampling grid. The sample frequency is sufficient
 to detect a circular contamination hotspot with a diameter of 28.32m or greater at a 95 %
 statistical degree of certainty. The sampling grid meets minimum sampling standards for the
 site area (12,140 m²) as per NSW EPA (1995); and
- In areas of suspected market gardening, native soil samples were analysed for OCPs and heavy metals.

Sampling and analysis of current and former sheds, areas where fragments of suspected ACM were observed, and the corrugated ACM fence included:

- Collection of one soil sample from the footprint of each of the current and former sheds (eight in total) for laboratory analysis of asbestos and lead; and
- Collection of six samples from the base of the corrugated ACM fence. Sample collection targeted areas of damage and were analysed for asbestos.

Portions of the site appear to have been filled and leveled relative to the surrounding topography. To assess fill material at the site the following scope of work was undertaken:



- Collection of a fill samples at locations where grid based samples fell within the filled areas;
- Collection of a soil sample from fill material within stockpile identified at a grid based location;
 and
- Laboratory analysis of soil samples for fill related COPC including: total recoverable
 hydrocarbons (TRH); benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN);
 PAHs; heavy metals (arsenic (As), cadmium (Cd), chromium (Cr), copper, (Cu), lead (Pb),
 nickel (Ni), zinc (Zn), mercury (Hg)); OCPs; and asbestos.

A truck shed is located in the central western portion of the property. The scope of works completed to assess areas of areas of vehicle / equipment maintenance included:

- Collection of two soil samples from the edge of the slab;
- Concrete coring and collection of one soil sample from beneath the slab; and
- Laboratory analysis of soil samples for vehicle maintenance related COPC including TRH, BTEX, VOCs, PAHs and heavy metals.

The assessment decision adopted for the investigation states:

• Contamination has not been identified in soil at concentrations above residential land use standards and the site is considered suitable for the proposed residential subdivision.

To accept the assessment decision the following decision rules need to be met:

- Shallow soils must be free of circular COPC hotspots of the specified diameter for the site;
- The 95% Upper Confidence Limit of COPC concentration data for systematic soil sampling does not exceed the soil assessment criteria;
- No single systematic soil sample exceeds 250% of the soil COPC assessment criteria;
- The standard deviation of COPC analytical results for systematic soil sampling is less than 50% of the soil assessment criteria;
- No visible identification of ACM at systematic soil sample locations; and
- No single targeted soil sample collected exceeds the COPC assessment criteria.

Results of the assessment identified the soil contamination issues at the site:

- Petroleum hydrocarbon impact detected at concentrations above residential assessment criteria in shallow soils in the vicinity of the shed located in the western portion of the site;
- Asbestos was detected in the form of weathered fragments and as bonded ACM in shallow soil in western portions of the site; and
- Asbestos detected in the form of bonded ACM in shallow fill in the south eastern, eastern, central northern and western portions of the site;

Remediation and / or management of the above is required for the site to be considered suitable for the proposed residential landuse. Further investigation is recommended to define contamination extents and remedial requirements.



TABLE OF CONTENTS

1.	INTRODUCTION	1
2.	SITE INFORMATION	1
	2.1 Site Identification	1
	2.2 Site Zoning and Land Use	
	2.3 Site Description	
	2.4 Surrounding Land Use	
	2.5 Topography	
	2.6 Surface Water Receptor	
	2.7 Geology	
	2.8 Hydrogeology	
	2.9 Underground Utilities	3
3.	PREVIOUS ENVIRONMENTAL INVESTIGATIONS	
	3.1 Geo-Logix (2016) Phase 1 Environmental Site Assessment	3
4.	POTENTIAL SITE CONTAMINATION	4
5.	DATA QUALITY OBJECTIVES	5
6.	ASSESSMENT CRITERIA	7
	6.1 Soil Assessment Criteria	7
7.	INVESTIGATION METHODOLOGIES	9
	7.1 Soil Sampling Methodology	10
	7.2 Quality Assurance	10
8.	INVESTIGATION RESULTS	11
	8.1 Site Geology	11
	8.2 Site Hydrogeology	11
	8.3 Soil Analytical Results	
	8.4 Soil Analytical Statistical Summary	13
	8.5 QA/QC Results	14
9.	DISCUSSION	15
1(). CONCLUSIONS	16
1′	. LIMITATIONS	17
12	P. REFERENCES	19



FIGURES

Figure 1: Site Location Map

Figure 2: Site Map

Figure 3: Sample Location Map

Figure 4: Asbestos Location Map

TABLES

 Table 1: Summary of Soil Analytical Data – TRH and BTEX

Table 2: Summary of Soil Analytical Data – VOCs

Table 3: Summary of Soil Analytical Data - PAHs

Table 4: Summary of Soil Analytical Data - Metals

Table 5: Summary of Soil Analytical Data - OCPs

 Table 6: Summary of Soil Analytical Data – Asbestos

Table 7: Summary of QA / QC Water Analytical Data – TRH and BTEX

Table 8: Summary of QA / QC Water Analytical Data - PAHs

Table 9: Summary of QA / QC Water Analytical Data – Metals

Table 10: Summary of QA / QC Water Analytical Data - OCPs

ATTACHMENTS

Attachment A: Planning Certificates under Section 149

Attachment B: Photographic Log

Attachment C: Registered Bore Search

Attachment D: Underground Utilities Plan

Attachment E: Shallow Soil Sample Descriptions

Attachment F: Laboratory Reports

Attachment G ProUCL Statistical Outputs



1. INTRODUCTION

Geo-Logix Pty Ltd (Geo-Logix) was commissioned by Vantage Property Pty Ltd (Vantage) on behalf of Austral 1 Pty Ltd to conduct a Phase 2 Environmental Site Assessment (ESA) of the property located at 230 Sixth Avenue, Austral NSW (Figure 1). It is understood the property is currently subject to a development application for residential subdivision.

Geo-Logix completed a Phase I ESA for the subject site in September 2016. The Phase I ESA identified a number of historical activities that occurred on site which had the potential to result in contamination of the land, including:

- Hazardous building materials;
- · Fill of unknown origin;
- Vehicle / equipment maintenance; and
- Application of pesticides and herbicides.

The objective of the Phase 2 ESA was to conduct an investigation to assess the presence or otherwise of contamination to the land associated with the above identified historical activities and determine the suitability of the site for the proposed residential subdivision.

2. SITE INFORMATION

2.1 Site Identification

The investigation area comprises the following properties:

Street Address	Lot and Deposited Plan (DP)	Approximate Area (m²)
230 Sixth Avenue, Austral NSW 2179	Lot 1067 DP2475	12,140

2.2 Site Zoning and Land Use

Under Liverpool Council Local Environment Plan (LEP) (2008), the site is zoned Low density residential (R2). Planning and Development Certificates are provided in Attachment A.

2.3 Site Description

The following observations were made during site inspection in September 2016 and field works conducted by Geo-Logix in October 2016. A photographic log is presented in Attachment B.

The site is located within a rural residential area on the southern side of Sixth Avenue, Austral NSW. The site is accessed via Sixth Avenue and consists of one rectangular lot encompassing an area of 12,140 m² (Figure 2). At the time of Geo-Logix investigation the site was occupied by a residential dwelling with landscaped gardens, a tennis court and swimming pool as well as numerous outbuildings and sheds. A fenced paddock is located in the southern portion of the site. Vegetation appears to be in good health across the site however herbicides have been used to control grass growth along fence lines.



The single storey brick dwelling is located in the north-east portion of the site with landscaped gardens to the north and west. A retaining wall is located along the north-eastern property boundary indicating the area surrounding the house has been filled relative to surrounding topography. A small soil / vegetation stockpile was also noted in the grassed area west of dwelling.

A number of structures including swimming pool, pool house, garden shed, outhouse and single-storey granny flat are located to the rear of the dwelling. Asbestos Containing Material (ACM) was observed in all of these structures and appeared to be in moderate condition with some broken panels observed. Peeling paint was also noted throughout many of the buildings and on surrounding ground surfaces. A soil stockpile and possible vegetable garden is located to the west of the granny flat.

A large truck shed is located in a partially fenced area in the central western portion of the site. The one to two storey steel / timber frame and metal clad structure has been extended over time and is currently used to store furniture, building materials and miscellaneous equipment. Some paints, thinners and household pesticides, including a spray pack, were observed in a section of the shed. Paint throughout the shed was in poor condition and peeling. Asphalt hardstand surrounds the shed which is littered with numerous items of furniture, household items, timber and building materials. Fragments of weathered ACM were observed on the asphalt hardstand area to the north of the shed. Three large drums, filled with water were located in front of the shed with another drum used to burn timber materials. A corrugated ACM fence is located to the north of the shed and runs from the residential dwelling to the western boundary and behind the shed. The fence appeared to be in moderate condition with some broken panels observed.

An open grassed area is located east of the large shed and south of the residential dwelling with a fernery and aviary located in the southern portion of this area. A concrete tennis court is situated in in the central portion of the site, adjacent to the eastern boundary. Some filling was observed to the north of the tennis court with a timber retaining wall located to the south.

A grassed, fenced paddock with some vegetation and mature trees occupies the southern portion of the site which contains a stockpile of vegetation and soil. The ground surface appears raised relative to surrounding topography suggesting the area has been filled. A collection of kennels, stables and small sheds is located adjacent the western boundary and have been constructed from timber, metal cladding and ACM. Several sheets of ACM was have been used to patch holes between the kennels. Corrugated ACM used to clad the rear of the kennels appeared to be in moderate to poor condition with numerous fragments scattered on the ground surface and subject to partial burial. Numerous fragments of ACM were observed scattered on the ground surface within and in close proximity to the southernmost shed.

2.4 Surrounding Land Use

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

- **North** Sixth Avenue with rural residential properties beyond;
- South Rural residential properties with Fifth Avenue beyond;
- West Rural residential properties with Fourth Avenue beyond; and
- East Rural residential properties with Edmondson Avenue beyond.



2.5 Topography

The site slopes gently down towards the north east. The north east portion of the site, below the house and front garden, appears to have been filed relative to surrounding topography with possible filling also observed in the grassed paddock at the rear of the property.

2.6 Surface Water Receptor

The nearest surface water is an unnamed tributary of Kemps Creek, located approximately 150 north east of the site.

2.7 Geology

Review of the NSW 1:100,000 Penrith Geological Map (Geological Survey of NSW, 1991) indicates the site is situated on Wianamatta group shale characterised by shale, carbonaceous claystone, laminite, fine to medium-grained lithic sandstone, rare coal and tuff.

2.8 Hydrogeology

It is expected that groundwater would follow the natural regional topography and generally flow north—east. Reference to the NSW Water Groundwater Works Report (NSW Government, 2016) indicates there are no registered groundwater bores within a 500 m radius of the site. The groundwater bore map is presented in Attachment C.

2.9 Underground Utilities

A Dial Before You Dig search was conducted to determine the presence of underground utilities which may act as conduits for contamination migration both onsite and offsite (Attachment D). The plans indicate Sydney Water, Telstra utilities run underneath Sixth Avenue to the north. Telstra utilities enter the site from the north-eastern boundary.

3. PREVIOUS ENVIRONMENTAL INVESTIGATIONS

3.1 Geo-Logix (2016) Phase 1 Environmental Site Assessment

Geo-Logix completed a Phase 1 Environmental Site Assessment (ESA) of the site in September 2016. The objective of the Phase I ESA was to conduct a site inspection and collate site historical information in order to establish whether activities have occurred on site which may have resulted in contamination of land. The findings of the report were based on a site inspection conducted on the 6 September 2016 and a review of site historical information.

The following potential contamination issues were observed during site inspection:

 ACM in moderate to poor condition and peeling paint was observed in several structures on site:



- Portions of the site appeared to have been filled and levelled relative to the surrounding topography;
- Small soil stockpiles were also observed across the site at the time of the inspection;
- The presence of a drum labelled 'grease' as well as two 205 L drums suggested vehicle / equipment maintenance activities were possibly undertaken in the large truck shed in the central portion of the property; and
- A possible domestic vegetable garden was observed on site with potential for land contamination arising from the application of pesticides. Evidence of herbicide use was also noted at to control grass along fence lines.

The review of historical data indicated the following potential contamination issues:

• The aerial photograph review and site inspection identified possible market gardening in the northeast corner and a vegetable garden in the central portion of the site.

Results of the Phase I ESA indicated that the site and surrounds have a history of rural / residential use with minor commercial activities. While no market garden activities were observed in historical aerial photos, surrounding land had a history of market gardening and as such, market garden activities on the site could be ruled out. Potential sources of contamination noted onsite included:

- Hazardous building materials;
- Fill of unknown origin;
- Vehicle / equipment maintenance; and
- Application of pesticides and herbicides.

Given the site history Geo-Logix concluded there is a potential for land contamination at the site and further investigation would be 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 for the site.

Hazardous Building Materials

ACM in moderate to poor condition and peeling paint was observed in several structures on site. Historical aerial imagery also indicates a building was demolished in the central portion of the site between 1955 and 1965.

Given the age of the buildings, there is potential for land contamination arising from hazardous building materials Contaminants of potential concern (COPC) including lead-based paint and asbestos. Several fragments of bonded ACM were identified on or within the ground surface in several locations.

Fill of Unknown Origin

Portions of the site appears to have been filled and levelled relative to the surrounding topography. It is possible cut and fill activities occurred however it is unknown if fill was imported. Small soil stockpiles were also observed across the site at the time of the inspection. COPC associated with fill of unknown origin comprise:

Total Recoverable Hydrocarbons (TRH);



- Benzene, Toluene, Ethylbenzene and Xylenes (BTEX);
- Polycyclic Aromatic Hydrocarbons (PAHs);
- Organochlorine Pesticides (OCPs);
- Polychlorinated Biphenyls (PCBs);
- Heavy metals; and
- Asbestos

Vehicle / Equipment Maintenance

The presence of a drum labelled 'grease' as well as two 205 L drums suggest vehicle / equipment maintenance activities were possibly undertaken in the large truck shed in the central portion of the property. COPC commonly associated these mechanical maintenance and vehicle washing activities include:

- TRH and BTEX;
- PAHs;
- · Heavy metals; and
- Volatile Organic Compounds (VOCs).

Application of Pesticides / Herbicides

The aerial photograph review and site inspection identified possible market gardening in the northeast corner and a vegetable garden in the central portion of the site. While no other evidence of market garden activities was observed, it could not be ruled for other areas of the site, particularly given the regional history of market gardening. COPC associated with the application of pesticides and herbicides include:

- Heavy metals; and
- OCPs.

5. DATA OUALITY 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 the proposed residential development.

To achieve the objective, Geo-Logix has adopted the seven step Data Quality Objective (DQO) process as described in AS 4482.1-2005, US EPA (2000), DEC (2006) and NEPM (2013).

Step 1: State the problem.

The subject site may be contaminated as a result of previous and current land use and activities. Issues of potential environmental concern for the site include:

- Contamination of shallow soils from deterioration of current structures and demolition of former structures:
- · Contamination to soil from the fill of an unknown origin; and
- Contamination of shallow soils from vehicle and equipment maintenance.
- Contamination of the shallow soils from application of pesticides and possible market garden activities;



Step 2: Identify the decision.

Contamination has not been identified in soil at concentrations above residential land use standards and the site is considered suitable for the proposed residential subdivision.

Step 3: Identify inputs into the decision.

- Identification of issues of potential environmental concern;
- Appropriate identification of COPCs;
- Systematic soil sampling and analysis program of shallow soils across the site at a frequency consistent with minimum sampling requirements as defined in NSW EPA (1995);
- A targeted sampling and analysis program of shallow soils in the vicinity of identified potential contamination point sources;
- 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 (Residential).

Step 4: Define the boundaries of the site.

The project boundary is defined as the area within the site boundary to a maximum depth of intrusive works at approximately 1.0mbg.

Step 5: Develop a decision rule.

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

- The 95% UCL concentration of any COPC does not exceed the assessment criteria;
- No sample exceeds 250% of the assessment criteria; and
- The standard deviation of results must be less than 50% of the assessment criteria.

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

COPC do not exist in soil at concentrations in excess of the assessment criteria.

The results of systematic and targeted soil samples must comply with the following decision rule regarding asbestos:

 ACM was not visually observed on the site surface or in the subsurface at soil sampling locations.

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. 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, soil vapour 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.

6.1 Soil Assessment Criteria

The following soil assessment criteria were adopted for the investigation.

NEPM Health Based Investigation Levels (HILs A)

HILs are Tier 1 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 A soil assessment criteria were adopted on the basis the proposed site use is residential.

NEPM Health Screening Levels (HSLs A)

HSLs are Tier 1 risk based generic soil assessment criteria used for the assessment of potential risks to human health from chronic inhalation exposure of petroleum vapour emanating off 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 A soil assessment criteria were adopted.

NEPM Management Limits – Residential

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. Residential, parkland and public open space limits are adopted based on the proposed residential land use.

NEPM (1999) Amendment 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. The presence of asbestos contamination was not known at the time of investigation therefore its investigation was of a preliminary nature. Given the preliminary assessment the following assessment criteria was adopted:

• No visible ACM on site surface or in the subsurface at soil sampling locations.



Ecological Assessment

Ecological Investigation Levels (EILs) are used for the protection of terrestrial ecosystems and have been derived for common contaminants in soil based on a species sensitivity distribution model developed for Australian conditions. EILs apply principally to contaminants in the top 2 m of soil which corresponds to the root zone and habitation zone of many species. EILs have been developed for the following contaminants:

- Arsenic (As);
- Copper (Cu);
- Chromium III (CrIII);
- Nickel (Ni);
- Lead (Pb);
- Zinc (Zn)
- DDT; and
- · Naphthalene.

EILs depend on specific soil physicochemical properties and land use scenarios. The protection levels for generic land use settings are:

- 99% for areas of ecological significance;
- 80% for urban residential areas and public open space; and
- 60% for commercial and industrial uses.

80% protection was adopted on the basis the proposed land use is residential. Two soil samples (S4/0.2-0.3 and S23/0.0-0.15) were sent to the laboratory for analysis of cation exchange capacity (CEC), pH and clay content to determine appropriate EILs for site soils.

A summary of EILs adopted for site and rationale are detailed below.

Contaminant	EIL (mg/kg)	Rationale
As	100	Value for urban residential and public open space irrespective of physicochemical properties.
Cu	150	Value for urban residential and public open space based on an average CEC of 12.1, pH of 5.5 and iron content of 2.55 %
CrIII	460	Value for urban residential and public open space based on an average clay content of 15 % and iron content of 2.55 %
Ni	190	Value for urban residential and public open space based on an average CEC of 12.1 and iron content of 2.55 %
Pb	1100	Value for urban residential and public open space without background concentrations
Zn	350	Value for urban residential and public open space based on an average CEC of 12.1, pH of 5.5 and iron content of 2.55 %
DDT	180	Value for urban residential and public open space irrespective of physicochemical
Naphthalene	170	properties.



In addition, Ecological Screening Levels (ESLs) have been developed. The ESLs are based on a review of Canadian guidance for petroleum hydrocarbons contamination in coarse and fine grained soil types and application of the Australian methodology. A summary of ESLs adopted for site and rationale are detailed below.

Contaminant	EIL (mg/kg)	Rationale
F1 C6-C10	180	
F2 C10-C16	120	
F3 C16-C34	300	
F4 C34-C40	2800	
Benzene	50	Value for urban residential/public open space in coarse grained soil.
Toluene	85	
Ethylbenzene	70	
Xylenes (Total)	105	
Benzo(a)pyrene	0.7	

7. INVESTIGATION METHODOLOGIES

Geo-Logix conducted environmental investigations of the site on 4, 5 and 6 October 2016. Sample locations are presented in Figure 3. The investigation methodology undertaken for each issue of potential environmental concern is presented below.

Market Garden Activities

The aerial photograph review and site inspection identified possible market gardening in the northeast corner and a vegetable garden in the central portion of the site. While no other evidence of market garden activities was observed, it cannot be ruled out for other areas of the site, particularly given the regional history of market gardening. A systematic based sampling plan was undertaken consisting of the following scope of works:

- Sampling at 26 locations (S1 to S26) on a 24 m spaced sampling grid. The sample frequency is sufficient to detect a circular contamination hotspot with a diameter of 28.32m or greater at a 95 % statistical degree of certainty. The sampling grid meets minimum sampling standards for the site area (12,140 m²) as per NSW EPA (1995); and
- In areas of suspected market gardening, native soil samples (S21, S23, S25 and S26) were analysed for OCPs and heavy metals. Samples S25 and S26 were composited (composite sample C1) in the laboratory from two primary systematic soil samples for analysis of OCPs and heavy metals.

Former and Current Sheds and Corrugated ACM Fence

Sampling and analysis of current and former sheds, areas where fragments of suspected ACM were observed, and the corrugated ACM fence included:

 Collection of one surface soil sample (SS1 to SS8) from the footprint of each of the current and former sheds (eight in total) for laboratory analysis of asbestos and lead; and



 Collection of six surface soils samples (AF1 to AF6) from the base of the corrugated ACM fence. Sample collection targeted areas of damage and were analysed for asbestos.

Fill of Unknown Origin

Portions of the site appear to have been filled and leveled relative to the surrounding topography. The origin of the fill at the site is unknown. To assess fill material at the site the following scope of work was undertaken:

- Collection of a fill samples at locations (S1 to S20, S22, S24 to S26) where grid based samples fell within the filled areas;
- Collection of a soil sample from fill material within stockpile identified at grid based location \$18; and
- Laboratory analysis of soil samples for fill related COPC including TRH, BTEXN, PAHs, heavy metals, OCPs and asbestos.

A stockpile identified in the Phase 1 in the southern portion of the site was observed to be comprised of vegetation and as such no soil sample was collected from the stockpile.

Vehicle / Equipment Maintenance

A truck maintenance shed is located in the central western portion of the property. The scope of works completed to assess areas of areas of vehicle / equipment maintenance included:

- Collection of two surface soil samples (B1 and B2) from the edge of the slab;
- Concrete coring and collection of one soil sample (BH1) from beneath the slab; and
- Laboratory analysis of soil samples for vehicle maintenance related COPC including TRH, BTEX, VOCs, PAHs and heavy metals.

7.1 Soil Sampling Methodology

Shallow soil sampling at locations S1 to S20, S22, S24 to S26 and B1 and B2 were completed as shallow test pits using a 5.5 tonne excavator. Testpits were completed to a maximum depth of approximately 1.0 mbg. Soil samples were collected directly from the bucket of the excavator.

Shallow soil samples S21, S23 and SS1 to SS8 were collected using a shovel to depths of approximately 0.15 mbg. Care was taken to ensure soil samples were collected from soils that had not come into contact with the shovel blade.

Boring BH1 was completed using a hand auger to a depth of approximately 0.3 mbg. Soil samples were collected directly from the hand auger.

Soil samples were placed in laboratory prepared jars, labelled and placed on ice in an esky for transport under chain of custody to a NATA accredited laboratory for the analysis of COPC. Borelogs where fill was encountered and soil sample descriptions are presented in Attachment E.

7.2 Quality Assurance

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 S11/0.0-0.2	Soil	1 in 20 samples
TS1	Field triplicate of S11/0.0-0.2	Soil	1 in 20 samples
DS2	Field duplicate of S23/0.0-0.15	Soil	1 in 20 samples
TS2	Field triplicate of S23/0.0-0.15	Soil	1 in 20 samples
R1	Soil sampling equipment rinsate	Water	1 per day
R2	Soil sampling equipment rinsate	Water	1 per day
R3	Soil sampling equipment rinsate	Water	1 per day

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.

8. INVESTIGATION RESULTS

8.1 Site Geology

Intrusive investigations identified variable fill soils across much of the property. Fill in the southern portion of the site (S1 to S12) was encountered to a maximum depth of 0.85 mbg and consisted of variable silty clays and gravelly silt with anthropogenic material including concrete, asphalt, roof tiles and brick. Fill typically overlaid native silts and lean clays from depths of 0.05 mbg to 0.85 mbg.

A sewerage transpiration pit was identified at sample location S3 which was filled with crushed roof tiles. Fragments of ACM was identified at sample location S4 in shallow fill as well as at sample location S5 in the top 0.05 m of the soil profile. ACM at S5 appeared associated with scattered fragments of ACM observed within and surrounding the nearby shed.

Fill within the central portion of the site (S12 to S20) was encountered to depths between 0.15 to 0.6 mbg. Fill comprised silty clays with crushed sandstone, shales, road base and coal wash. Fill overlaid native silts and heavy clays. In addition to fragments of ACM observed on the ground surface to the north of the truck shed, a fragment of ACM was also identified in shallow fill at sample location S13 towards the rear of the truck shed. Numerous bonded ACM fragments were encountered at sample location S16, associated with fill material surrounding the tennis court. Further exploratory test pits surrounding the tennis court also identified a fragment of bonded ACM in fill between 0.3 and 0.4 mbg. Numerous fragments were also encountered in shallow fill (0.0-0.15 mbg) at sample location S19.

Fill surrounding the dwelling in the northern portion of the site was encountered to a maximum depth of 1.0 mbg and consisted of sandy gravelly clays. Fill was underlain by silts and heavy clays. Fill was not encountered in the north-western corner of the site at S21 which was characterised sandy silt topsoil. Crushed sandstone fill was observed in the location of a former driveway (S22 and S24) to a maximum depth of 0.3 mbg.

8.2 Site Hydrogeology

Groundwater was not encountered during intrusive investigations.



8.3 Soil Analytical Results

Soil analytical results are summarised in Tables 1 through 6. Laboratory reports are presented in Attachment F.

TRH and BTEX

Petroleum hydrocarbons ($C_{16} - C_{34}$) were detected at concentrations above Residential ESLs in shallow soil samples collected at locations S13, S17, B1 and B2. Petroleum hydrocarbons (F2 fraction) exceeded residential HSLs in shallow soil at B1 (Table 1).

Petroleum hydrocarbons were not detected at concentrations above assessment criteria in all other soil samples analysed.

VOCs

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

PAHs

Benzo(a)pyrene was detected at concentrations marginally above Residential ESLs in the shallow soil samples collected at locations S2, S9, S22.

PAHs were not detected in soil at concentrations above assessment criteria in remaining samples analysed (Table 3).

Metals

Copper was detected at concentrations above Residential EILs in the shallow soil samples collected at locations S9, S17 (Table 4).

Lead was detected at concentrations above Residential HILs in the shallow soil samples collected at locations SS4.

Zinc was detected at concentrations above Residential EILs in the shallow soil sample collected at location B1.

Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc were not detected at concentrations greater than the assessment criteria in remaining soil samples analysed.

OCPs

OCPs were not identified at concentrations above assessment criteria in all samples analysed (Table 5).

Asbestos

Asbestos was detected as small fragments of weathered fibre cement fragments in the shallow soil sample collected from location SS1 (Table 6).

Asbestos was not identified by the laboratory in soil at remaining sample locations.

Asbestos in the form of bonded ACM fragments were visually identified within fill or on site surfaces at locations SS1, S4, S5, S13, S16 and S19.



8.4 Soil Analytical Statistical Summary

Statistical analysis of grid based soil sample analytical results has been undertaken where COPC were detected at concentrations greater than the laboratory reporting limits. Statistical summary is presented in the following table. Statistical computation output sheets are presented in Attachment G.

COPC	# Sample	# Sample Detections	Residential Assessment Criteria (mg/kg)	Min (mg/kg)	Max (mg/kg)	Mean	95% UCL	Standard Deviation
Arsenic	26	10	100	<2	5.3	3.18	2.75	1.037
Cadmium	26	2	20	<0.4	1.4	1.0	0.538	0.566
Chromium	26	25	100	8.7	58	26.23	30.26	14.14
Copper*	25	18	150	7.9	200	29.88	61.91	36.74
Lead	26	18	300	8.2	180	41.85	52.9	34.99
Mercury	26	5	40	<0.05	0.2	0.11	0.0751	0.0696
Nickel	26	24	190	7.2	50	19.18	21.97	11.35
Zinc	26	20	350	7.5	150	56.06	75.27	37.69
Benz(a)anthracene	24	3	NA	<0.05	1.2	0.867	0.609	0.289
Benzo(a)pyrene	24	3	0.7	<0.5	1.2	0.933	0.622	0.231
Benzo(b&j)fluoranthene	24	3	NA	<0.5	1.1	0.867	0.606	0.867
Benzo(ghi)perylene	24	3	NA	<0.5	1.3	0.933	0.627	0.321
Benzo(k)fluoranthene	24	3	NA	<0.5	1.1	0.9	0.611	0.173
Chrysene	24	3	NA	<0.5	1.4	1	0.646	0.361
Fluoranthene	24	3	NA	<0.5	3.3	2.225	1.076	0.885
Phenanthrene	24	4	NA	<0.5	1.4	1.075	0.689	0.25
Pyrene	24	4	NA	<0.5	1.3	2	0.995	0.658
Total PAHs	24	5	300	<0.5	12.6	7.82	3.463	7.82
TRH C ₁₀ – C ₁₆	24	3	110	<50	110	84	59.98	25.06
TRH C ₁₆ – C ₃₄ *	23	6	300	<100	540	235	173	162.6
TRH C ₃₄ – C ₄₀	24	2	2800	<100	1200	710	427.8	693

^{*}One or more grid based samples removed from data set if exceeding assessment criteria by 250%

ProUCL data output is presented in Attachment G.

With the exception of copper at one location (discussed in section 10) remaining COPC were not detected at concentrations greater than the assessment criteria in all grid based soil samples collected from across the site. In addition the sample data for all grid based samples collected also meets the following qualifiers:

^{**}Only one distinct value detected. ProUCL was unable to process the data set. Mean values calculated using half laboratory reporting limits (LOR) for all non-detects.



- 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.

8.5 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:

- Chromium, copper, lead and nickel in soil triplicate pair S11/0.0-0.2 and TS1; and
- Chromium, lead and nickel in soil triplicate pair \$23/0.0-0.15 and T\$2.

The RPD outliers are attributed to the low levels of metals (<5 time LOR) and heterogeneity of the soils.

COPC were not detected at concentrations above laboratory reporting limits in the rinsate samples collected from the hand auger indicating decontamination procedures were adequate to prevent cross contamination (Tables 7 to 9).

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

Report #	Analysis Within Holding Time	Surrog Recov		Lab. Duplicate RPD %	Lab Matrix Spike Recovery	Lab. Control Sample	Lab Method Blank	
518931-S	✓	✓		×	✓	✓	✓	
519056-S	✓	✓		×	×	✓	✓	
	√ =	Pass X =	Fail -=	not required * = re	fer to report text	1		
Quality Assurance Cri	teria		Quality Control Criteria					
Holding Times			Accura	асу				
VOCs 14 days soil / wa	VOCs 14 days soil / water			ate, matrix spike, cont	rol sample 70-130% a	and 30-130% for Phe	nols.	
SVOCs 7 days water, 1	SVOCs 7 days water, 14 days soil			ate recovery 50-150%	and 20-130% for Phe	nols.		
Pesticides 7 days water	Pesticides 7 days water, 14 days soil		Precisi	ecision				
Metals 6 months, Mer	cury 28 days		Method Blank Not detected					
			Duplic	ate - No limit (<10xEQI	_), 0-50% (10-20xEQL)	, 0-200% (>20xEQL)		

The laboratory QA/QC was within the acceptable limits with the exception of the following:

Report # 518931-S

The laboratory duplicate RPD% exceeded acceptance criteria of 30 - 50% for arsenic, chromium and lead however was accepted under the laboratory QC guidelines as the results were <10 times the LOR.

Report # 519056-S

The laboratory duplicate RPD% exceeded acceptance criteria of 30 - 50% for benzo(g.h.i)perylene and phenanthrene however was accepted under the laboratory QC guidelines as the results were <10 times the LOR.



The matrix spike recovery was outside of the recommended acceptance criteria for benz(a)anthracene, benzo(a)pyrene, benzo(b&j)fluoranthene, chrysene, fluoranthene, phenanthrene and pyrene. An acceptable recovery was obtained for the laboratory control sample indicating a sample matrix interference.

Geo-Logix accepts the integrity of the analytical data.

9. DISCUSSION

Petroleum Impact to Soils

Petroleum hydrocarbons ($C_{16} - C_{34}$ fraction) were detected at concentrations exceeding 250% of residential ESLs in shallow soil sample collected at locations S13, B1 and B2 therefore constitutes a contamination hotspot. Petroleum hydrocarbons were also detected at concentrations exceeding, but below 250% of residential ESLs at S17. Petroleum hydrocarbons (F2 fraction) were detected at concentrations slightly above residential HSLs at sample location B1.

Petroleum hydrocarbons in the F2 fraction identified in soil at sample location B1 requires further assessment to determine the extent and magnitude of impact. From this the requirement for remediation should be evaluated.

The extent of petroleum in fill at concentrations greater than ESLs requires assessment to determine the requirement for remediation.

Asbestos Impact to Soils

Asbestos in the form of weathered fibre cement fragments was detected in a shallow soil sample collected from the floor of the shed in the western portion of the site (SS1). Due to the size of the fragments the asbestos is within the range of asbestos fines (AF) and is therefore considered friable asbestos. Remediation of friable asbestos within the shed would be required for the site to be considered suitable for the proposed residential development. The extent of asbestos impact to soils in the vicinity of SS1 has not been determined.

Asbestos was also visually identified in the form of bonded ACM at nearby location S5 in the shallow surface soils (0.0-0.1m). ACM at S5 appeared associated with scattered fragments of ACM observed within the nearby shed (Figure 4).

Scattered fragments of ACM were also visually identified on the asphalt area to the immediate north of the shed in the western portion of the site and within shallow fill at the following locations:

- S4 in the south eastern corner of the site;
- S13 towards the rear of the truck shed in the western portion of the site;
- S16 in the central eastern portion; and
- S19 in the central northern portion of the site.

The fragments of ACM appear to be either associated with areas of filling or nearby sheds. Further assessment of the above areas is required to determine potential remediation / management requirements.



Metals Impact to Soils

Lead was detected at concentrations marginally above Residential HILs in the shallow soil sample collected at location SS4 in the vicinity of the shed in the central portion of the site. Lead impact to shallow soils is likely the result of lead based paint from the shed. The results of nearby soil samples demonstrate the lead is an isolated one off occurrence. Additionally, the lead is not representative of a contamination hotspot as the concentration is less than 250% of the HIL. No further assessment or remediation is warranted.

Copper and zinc were detected at concentrations marginally above residential EILs at a number of other locations across the site. The marginal exceedances of the grid based samples however is not considered to require remediation given the following statistical findings for grid based results:

- 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.

Copper was detected at a concentration greater than 250% of the EILs but well below human health criteria (HILs) at sample location S17 located in the vicinity of the shed located in the central western portion of the site. The shed has historically been used for vehicle and equipment maintenance. Copper was not detected at concentrations above the EILs in all surrounding samples indicating the copper at S17 is likely a one-off isolated occurrence and does represent contamination that may result in measurable impact on environmental health.

10. CONCLUSIONS

Results of the assessment identified the soil contamination issues at the site:

- Petroleum hydrocarbon impact detected at concentrations above residential assessment criteria in shallow soils in the vicinity of the shed located in the western portion of the site;
- Asbestos was detected in the form of weathered fragments and as bonded ACM in shallow soil in western portions of the site; and
- Asbestos detected in the form of bonded ACM in shallow fill in the south eastern, eastern, central northern and western portions of the site;

Remediation and / or management of the above is required for the site to be considered suitable for the proposed residential landuse. Further investigation is recommended to define contamination extents and remedial requirements.



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 6 September and 5 to 6 October 2016.

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

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

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

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

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



12. REFERENCES

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

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

Geo-Logix (2016) Phase 1 Environment Site Assessment Report, 230 Sixth Avenue, Austral NSW. Report Ref 1601067Rpt02FinalV01_12July16.

Geological Survey of New South Wales (1991), Penrith 1:100,000 Geological Series Sheet 9030, NSW Department of Mineral Resources, Sydney.

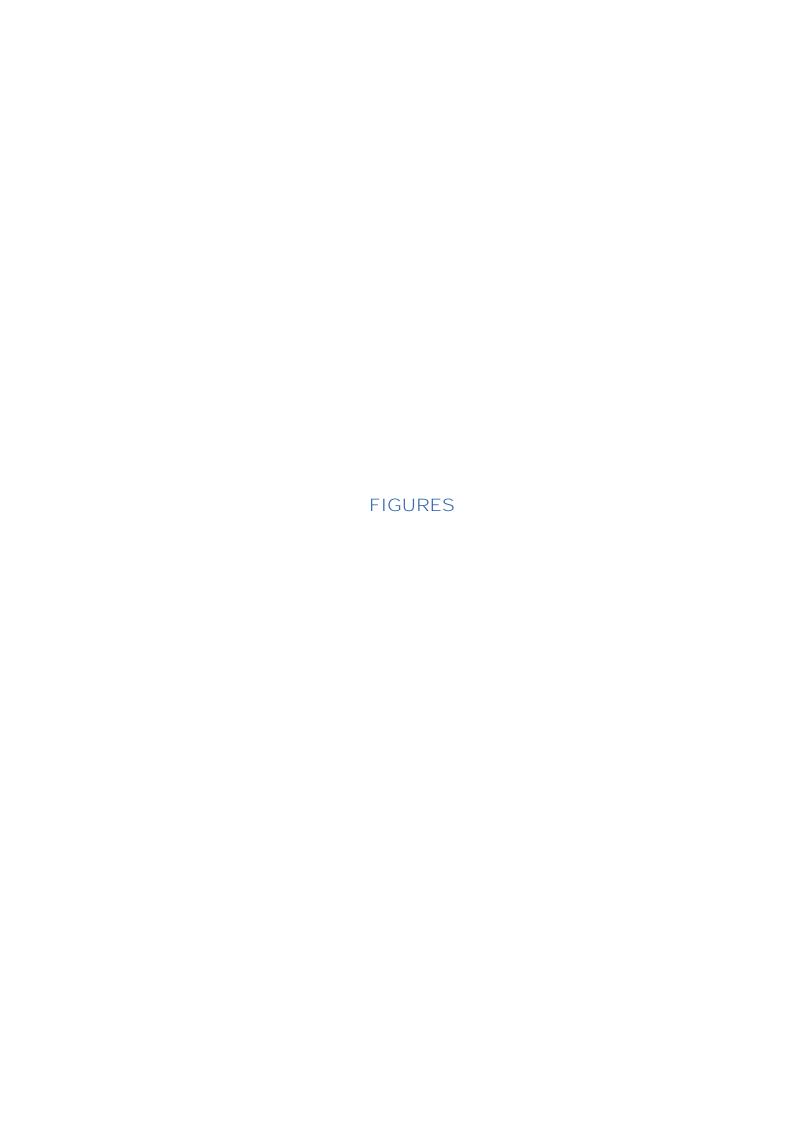
Google Earth (2016). Austral, NSW.

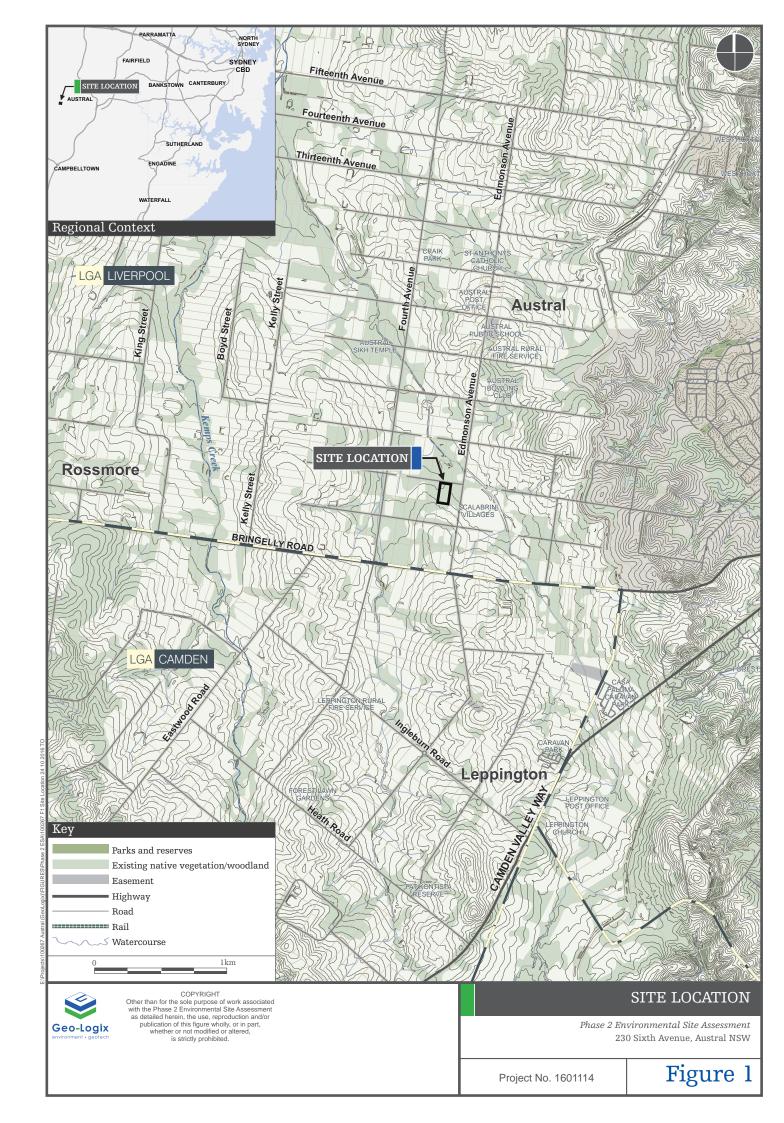
NEPC (1999) Amended National Environmental Protection Measure (2013), National Environmental Protection Council.

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

NSW Government (2016) NSW Groundwater Works Reports.

US EPA (2000) Data Quality Objectives Process for Hazardous Wastes Site Investigations EPAQA/G-4HW, United States Environmental Protection Agency.









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Phase 2 Environmental Site Assessment 230 Sixth Avenue, Austral NSW

Project No. 1601114





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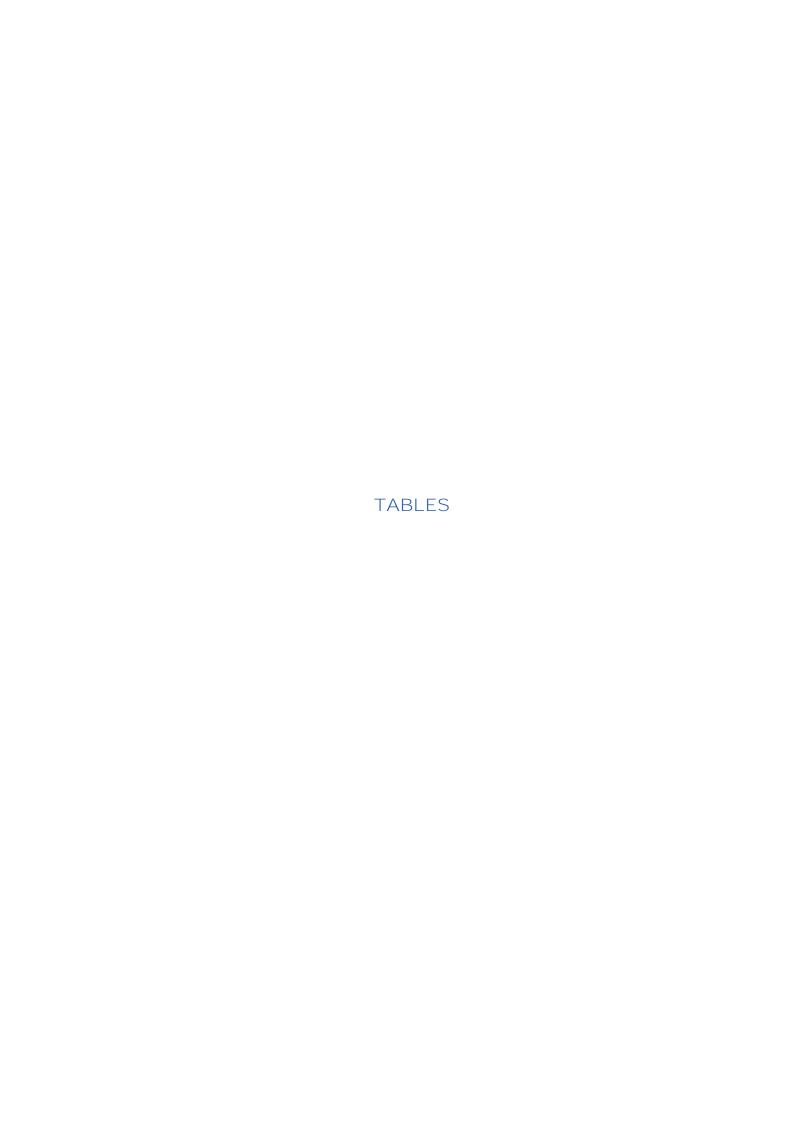




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ASBESTOS LOCATION MAP

Phase 2 Environmental Site Assessment 230 Sixth Avenue, Austral NSW





Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
	HSLs - A/B	Management	ESLs	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	Sand	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Coarse Soll	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
TRH C ₆ -C ₁₀	-	700	-		< 20	< 20	< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	< 20	< 20	< 20
TRH >C10-C16	-	1,000	-		< 50	< 50	< 50	< 50	< 50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	110	-	120		< 50	< 50	< 50	< 50	< 50
TRH >C ₁₆ -C ₃₄	-	2,500	300		< 100	180	< 100	< 100	< 100
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		< 100	< 100	< 100	< 100	< 100
Benzene	0.5	-	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	160	-	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	3	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	Sand	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Coarse Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
TRH C ₆ -C ₁₀	-	700	-		< 20	< 20	< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	< 20	< 20	< 20
TRH >C ₁₀ -C ₁₆	-	1,000	-		60	< 50	< 50	< 50	< 50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	110	-	120		60	< 50	< 50	< 50	< 50
TRH >C ₁₆ -C ₃₄	-	2,500	300		< 100	< 100	< 100	120	110
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		< 100	< 100	< 100	< 100	< 100
Benzene	0.5	-	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	160	-	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	3	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S11/0.0-0.2	DS1	RPD_TS1	TS1	RPD_DS1
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	-	-	-	-
	Sand	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Coarse Soil	Date	4/10/2016	4/10/2016	-	4/10/2016	-
TRH C ₆ -C ₁₀	-	700	-		< 20	< 20	nc	< 20	пс
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	nc	< 20	пс
TRH >C ₁₀ -C ₁₆	-	1,000	-		< 50	< 50	nc	< 50	пс
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	110	-	120		< 50	< 50	nc	< 50	nc
TRH >C ₁₆ -C ₃₄	-	2,500	300		< 100	100	nc	< 100	nc
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		< 100	< 100	nc	< 100	nc
Benzene	0.5	-	50		< 0.1	< 0.1	nc	< 0.1	nc
Toluene	160	-	85		< 0.1	< 0.1	nc	< 0.1	пс
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	nc	< 0.3	пс
Naphthalene	3	-	-		< 0.5	< 0.5	nc	< 0.5	nc

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	Sand	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Coarse Soil	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
TRH C6- C 10	-	700	-		< 20	< 20	< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	< 20	< 20	< 20
TRH >C ₁₀ -C ₁₆	-	1,000	-		< 50	110	82	< 50	< 50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	110	-	120		< 50	110	82	< 50	< 50
TRH >C ₁₆ -C ₃₄	-	2,500	300		< 100	3,500	290	< 100	< 100
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		< 100	1,200	< 100	< 100	< 100
Benzene	0.5	-	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	160	-	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	3	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1 HSLs - A/B Sand	Criteria 2 Management Limits	Criteria 3 ESLs Urban Res	Sample ID Depth (m) Type	S17/0.0-0.2 0.0-0.2	\$18/0.35-0.55 0.35-0.55 -	\$19/0.0-0.15 0.0-0.15 -	\$20/0.0-0.15 0.0-0.15 -	S22/0.15-0.35 0.15-0.35
	0 to <1 m	Res/Park	Coarse Soil	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	4/10/2016
TRH C ₆ -C ₁₀	-	700	-		< 20	< 20	< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	< 20	< 20	< 20
TRH >C ₁₀ -C ₁₆	-	1,000	-		< 50	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2)	110	-	120		< 50	< 50	< 50	< 50	< 50
TRH >C ₁₆ -C ₃₄	-	2,500	300		540	< 100	< 100	< 100	170
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		220	< 100	< 100	< 100	< 100
Benzene	0.5	-	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	160	-	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	3	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	BH1/0.15-0.3	B1/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	0.4-0.6	0.3-0.5	0.15-0.3	0.0-0.15
	Sand	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Coarse Soil	Date	4/10/2016	4/10/2016	4/10/2016	6/10/2016	6/10/2016
TRH C6 -C 10	-	700	-		< 20	< 20	< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	< 20	< 20	< 20	< 20
TRH >C ₁₀ -C ₁₆	-	1,000	-		< 50	< 50	< 50	< 50	170
TRH >C10-C16 less Naphthalene (F2)	110	-	120		< 50	< 50	< 50	< 50	170
TRH >C ₁₆ -C ₃₄	-	2,500	300		< 100	< 100	< 100	< 100	1,900
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		< 100	< 100	< 100	< 100	620
Benzene	0.5	-	50		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	160	-	85		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	55	-	70		< 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	40	-	105		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	3	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue. Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	B2/0.0-0.15	
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	
	Sand	Limits	Urban Res	Туре	-	
	0 to <1 m	Res/Park	Coarse Soil	Date	6/10/2016	
TRH C ₆ -C ₁₀	-	700	-		< 20	
TRH C ₆ -C ₁₀ less BTEX (F1)	45	-	180		< 20	
TRH >C ₁₀ -C ₁₆	-	1,000	-		< 50	
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	110	-	120		< 50	
TRH >C ₁₆ -C ₃₄	-	2,500	300		1,400	
TRH >C ₃₄ -C ₄₀	-	10,000	2,800		250	
Benzene	0.5	-	50		< 0.1	
Toluene	160	-	85		< 0.1	
Ethylbenzene	55	-	70		< 0.1	
m&p-Xylenes	-	-	-		< 0.2	
o-Xylene	-	-	-		< 0.1	
Xylenes - Total	40	-	105		< 0.3	
Naphthalene	3	-	-		< 0.5	

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, Sand 0 to <1m. Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, coarse material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, coarse soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
	HSLs - A/B	Management	ESLs	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	Silt	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soll	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
1.1-Dichloroethane	-	-	-						
.1-Dichloroethene	-	-	-						
.1.1-Trichloroethane	-	-	-						
.1.1.2-Tetrachloroethane	-	-	-						
.1.2-Trichloroethane	-	-	-						
.1.2.2-Tetrachloroethane	-	-	-						
.2-Dibromoethane	-	-	=						
.2-Dichlorobenzene	-	-	-						
.2-Dichloroethane	-	-	-						
.2-Dichloropropane	-	-	-						
.2.3-Trichloropropane	-	-	-						
.2.4-Trimethylbenzene	-	-	-						
.3-Dichlorobenzene	-	-	-						
.3-Dichloropropane	-	-	-						
.3.5-Trimethylbenzene	-	-	-						
.4-Dichlorobenzene	-	-	-						
-Butanone (MEK)	-	-	-						
-Propanone (Acetone)	-	-	-						
-Chlorotoluene	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
	HSLs - A/B	Management	ESLs	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
4-Methyl-2-pentanone (MIBK)	-	-	-						
Allyl chloride	-	-	-						
Benzene	0.6	-	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	-	-	-						
Bromochloromethane	-	-	-						
Bromodichloromethane	-	-	-						
Bromoform	-	-	-						
Bromomethane	-	-	-						
Carbon disulfide	-	-	-						
Carbon Tetrachloride	-	-	-						
Chlorobenzene	-	-	-						
Chloroethane	-	-	-						
Chloroform	-	-	-						
Chloromethane	-	-	-						
sis-1.2-Dichloroethene	-	-	-						
sis-1.3-Dichloropropene	-	-	-						
Dibromochloromethane	-	-	-						
Dibromomethane	-	-	-						
Dichlorodifluoromethane	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
	HSLs - A/B	Management	ESLs	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Ethylbenzene	NL	-	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	-	-	-						
Isopropyl benzene (Cumene)	-	-	-						
m&p-Xylenes	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	-	-	-						
o-Xylene	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	-	-	-						
Tetrachloroethene	-	-	-						
Toluene	390	-	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	-	-	-						
trans-1.3-Dichloropropene	-	-	-						
Trichloroethene	-	-	-						
Trichlorofluoromethane	-	-	-						
Vinyl chloride	-	-	-						
Xylenes - Total	95	-	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
.1-Dichloroethane	-	-	-						
.1-Dichloroethene	-	-	-						
.1.1-Trichloroethane	-	-	-						
.1.1.2-Tetrachloroethane	-	-	-						
.1.2-Trichloroethane	-	-	-						
.1.2.2-Tetrachloroethane	-	-	-						
.2-Dibromoethane	-	-	-						
.2-Dichlorobenzene	-	-	-						
.2-Dichloroethane	-	-	-						
.2-Dichloropropane	-	-	-						
.2.3-Trichloropropane	-	-	-						
.2.4-Trimethylbenzene	-	-	-						
.3-Dichlorobenzene	-	-	-						
.3-Dichloropropane	-	-	-						
.3.5-Trimethylbenzene	-	-	-						
.4-Dichlorobenzene	-	-	-						
-Butanone (MEK)	-	-	-						
-Propanone (Acetone)	-	-	-						
-Chlorotoluene	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

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Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
4-Methyl-2-pentanone (MIBK)	-	-	-						
Allyl chloride	-	-	-						
Benzene	0.6	-	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	-	-	-						
Bromochloromethane	-	-	-						
Bromodichloromethane	-	-	-						
Bromoform	-	-	-						
Bromomethane	-	-	-						
Carbon disulfide	-	-	-						
Carbon Tetrachloride	-	-	-						
Chlorobenzene	-	-	-						
Chloroethane	-	-	-						
Chloroform	-	-	-						
Chloromethane	-	-	-						
cis-1.2-Dichloroethene	-	-	-						
cis-1.3-Dichloropropene	-	-	-						
Dibromochloromethane	-	-	-						
Dibromomethane	-	-	-						
Dichlorodifluoromethane	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

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Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Ethylbenzene	NL	-	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	-	-	-						
Isopropyl benzene (Cumene)	-	-	-						
m&p-Xylenes	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	-	-	-						
o-Xylene	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	-	-	-						
Tetrachloroethene	-	-	-						
Toluene	390	-	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	-	-	-						
trans-1.3-Dichloropropene	-	-	-						
Trichloroethene	-	-	-						
Trichlorofluoromethane	-	-	-						
Vinyl chloride	-	-	-						
Xylenes - Total	95	-	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S11/0.0-0.2	DS1	RPD_TS1	TS1	RPD_DS
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	-	-	-	-
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	-	4/10/2016	-
.1-Dichloroethane	-	-	-						
.1-Dichloroethene	-	-	-						
.1.1-Trichloroethane	-	-	-						
.1.1.2-Tetrachloroethane	-	-	-						
.1.2-Trichloroethane	-	-	-						
.1.2.2-Tetrachloroethane	-	-	-						
.2-Dibromoethane	-	-	-						
.2-Dichlorobenzene	-	-	-						
.2-Dichloroethane	-	-	-						
.2-Dichloropropane	-	-	-						
.2.3-Trichloropropane	-	-	-						
.2.4-Trimethylbenzene	-	-	-						
.3-Dichlorobenzene	-	-	-						
.3-Dichloropropane	-	-	-						
.3.5-Trimethylbenzene	-	-	-						
.4-Dichlorobenzene	-	-	-						
-Butanone (MEK)	-	-	-						
-Propanone (Acetone)	-	-	-						
-Chlorotoluene	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S11/0.0-0.2	DS1	RPD_TS1	TS1	RPD_DS
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	-	-	-	-
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soll	Date	4/10/2016	4/10/2016	-	4/10/2016	-
4-Methyl-2-pentanone (MIBK)	-	-	-						
Allyl chloride	-	-	-						
Benzene	0.6	-	65		< 0.1	< 0.1	пс	< 0.1	nc
Bromobenzene	-	-	-						
Bromochloromethane	-	-	-						
Bromodichloromethane	-	-	-						
Bromoform	-	-	-						
Bromomethane	-	-	-						
Carbon disulfide	-	-	-						
Carbon Tetrachloride	-	-	-						
Chlorobenzene	-	-	-						
Chloroethane	-	-	-						
Chloroform	-	-	-						
Chloromethane	-	-	-						
is-1.2-Dichloroethene	-	-	-						
is-1.3-Dichloropropene	-	-	-						
Dibromochloromethane	-	-	-						
Dibromomethane	-	-	-						
Dichlorodifluoromethane	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S11/0.0-0.2	DS1	RPD_TS1	TS1	RPD_DS1
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	-	-	-	-
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	-	4/10/2016	-
Ethylbenzene	NL	-	125		< 0.1	< 0.1	nc	< 0.1	пс
Iodomethane	-	-	-						
Isopropyl benzene (Cumene)	-	-	-						
m&p-Xylenes	-	-	-		< 0.2	< 0.2	nc	< 0.2	nc
Methylene Chloride	-	-	-						
o-Xylene	-	-	-		< 0.1	< 0.1	пс	< 0.1	nc
Styrene	-	-	-						
Tetrachloroethene	-	-	-						
Toluene	390	-	105		< 0.1	< 0.1	nc	< 0.1	nc
trans-1.2-Dichloroethene	-	-	-						
trans-1.3-Dichloropropene	-	-	-						
Trichloroethene	-	-	-						
Trichlorofluoromethane	-	-	-						
Vinyl chloride	-	-	-						
Xylenes - Total	95	-	45		< 0.3	< 0.3	nc	< 0.3	nc

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
1.1-Dichloroethane	-	-	-						
1.1-Dichloroethene	-	-	-						
1.1.1-Trichloroethane	-	-	-						
1.1.1.2-Tetrachloroethane	-	-	-						
1.1.2-Trichloroethane	-	-	-						
1.1.2.2-Tetrachloroethane	-	-	-						
1.2-Dibromoethane	-	-	-						
1.2-Dichlorobenzene	-	-	-						
1.2-Dichloroethane	-	-	-						
1.2-Dichloropropane	-	-	-						
1.2.3-Trichloropropane	-	-	-						
1.2.4-Trimethylbenzene	-	-	-						
1.3-Dichlorobenzene	-	-	-						
1.3-Dichloropropane	-	-	-						
1.3.5-Trimethylbenzene	-	-	-						
1.4-Dichlorobenzene	-	-	-						
2-Butanone (MEK)	-	-	-						
2-Propanone (Acetone)	-	-	-						
4-Chlorotoluene	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soll	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
4-Methyl-2-pentanone (MIBK)	-	-	-						
Allyl chloride	-	-	-						
Benzene	0.6	-	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	-	-	-						
Bromochloromethane	-	-	-						
Bromodichloromethane	-	-	-						
Bromoform	-	-	-						
Bromomethane	-	-	-						
Carbon disulfide	-	-	-						
Carbon Tetrachloride	-	-	-						
Chlorobenzene	-	-	-						
Chloroethane	-	-	-						
Chloroform	-	-	-						
Chloromethane	-	-	-						
cis-1.2-Dichloroethene	-	-	-						
cis-1.3-Dichloropropene	-	-	-						
Dibromochloromethane	-	-	-						
Dibromomethane	-	-	-						
Dichlorodifluoromethane	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	Silt	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
Ethylbenzene	NL	-	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	-	-	-						
Isopropyl benzene (Cumene)	-	-	-						
m&p-Xylenes	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	-	-	-						
o-Xylene	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	-	-	-						
Tetrachloroethene	-	-	-						
Toluene	390	-	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	-	-	-						
trans-1.3-Dichloropropene	-	-	-						
Trichloroethene	-	-	-						
Trichlorofluoromethane	-	-	-						
Vinyl chloride	-	-	-						
Xylenes - Total	95	-	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S22/0.15-0.35
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.15-0.35
	Silt	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	4/10/2016
1.1-Dichloroethane	-	-	-						
1.1-Dichloroethene	-	-	-						
1.1.1-Trichloroethane	-	-	-						
1.1.1.2-Tetrachloroethane	-	-	-						
1.1.2-Trichloroethane	-	-	-						
1.1.2.2-Tetrachloroethane	-	-	-						
1.2-Dibromoethane	-	-	-						
1.2-Dichlorobenzene	-	-	-						
1.2-Dichloroethane	-	-	-						
1.2-Dichloropropane	-	-	-						
1.2.3-Trichloropropane	-	-	-						
1.2.4-Trimethylbenzene	-	-	-						
1.3-Dichlorobenzene	-	-	-						
1.3-Dichloropropane	-	-	-						
1.3.5-Trimethylbenzene	-	-	-						
1.4-Dichlorobenzene	-	-	-						
2-Butanone (MEK)	-	-	-						
2-Propanone (Acetone)	-	-	-						
4-Chlorotoluene	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S22/0.15-0.35
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.15-0.35
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	4/10/2016
4-Methyl-2-pentanone (MIBK)	-	-	-						
Allyl chloride	-	-	_						
Benzene	0.6	-	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	-	-	-						
Bromochloromethane	-	-	-						
Bromodichloromethane	-	-	-						
Bromoform	-	-	-						
Bromomethane	-	-	-						
Carbon disulfide	-	-	-						
Carbon Tetrachloride	-	-	-						
Chlorobenzene	-	-	-						
Chloroethane	-	-	-						
Chloroform	-	-	-						
Chloromethane	-	-	-						
cis-1.2-Dichloroethene	-	-	-						
cis-1.3-Dichloropropene	-	-	-						
Dibromochloromethane	-	-	-						
Dibromomethane	-	-	-						
Dichlorodifluoromethane	-	-	-						

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

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Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S22/0.15-0.35
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.15-0.35
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	4/10/2016
Ethylbenzene	NL	-	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	-	-	-						
Isopropyl benzene (Cumene)	-	-	-						
m&p-Xylenes	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	-	-	-						
o-Xylene	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	-	-	-						
Tetrachloroethene	-	-	-						
Toluene	390	-	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	-	-	-						
trans-1.3-Dichloropropene	-	-	-						
Trichloroethene	-	-	-						
Trichlorofluoromethane	-	-	-						
Vinyl chloride	-	-	-						
Xylenes - Total	95	-	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	BH1/0.15-0.3	B1/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	0.4-0.6	0.3-0.5	0.15-0.3	0.0-0.15
	Silt	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	6/10/2016	6/10/2016
1.1-Dichloroethane	-	-	-					< 0.5	< 0.5
1.1-Dichloroethene	-	-	-					< 0.5	< 0.5
1.1.1-Trichloroethane	-	-	-					< 0.5	< 0.5
.1.1.2-Tetrachloroethane	-	-	-					< 0.5	< 0.5
.1.2-Trichloroethane	-	-	-					< 0.5	< 0.5
.1.2.2-Tetrachloroethane	-	-	-					< 0.5	< 0.5
.2-Dibromoethane	-	-	-					< 0.5	< 0.5
.2-Dichlorobenzene	-	-	-					< 0.5	< 0.5
.2-Dichloroethane	-	-	-					< 0.5	< 0.5
.2-Dichloropropane	-	-	-					< 0.5	< 0.5
.2.3-Trichloropropane	-	-	-					< 0.5	< 0.5
.2.4-Trimethylbenzene	-	-	-					< 0.5	< 0.5
.3-Dichlorobenzene	-	-	-					< 0.5	< 0.5
.3-Dichloropropane	-	-	-					< 0.5	< 0.5
.3.5-Trimethylbenzene	-	-	-					< 0.5	< 0.5
.4-Dichlorobenzene	-	-	-					< 0.5	< 0.5
-Butanone (MEK)	-	-	-					< 0.5	< 0.5
-Propanone (Acetone)	-	-	-					< 5	< 5
-Chlorotoluene	-	-	-					< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	BH1/0.15-0.3	B1/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	0.4-0.6	0.3-0.5	0.15-0.3	0.0-0.15
	Silt	Limits	Urban Res	Туре	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	6/10/2016	6/10/2016
4-Methyl-2-pentanone (MIBK)	-	-	-					< 0.5	< 0.5
Allyl chloride	-	-	-					< 0.05	< 0.05
Benzene	0.6	-	65		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Bromobenzene	-	-	-					< 0.5	< 0.5
Bromochloromethane	-	-	-					< 0.5	< 0.5
Bromodichloromethane	-	-	-					< 0.5	< 0.5
Bromoform	-	-	-					< 0.5	< 0.5
Bromomethane	-	-	-					< 0.5	< 0.5
Carbon disulfide	-	-	-					< 0.5	< 0.5
Carbon Tetrachloride	-	-	-					< 0.5	< 0.5
Chlorobenzene	-	-	-					< 0.5	< 0.5
Chloroethane	-	-	-					< 0.5	< 0.5
Chloroform	-	-	-					< 0.5	< 0.5
Chloromethane	-	-	-					< 0.5	< 0.5
cis-1.2-Dichloroethene	-	-	-					< 0.5	< 0.5
cis-1.3-Dichloropropene	-	-	-					< 0.5	< 0.5
Dibromochloromethane	-	-	-					< 0.5	< 0.5
Dibromomethane	-	-	-					< 0.5	< 0.5
Dichlorodifluoromethane	-	-	-					< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	BH1/0.15-0.3	B1/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	0.4-0.6	0.3-0.5	0.15-0.3	0.0-0.15
	Silt	Limits	Urban Res	Type	-	-	-	-	-
	0 to <1 m	Res/Park	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	6/10/2016	6/10/2016
Ethylbenzene	NL	-	125		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Iodomethane	-	-	-					< 0.5	< 0.5
Isopropyl benzene (Cumene)	-	-	-					< 0.5	< 0.5
m&p-Xylenes	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Methylene Chloride	-	-	-					< 0.5	< 0.5
o-Xylene	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Styrene	-	-	-					< 0.5	< 0.5
Tetrachloroethene	-	-	-					< 0.5	< 0.5
Toluene	390	-	105		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
trans-1.2-Dichloroethene	-	-	-					< 0.5	< 0.5
trans-1.3-Dichloropropene	-	-	-					< 0.5	< 0.5
Trichloroethene	-	-	-					< 0.5	< 0.5
Trichlorofluoromethane	-	-	-					< 0.5	< 0.5
Vinyl chloride	-	-	-					< 0.5	< 0.5
Xylenes - Total	95	-	45		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	B2/0.0-0.15	
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	
	Silt	Limits	Urban Res	Туре	-	
	0 to <1 m	Res/Park	Fine Soil	Date	6/10/2016	
.1-Dichloroethane	-	-	-		< 0.5	
.1-Dichloroethene	-	-	-		< 0.5	
.1.1-Trichloroethane	-	-	-		< 0.5	
.1.1.2-Tetrachloroethane	-	-	-		< 0.5	
.1.2-Trichloroethane	-	-	-		< 0.5	
.1.2.2-Tetrachloroethane	-	-	-		< 0.5	
.2-Dibromoethane	-	-	-		< 0.5	
.2-Dichlorobenzene	-	-	-		< 0.5	
.2-Dichloroethane	-	-	-		< 0.5	
.2-Dichloropropane	-	-	-		< 0.5	
.2.3-Trichloropropane	-	-	-		< 0.5	
.2.4-Trimethylbenzene	-	-	-		< 0.5	
.3-Dichlorobenzene	-	-	-		< 0.5	
.3-Dichloropropane	-	-	-		< 0.5	
.3.5-Trimethylbenzene	-	-	-		< 0.5	
.4-Dichlorobenzene	-	-	-		< 0.5	
-Butanone (MEK)	-	-	-		< 0.5	
-Propanone (Acetone)	-	-	-		< 5	
-Chlorotoluene	-	-	-		< 0.5	

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	B2/0.0-0.15	
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15	
	Silt	Limits	Urban Res	Туре	-	
	0 to <1 m	Res/Park	Fine Soil	Date	6/10/2016	
4-Methyl-2-pentanone (MIBK)	-	-	-		< 0.5	
Allyl chloride	-	-	-		< 0.05	
Benzene	0.6	-	65		< 0.1	
Bromobenzene	-	-	-		< 0.5	
Bromochloromethane	-	-	-		< 0.5	
Bromodichloromethane	-	-	-		< 0.5	
Bromoform	-	-	-		< 0.5	
Bromomethane	-	-	-		< 0.5	
Carbon disulfide	-	-	-		< 0.5	
Carbon Tetrachloride	-	-	-		< 0.5	
Chlorobenzene	-	-	-		< 0.5	
Chloroethane	-	-	-		< 0.5	
Chloroform	-	-	-		< 0.5	
Chloromethane	-	-	-		< 0.5	
cis-1.2-Dichloroethene	-	-	-		< 0.5	
cis-1.3-Dichloropropene	-	-	-		< 0.5	
Dibromochloromethane	-	-	-		< 0.5	
Dibromomethane	-	-	-		< 0.5	
Dichlorodifluoromethane	-	-	-		< 0.5	

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	B2/0.0-0.15
	HSLs - A/B	Management	ESLs	Depth (m)	0.0-0.15
	Silt	Limits	Urban Res	Туре	-
	0 to <1 m	Res/Park	Fine Soil	Date	6/10/2016
Ethylbenzene	NL	-	125		< 0.1
Iodomethane	-	-	-		< 0.5
Isopropyl benzene (Cumene)	-	-	-		< 0.5
m&p-Xylenes	-	-	-		< 0.2
Methylene Chloride	-	-	-		< 0.5
o-Xylene	-	-	-		< 0.1
Styrene	-	-	-		< 0.5
Tetrachloroethene	-	-	-		< 0.5
Toluene	390	-	105		< 0.1
trans-1.2-Dichloroethene	-	-	-		< 0.5
trans-1.3-Dichloropropene	-	-	-		< 0.5
Trichloroethene	-	-	-		< 0.5
Trichlorofluoromethane	-	-	-		< 0.5
Vinyl chloride	-	-	-		< 0.5
Xylenes - Total	95	-	45		< 0.3

Notes:

Criteria 1 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 2 = NEPC (1999) Amended, Residential and parkland Management Limits for TPH fractions in soil, fine material.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
		HSLs - A/B	ESLs	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	HILs - A	Silt	Urban Res	Туре	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
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	0.7	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	-	0.7		< 0.5	1.2	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-	-		< 0.5	1.1	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-	-		< 0.5	1.3	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-	-		< 0.5	0.8	< 0.5	< 0.5	< 0.5
Chrysene	-	-	-		< 0.5	0.7	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-	-		< 0.5	1.5	< 0.5	1.5	< 0.5
Fluorene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-	-		< 0.5	0.8	< 0.5	< 0.5	< 0.5
Naphthalene	-	4	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-	-		< 0.5	1.1	< 0.5	1	< 0.5
Pyrene	-	-	-		< 0.5	1.6	< 0.5	1.3	< 0.5
Benzo(a)pyrene TEQ	3	-	-		0.6	1.8	0.6	0.6	0.6
Total PAH	300	-	-		< 0.5	10.8	< 0.5	3.8	< 0.5

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
		HSLs - A/B	ESLs	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Silt	Urban Res	Туре	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
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	0.7	< 0.5
Benzo(a)pyrene	-	-	0.7		< 0.5	< 0.5	< 0.5	0.8	< 0.5
Benzo(b&j)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	0.6	< 0.5
Benzo(g.h.i)perylene	-	-	-		< 0.5	< 0.5	< 0.5	0.8	< 0.5
Benzo(k)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	1.1	< 0.5
Chrysene	-	-	-		< 0.5	< 0.5	< 0.5	0.9	< 0.5
Dibenz(a.h)anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	2.6	< 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	-	4	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-	-		< 0.5	< 0.5	< 0.5	1.4	< 0.5
Pyrene	-	-	-		< 0.5	< 0.5	< 0.5	2.4	< 0.5
Benzo(a)pyrene TEQ	3	-	-		0.6	0.6	0.6	1.3	0.6
Total PAH	300	-	-		< 0.5	< 0.5	< 0.5	11.3	< 0.5

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S11/0.0-0.2	DS1	RPD_TS1	TS1	RPD_DS
		HSLs - A/B	ESLs	Depth (m)	0.0-0.2	-	-	-	-
	HILs - A	Silt	Urban Res	Type	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	4/10/2016	4/10/2016	-	4/10/2016	-
A					0.5	0.5		0.5	
Acenaphthene	-	-	-		< 0.5	< 0.5	nc	< 0.5	nc
Acenaphthylene	-	-	-		< 0.5	0.6	пс	< 0.5	nc
Anthracene	-	-	-		< 0.5	< 0.5	nc	< 0.5	nc
Benz(a)anthracene	-	-	-		< 0.5	< 0.5	пс	< 0.5	nc
Benzo(a)pyrene	-	-	0.7		< 0.5	< 0.5	nc	< 0.5	пс
Benzo(b&j)fluoranthene	-	-	-		< 0.5	< 0.5	nc	< 0.5	nc
Benzo(g.h.i)perylene	-	-	-		< 0.5	< 0.5	nc	< 0.5	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	< 0.5	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	< 0.5	nc
Naphthalene	-	4	-		< 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	3	-	<u> </u>		0.6	0.6	0%	0.6	0%
Total PAH	300	-	-		< 0.5	0.6	пс	< 0.5	пс

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
		HSLs - A/B	ESLs	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	HILs - A	Silt	Urban Res	Туре	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
Acenaphthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.6
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	-	-	0.7		< 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	-	4	-		< 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	3	-	-		0.6	0.6	0.6	0.6	0.6
Total PAH	300	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.6

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S22/0.15-0.35
		HSLs - A/B	ESLs	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.15-0.35
	HILs - A	Silt	Urban Res	Type	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	4/10/2016
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	1.2
Benzo(a)pyrene	-	-	0.7		< 0.5	< 0.5	< 0.5	< 0.5	0.8
Benzo(b&j)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.9
Benzo(g.h.i)perylene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.7
Benzo(k)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.8
Chrysene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	1.4
Dibenz(a.h)anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	3.3
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	-	4	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	0.8
Pyrene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	2.7
Benzo(a)pyrene TEQ	3	-	-		0.6	0.6	0.6	0.6	1.4
Total PAH	300	-	-		< 0.5	< 0.5	< 0.5	< 0.5	12.6

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Criteria 3	Sample ID	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	BH1/0.15-0.3	B1/0.0-0.15
		HSLs - A/B	ESLs	Depth (m)	0.0-0.15	0.4-0.6	0.3-0.5	0.15-0.3	0.0-0.15
	HILs - A	Silt	Urban Res	Type	-	-	-	-	-
		0 to <1 m	Fine Soil	Date	4/10/2016	4/10/2016	4/10/2016	6/10/2016	6/10/2016
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	-	-	0.7		< 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	-	4	-		< 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	3	-	-		0.6	0.6	0.6	0.6	0.6
Total PAH	300	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

HSLs - A/B Silt	ESLs	Depth (m)	0.0-0.15	
Silt			0.0-0.15	
	Urban Res	Туре	-	
0 to <1 m	Fine Soil	Date	6/10/2016	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	0.7		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
4	-		< 0.5	
-	-		< 0.5	
-	-		< 0.5	
-	-		0.6	
-	-		< 0.5	
	- - - - - - - - - 4			< 0.5 < 0.5 < 0.5 < 0.5 0.7 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5

Notes:

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

Criteria 2 = NEPC (1999) Amended, 'A/B' Residential Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.

Criteria 3 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.

Total concentrations in mg/kg

- = assessment criteria not available

NL = not limiting

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
		EILS	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
	100	400						
Arsenic	100	100		< 2	< 2	< 2	< 2	2.4
Cadmium	20	-		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	1001	460 ²		19	42	11	28	22
Copper	6,000	150		25	27	34	21	14
Lead	300	1,100		47	33	26	32	33
Mercury	40	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	400	190		14	31	16	22	8.1
Zinc	7,400	350		60	39	48	40	81

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
		EILS	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Arsenic	100	100		< 2	< 2	< 2	< 2	4.2
Cadmium	20	-		< 0.4	< 0.4	< 0.4	< 0.4	1.4
Chromium	1001	460²		25	23	57	45	18
Copper	6,000	150		16	20	37	200	29
Lead	300	1,100		28	32	30	180	36
Mercury	40	-		< 0.05	< 0.05	< 0.05	0.17	0.06
Nickel	400	190		7.8	15	50	33	14
Zinc	7,400	350		19	38	41	130	44

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S11/0.0-0.2	DS1	TS1	RPD_TS1	RPD_DS
		EILS	Depth (m)	0.0-0.2	-	-	-	-
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	-	-
Arsenic	100	100		< 2	< 2	4.7	nc	пс
Cadmium	20	-		< 0.4	< 0.4	< 0.4	nc	nc
Chromium	1001	460 ²		28	22	12	80%	24%
Copper	6,000	150		21	17	12	55%	21%
_ead	300	1,100		42	32	15	95%	27%
Mercury	40	-		0.2	0.27	< 0.1	nc	30%
Nickel	400	190		19	15	7.9	83%	24%
Zinc	7,400	350		38	30	36	5%	24%

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
Arsenic	100	100		< 2	2.1	< 2	3.4	5.3
Cadmium	20	-		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	1001	460 ²		25	< 5	33	58	41
Copper	6,000	150		37	11	42	12	17
Lead	300	1,100		24	8.2	100	36	34
Mercury	40	-		< 0.05	0.07	< 0.05	< 0.05	< 0.05
Nickel	400	190		24	< 5	40	11	9.9
Zinc	7,400	350		110	50	130	31	31

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S21/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	5/10/2016
Arsenic	100	100		3.3	< 2	3.8	< 2	2.4
Cadmium	20	-		0.6	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	1001	460 ²		35	11	15	10	25
Copper	6,000	150		1,300	33	40	21	7.9
Lead	300	1,100		58	42	95	28	26
Mercury	40	-		< 0.05	< 0.05	0.05	< 0.05	< 0.05
Nickel	400	190		35	23	7.4	21	< 5
Zinc	7,400	350		100	34	150	73	7.5

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S22/0.15-0.35	S23/0.0-0.15	DS2	TS2	RPD_TS2
		EILS	Depth (m)	0.15-0.35	0.0-0.15	-	-	-
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	5/10/2016	5/10/2016	4/10/2016	-
Arsenic	100	100		2.8	< 2	< 2	23	nc
Cadmium	20	-		< 0.4	< 0.4	< 0.4	< 0.4	пс
Chromium	100¹	460 ²		18	11	11	53	131%
Copper	6,000	150		21	13	14	14	7%
Lead	300	1,100		40	17	20	41	83%
Mercury	40	-		< 0.05	< 0.05	< 0.05	0.2	nc
Nickel	400	190		14	7.2	7.7	16	76%
Zinc	7,400	350		39	31	31	33	6%

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 2	Sample ID	RPD_DS2	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	SS1/0.0-0.15
	EILS	Depth (m)	-	0.0-0.15	0.4-0.6	0.3-0.5	0.0-0.15
HILs - A	Urban	Туре	-	-	-	-	-
	Residential	Date	-	4/10/2016	4/10/2016	4/10/2016	5/10/2016
100	100		nc	. 7	- 7	2.1	
			7%	16	16	16	
300	1,100		16%	17	17	27	40
40	-		nc	< 0.05	< 0.05	< 0.05	
400	190		7%	11	10	17	
7,400	350		0%	33	34	26	
	100 20 100¹ 6,000 300 40	HILS - A Urban Residential 100 100 20 - 1001 4602 6,000 150 300 1,100 40 - 400 190	HILs - A Urban Type Residential Date 100 100 20 - 1001 4602 6,000 150 300 1,100 40 - 400 190	HILs - A Urban Type - Residential Date - 100 100 nc 20 - nc 1001 4602 0% 6,000 150 7% 300 1,100 16% 40 - nc 400 190 7%	HILs - A Urban Type - - - 4/10/2016 100 100 nc < 2	HILs - A Urban Type -	HILs - A Urban Type -

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS2/0.0-0.15	SS3/0.0-0.15	SS4/0.0-0.15	SS5/0.0-0.15	SS6/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016
Arsenic	100	100						
	20							
Cadmium		- 4/03						
Chromium	1001	4602						
Copper	6,000	150						
Lead	300	1,100		32	57	380	98	28
Mercury	40	-						
Nickel	400	190						
Zinc	7,400	350						

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS7/0.0-0.15	SS8/0.0-0.15	BH1/0.15-0.3	B1/0.0-0.15	B2/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.15-0.3	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	6/10/2016	6/10/2016	6/10/2016
Arsenic	100	100				2.3	13	< 2
Cadmium	20	-				< 0.4	< 0.4	< 0.4
Chromium	1001	460 ²				22	23	32
Copper	6,000	150				15	50	57
Lead	300	1,100		57	34	77	86	54
Mercury	40	-				< 0.05	< 0.05	< 0.05
Nickel	400	190				7	26	22
Zinc	7,400	350				79	900	240

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID C1	
		EILS	Depth (m) -	
	HILs - A	Urban	Type -	
		Residential	Date 4/10/2016	
Arsenic	100	100	3.3	
Cadmium	20	-	< 0.4	
Chromium	1001	460²	29	
Copper	6,000	150	22	
Lead	300	1,100	49	
Mercury	40	-	< 0.05	
Nickel	400	190	9	
Zinc	7,400	350	42	

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

¹Guideline for Cromium (VI) used conservatively.

²Guideline for Chromium (III) used conservatively.

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
		EILS	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	S5/0.2-0.3
		EILS	Depth (m)	0.2-0.3	0.2-0.3	0.3-0.5	0.2-0.3	0.2-0.3
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Methoxychlor	300	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	20	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	6	-		ND	ND	ND	ND	ND
Endosulfans - Total	270	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	240	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	ND

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
		EILS	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15	S9/0.0-0.15	S10/0.0-0.15
		EILS	Depth (m)	0.4-0.6	0.2-0.3	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	4/10/2016	4/10/2016
Methoxychlor	300	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	20	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	6	-		ND	ND	ND	ND	ND
Endosulfans - Total	270	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	240	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	ND

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S11/0.0-0.2	DS1	TS1	RPD_TS1	RPD_DS
		EILS	Depth (m)	0.0-0.2	-	-	-	-
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	-	-
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	nc	пс
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	пс	пс
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	nc	nc
a-BHC	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Aldrin	-	-		< 0.05	< 0.05	< 0.05	nc	пс
b-BHC	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	nc	nc
d-BHC	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Dieldrin	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	nc	пс
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Endrin	10	-		< 0.05	< 0.05	< 0.05	nc	nc
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	nc	nc
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	nc	nc
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	nc	nc
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	nc	nc

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S11/0.0-0.2	DS1	TS1	RPD_TS1	RPD_DS1
		EILS	Depth (m)	0.0-0.2	-	-	-	-
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	4/10/2016	4/10/2016	-	-
Methoxychlor	300	-		< 0.2	< 0.2	< 0.05	nc	nc
Toxaphene	20	-		< 1	< 1	< 1	nc	nc
ALL BULL				NB	ND	NB		
Aldrin + Dieldrin	6	-		ND	ND	ND	nc	nc
Endosulfans - Total	270	-		ND	ND	ND	nc	nc
DDD + DDE + DDT	240	-		ND	ND	ND	nc	nc
Scheduled Chemical Wastes	-	-		ND	ND	ND	nc	nc

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S12/0.0-0.2	S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.0-0.15	0.0-0.2	0.1-0.25	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	4/10/2016	4/10/2016	4/10/2016
Methoxychlor	300	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	20	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	6	-		ND	ND	ND	ND	ND
Endosulfans - Total	270	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	240	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	ND

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

RPD = relative percent difference of duplicate/triplicate

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

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-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S21/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	5/10/2016
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
d-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	-	-		< 0.05	< 0.05	0.48	< 0.05	< 0.05
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15	S21/0.0-0.15
		EILS	Depth (m)	0.0-0.2	0.35-0.55	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	5/10/2016	4/10/2016	5/10/2016	5/10/2016	5/10/2016
Methoxychlor	300	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	20	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	6	-		ND	ND	0.48	ND	ND
Endosulfans - Total	270	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	240	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes		-		ND	ND	0.48	ND	ND

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S22/0.15-0.35	S23/0.0-0.15	DS2	TS2	RPD_TS:
		EILS	Depth (m)	0.15-0.35	0.0-0.15	-	-	-
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	4/10/2016	5/10/2016	5/10/2016	4/10/2016	-
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
4.4'-DDE	-	-		< 0.05	< 0.05	< 0.05	< 0.05	пс
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	< 0.05	nc
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	пс
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Chlordanes - Total	50	-		< 0.1	< 0.1	< 0.1	< 0.1	nc
d-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Dieldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endosulfan I	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endosulfan II	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endosulfan sulphate	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endrin	10	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endrin aldehyde	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Endrin ketone	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
g-BHC (Lindane)	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Heptachlor	6	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Heptachlor epoxide	-	-		< 0.05	< 0.05	< 0.05	< 0.05	nc
Hexachlorobenzene	10	-		< 0.05	< 0.05	< 0.05	< 0.05	nc

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	S22/0.15-0.35	S23/0.0-0.15	DS2	TS2	RPD_TS2
		EILS	Depth (m)	0.15-0.35	0.0-0.15	-	-	-
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	4/10/2016	5/10/2016	5/10/2016	4/10/2016	-
Methoxychlor	300	-		< 0.2	< 0.2	< 0.2	< 0.05	пс
Toxaphene	20	-		< 1	< 1	< 1	< 1	пс
Aldrin + Dieldrin	6	-		ND	ND	ND	ND	пс
Endosulfans - Total	270	-		ND	ND	ND	ND	nc
DDD + DDE + DDT	240	-		ND	ND	ND	ND	nc
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	nc

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	SS1/0.0-0.15
		EILS	Depth (m)	-	0.0-0.15	0.4-0.6	0.3-0.5	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	-	4/10/2016	4/10/2016	4/10/2016	5/10/2016
4.4'-DDD				nc	< 0.05	< 0.05	< 0.05	
4.4'-DDE	-	-			< 0.05	< 0.05	< 0.05	
4.4-DDE 4.4'-DDT	-	- 100		nc	< 0.05	< 0.05	< 0.05	
a-BHC	-	180		nc				
	-	-		nc	< 0.05	< 0.05	< 0.05	
Aldrin	-	-		nc	< 0.05	< 0.05	< 0.05	
b-BHC	-	-		nc	< 0.05	< 0.05	< 0.05	
Chlordanes - Total	50	-		nc	< 0.1	< 0.1	< 0.1	
d-BHC	-	-		nc	< 0.05	< 0.05	< 0.05	
Dieldrin	-	-		nc	< 0.05	< 0.05	< 0.05	
Endosulfan I	-	-		nc	< 0.05	< 0.05	< 0.05	
Endosulfan II	-	-		nc	< 0.05	< 0.05	< 0.05	
Endosulfan sulphate	-	-		nc	< 0.05	< 0.05	< 0.05	
Endrin	10	-		nc	< 0.05	< 0.05	< 0.05	
Endrin aldehyde	-	-		nc	< 0.05	< 0.05	< 0.05	
Endrin ketone	-	-		nc	< 0.05	< 0.05	< 0.05	
g-BHC (Lindane)	-	-		nc	< 0.05	< 0.05	< 0.05	
- Heptachlor	6	-		nc	< 0.05	< 0.05	< 0.05	
Heptachlor epoxide	-	-		nc	< 0.05	< 0.05	< 0.05	
Hexachlorobenzene	10	-		пс	< 0.05	< 0.05	< 0.05	

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	S24/0.0-0.15	S25/0.4-0.6	S26/0.3-0.5	SS1/0.0-0.15
		EILS	Depth (m)	-	0.0-0.15	0.4-0.6	0.3-0.5	0.0-0.15
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	-	4/10/2016	4/10/2016	4/10/2016	5/10/2016
Methoxychlor	300	-		nc	< 0.2	< 0.2	< 0.2	
Toxaphene	20	-		nc	< 1	< 1	< 1	
Aldrin + Dieldrin	6	-		пс	ND	ND	ND	
Endosulfans - Total	270	-		nc	ND	ND	ND	
DDD + DDE + DDT	240	-		nc	ND	ND	ND	
Scheduled Chemical Wastes	-	-		пс	ND	ND	ND	

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS2/0.0-0.15	SS3/0.0-0.15	SS4/0.0-0.15	SS5/0.0-0.15	SS6/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016
4.4'-DDD	-	-						
4.4'-DDE	-	-						
4.4'-DDT	-	180						
a-BHC	-	-						
Aldrin	-	-						
b-BHC	-	-						
Chlordanes - Total	50	-						
d-BHC	-	-						
Dieldrin	-	-						
Endosulfan I	-	-						
Endosulfan II	-	-						
Endosulfan sulphate	-	-						
Endrin	10	-						
Endrin aldehyde	-	-						
Endrin ketone	-	-						
g-BHC (Lindane)	-	-						
Heptachlor	6	-						
Heptachlor epoxide	-	-						
Hexachlorobenzene	10	-						

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS2/0.0-0.15	SS3/0.0-0.15	SS4/0.0-0.15	SS5/0.0-0.15	SS6/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15	0.0-0.15
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016
Methoxychlor	300							
Toxaphene	20							
Тохарпене	20							
Aldrin + Dieldrin	6	-						
Endosulfans - Total	270	-						
DDD + DDE + DDT	240	-						
Scheduled Chemical Wastes	-	-						

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS7/0.0-0.15	SS8/0.0-0.15	BH1/0.15-0.3	B1/0.0-0.15	B2/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.15-0.3	0.0-0.15	0.0-0.15
	HILs - A	Urban	Туре	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	6/10/2016	6/10/2016	6/10/2016
4.4'-DDD	-	-						
4.4'-DDE	-	<u>-</u>						
4.4'-DDT	-	180						
a-BHC	-	-						
Aldrin	-	-						
b-BHC	-	-						
Chlordanes - Total	50	-						
d-BHC	-	-						
Dieldrin	-	-						
Endosulfan I	-	-						
Endosulfan II	-	-						
Endosulfan sulphate	-	-						
Endrin	10	-						
Endrin aldehyde	-	-						
Endrin ketone	-	-						
g-BHC (Lindane)	-	-						
Heptachlor	6	-						
Heptachlor epoxide	-	-						
Hexachlorobenzene	10	-						

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID	SS7/0.0-0.15	SS8/0.0-0.15	BH1/0.15-0.3	B1/0.0-0.15	B2/0.0-0.15
		EILS	Depth (m)	0.0-0.15	0.0-0.15	0.15-0.3	0.0-0.15	0.0-0.15
	HILs - A	Urban	Type	-	-	-	-	-
		Residential	Date	5/10/2016	5/10/2016	6/10/2016	6/10/2016	6/10/2016
Methoxychlor	300							
		-						
Toxaphene	20	-						
Aldrin + Dieldrin	6	-						
Endosulfans - Total	270	-						
DDD + DDE + DDT	240	-						
Scheduled Chemical Wastes	-	-						

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID C1	
		EILS	Depth (m) -	
	HILs - A	Urban	Type -	
		Residential	Date 4/10/2016	
1.4'-DDD	-	-	< 0.05	
1.4'-DDE	-	-	< 0.05	
.4'-DDT	-	180	< 0.05	
a-BHC	-	-	< 0.05	
Aldrin	-		< 0.05	
-BHC	-	-	< 0.05	
Chlordanes - Total	50	-	< 0.1	
-BHC	-	-	< 0.05	
Dieldrin	-	-	< 0.05	
ndosulfan I	-	-	< 0.05	
indosulfan II	-	-	< 0.05	
ndosulfan sulphate	-	-	< 0.05	
indrin	10	-	< 0.05	
ndrin aldehyde	-	-	< 0.05	
ndrin ketone	-	-	< 0.05	
-BHC (Lindane)	-	-	< 0.05	
eptachlor	6	-	< 0.05	
eptachlor epoxide	-	-	< 0.05	
lexachlorobenzene	10	-	< 0.05	

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Criteria 2	Sample ID C1	
		EILS	Depth (m) -	
	HILs - A	Urban	Type -	
		Residential	Date 4/10/2016	
Methoxychlor	300	-	< 0.2	
Toxaphene	20	-	< 1	
Aldrin + Dieldrin	6	-	ND	
Endosulfans - Total	270	-	ND	
DDD + DDE + DDT	240	-	ND	
Scheduled Chemical Wastes	-	-	ND	

Notes:

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

Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, minimum ACLs.

Total concentrations in mg/kg

- = assessment criteria not available

DS1 = duplicate of S11/0.0-0.2

TS1 = triplicate of S11/0.0-0.2

DS2 = duplicate of S23/0.0-0.15

TS2 = triplicate of S23/0.0-0.15

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</pre>

-- = sample not analysed



Table 6 : Summary of Soil Analytical Data - Asbestos

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Sample ID	SS1	SS2	SS3	SS4	SS5
	Asbestos in Soil	Depth (m)	0.0-0.15 Soil 5/10/2016	0.0-0.15 Soil 5/10/2016	0.0-0.15 Soil 5/10/2016	0.0-0.15 Soil 5/10/2016	0.0-0.15 Soil
		Туре					
		Date					5/10/2016
Final/Fibraria Ashastas (AF/FA)	Dunanta		Assa Olas Osa	ND	NID	NID	ND
Fines/Fibrous Asbestos (AF/FA)	Presence		Amo, Chr, Cro	ND	ND	ND	ND
Bonded Asbestos (ACM)	Presence		ND	ND	ND	ND	ND

Notes:

Criteria 1 = Presence/absence of asbestos contamination in soil.

ND = no asbestos detected

Amo = Amosite asbestos detected

Chy = Chrysotile asbestos detected

Cro = Crocidolite asbestos detected

-- = sample not analysed

Bold/red indicates presence of asbestos therefore exceedance of assessment criteria



Table 6 : Summary of Soil Analytical Data - Asbestos

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1 Asbestos	Sample ID	SS6	SS7	SS8	AF1/0.0-0.15	AF2/0.0-0.15
		Depth (m) Type	0.0-0.15 Soil	0.0-0.15 Soil	0.0-0.15 Soil	0.0-0.15 Soil	0.0-0.15 Soil
	in Soil	Date	5/10/2016	5/10/2016	5/10/2016	5/10/2016	5/10/2016
Fines/Fibrous Asbestos (AF/FA)	Presence		ND	ND	ND	ND	ND
Bonded Asbestos (ACM)	Presence		ND	ND	ND	ND	ND

Notes:

Criteria 1 = Presence/absence of asbestos contamination in soil.

ND = no asbestos detected

Amo = Amosite asbestos detected

Chy = Chrysotile asbestos detected

Cro = Crocidolite asbestos detected

-- = sample not analysed

Bold/red indicates presence of asbestos therefore exceedance of assessment criteria



Table 6 : Summary of Soil Analytical Data - Asbestos

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Sample ID	AF3/0.0-0.15	AF4/0.0-0.15 0.0-0.15 Soil 5/10/2016	AF5/0.0-0.15 0.0-0.15 Soil 5/10/2016	AF6/0.0-0.15
		Depth (m)	0.0-0.15			0.0-0.15
	Asbestos	Туре	Soil			Soil
	in Soil	Date	5/10/2016			5/10/2016
Fines/Fibrous Asbestos (AF/FA)	Presence		ND	ND	ND	ND
Bonded Asbestos (ACM)	Presence		ND	ND	ND	ND

Notes:

Criteria 1 = Presence/absence of asbestos contamination in soil.

ND = no asbestos detected

Amo = Amosite asbestos detected

Chy = Chrysotile asbestos detected

Cro = Crocidolite asbestos detected

-- = sample not analysed

Bold/red indicates presence of asbestos therefore exceedance of assessment criteria



Table 7 : Summary of QAQC Water Analytical Data - Petroleum Hydrocarbons

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Sample ID	R1	R2	R3
		Depth (m)	-	-	-
		Туре	-	-	-
		Date	4/10/2016	5/10/2016	6/10/2016
TRH C ₆ -C ₁₀	-		< 20	< 20	< 20
TRH C ₆ -C ₁₀ less BTEX (F1)	-		< 20	< 20	< 20
TRH >C ₁₀ -C ₁₆	-		< 50	< 50	< 50
TRH >C ₁₀ -C ₁₆ less Naphthalene (F2)	-		< 50	< 50	< 50
TRH >C ₁₆ -C ₃₄	-		< 100	< 100	< 100
TRH >C ₃₄ -C ₄₀	-		< 100	< 100	< 100
Benzene	-		< 1	< 1	< 1
Toluene	-		< 1	< 1	< 1
Ethylbenzene	-		< 1	< 1	< 1
m&p-Xylenes	-		< 2	< 2	< 2
o-Xylene	-		< 1	< 1	< 1
Xylenes - Total	-		< 3	< 3	< 3
Naphthalene	-		< 1	< 1	< 1

Notes:

Total concentrations in µg/L

- = assessment criteria not available
- R1 = rinsate sample
- R2 = rinsate sample
- R3 = rinsate sample
- < # or ND = analyte(s) not detected in excess of laboratory reporting limit</pre>
- -- = sample not analysed



Table 8 : Summary of QAQC Water Analytical Data - Polyaromatic Hydrocarbons

Phase 2 Environmental Site Assessment

Project No.: 1601114

230 Sixth Avenue, Austral NSW

	Criteria 1	Sample ID	R1	R2	R3	
		Depth (m)	-	-	-	
		Туре	-	-	-	
		Date	4/10/2016	5/10/2016	6/10/2016	
Acenaphthene	-		< 1	< 1	< 1	
Acenaphthylene	-		< 1	< 1	< 1	
Anthracene	-		< 1	< 1	< 1	
Benz(a)anthracene	-		< 1	< 1	< 1	
Benzo(a)pyrene	-		< 1	< 1	< 1	
Benzo(b&j)fluoranthene	-		< 1	< 1	< 1	
Benzo(g.h.i)perylene	-		< 1	< 1	< 1	
Benzo(k)fluoranthene	-		< 1	< 1	< 1	
Chrysene	-		< 1	< 1	< 1	
Dibenz(a.h)anthracene	-		< 1	< 1	< 1	
Fluoranthene	-		< 1	< 1	< 1	
Fluorene	-		< 1	< 1	< 1	
Indeno(1.2.3-cd)pyrene	-		< 1	< 1	< 1	
Naphthalene	-		< 1	< 1	< 1	
Phenanthrene	-		< 1	< 1	< 1	
Pyrene	-		< 1	< 1	< 1	
Benzo(a)pyrene TEQ	-					
Total PAH	-		< 1	< 1	< 1	

Notes:

Total concentrations in µg/L

- = assessment criteria not available
- R1 = rinsate sample
- R2 = rinsate sample
- R3 = rinsate sample
- < # or ND = analyte(s) not detected in excess of laboratory reporting limit</pre>
- -- = sample not analysed



Table 9 : Summary of QAQC Water Analytical Data - Heavy Metals

Phase 2 Environmental Site Assessment

Project No.: 1601114

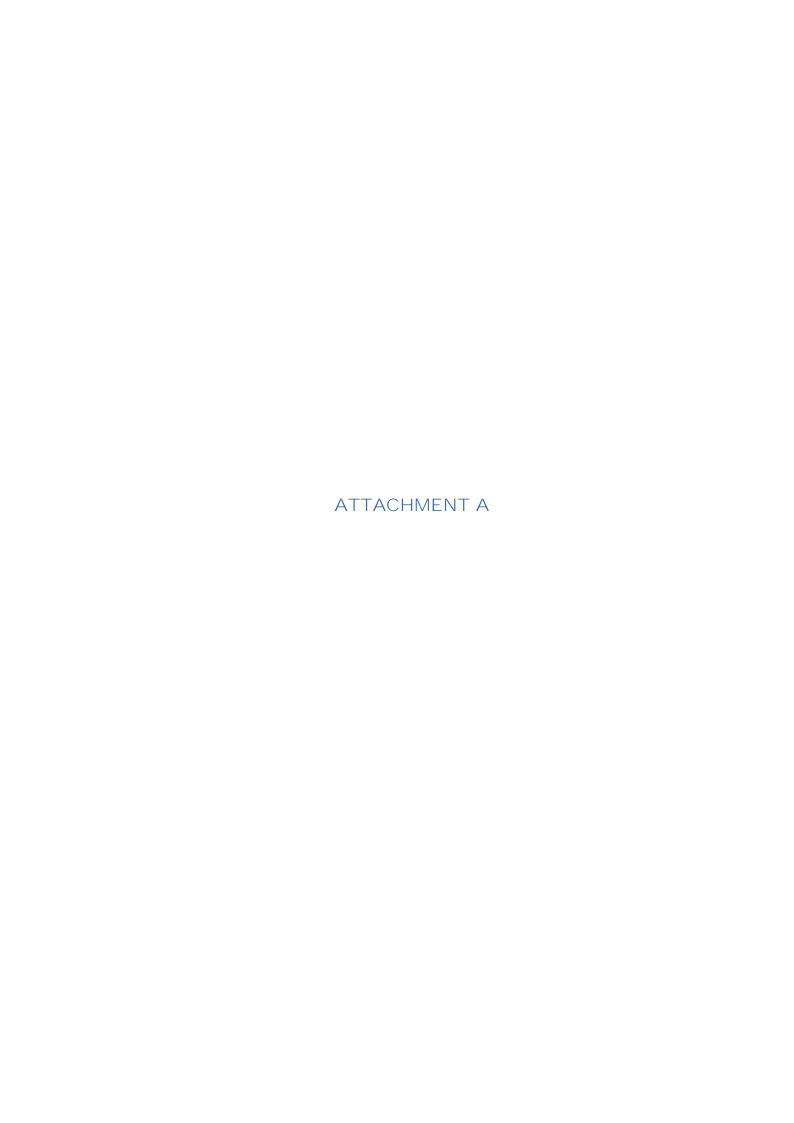
230 Sixth Avenue, Austral NSW

	Criteria 1	Sample ID	R1	R2	R3	
		Depth (m)	-	-	-	
		Type	-	-	-	
		Date	4/10/2016	5/10/2016	6/10/2016	
Arsenic	-		< 1	< 1	< 1	
Cadmium	-		< 0.2	< 0.2	< 0.2	
Chromium	-		< 1	< 1	< 1	
Copper	-		< 1	< 1	< 1	
Lead	-		< 1	< 1	< 1	
Mercury	-		< 0.1	< 0.1	< 0.1	
Nickel	-		< 1	< 1	< 1	
Zinc	-		< 5	< 5	< 5	

Notes:

Total concentrations in µg/L

- = assessment criteria not available
- R1 = rinsate sample
- R2 = rinsate sample
- R3 = rinsate sample
- < # or ND = analyte(s) not detected in excess of laboratory reporting limit</pre>
- -- = sample not analysed





 Ref.: 1601067:35521
 Cert. No.:
 7391

 Ppty: 23501
 Page No.:
 1

Applicant:Receipt No.:3359773GEO-LOGIXReceipt Amt.:133.002309/4 DAYDREAM STDate:21-Jun-2016WARRIEWOOD NSW 2102

Property Desc: BINDI EYE, 230 SIXTH AVENUE, AUSTRAL NSW 2179

LOT 1067 DP 2475

PRESCRIBED INFORMATION PROVIDED PURSUANT TO

SECTION 149(2) OF THE

ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979

NOTE: The following information is provided pursuant to Section 149(2) of the Environmental Planning and Assessment Act (EP&A Act) 1979 as prescribed by Schedule 4 of the Environmental Planning and Assessment Regulation (EP&A Regulation) 2000 and is applicable to the subject land as of the date of this certificate.

The Environmental Planning and Assessment Amendment Act 1997 commenced operation on the 1 July 1998. As a consequence of this Act the information contained in this certificate needs to be read in conjunction with the provisions of the Environmental Planning and Assessment (Amendment) Regulation 1998, Environmental Planning and Assessment (Further Amendment) Regulation 1998 and Environmental Planning and Assessment (Savings and Transitional) Regulation, 1998.





(1) Names of relevant planning instruments and DCPs

(1) The name of each environment planning instrument that applies to the carrying out of Development on the land is/are listed below: -

Cert. No.: 7391

Page No.: 2

Local Environmental Plans (LEPs)

Not Applicable

State Environmental Planning Policies (SEPPs)

State Environmental Planning Policy No. 19 - Bushland in Urban Areas

State Environmental Planning Policy No. 21 - Caravan Parks

State Environmental Planning Policy No. 30 – Intensive Agriculture

State Environmental Planning Policy No. 32 - Urban Consolidation (Redevelopment of Urban Land)

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development

State Environmental Planning Policy No. 44 – Koala Habitat

State Environmental Planning Policy No. 50 - Canal Estate Development

State Environmental Planning Policy No. 55 – Remediation of Land

State Environmental Planning Policy – (Exempt and Complying Development Codes) 2008

State Environmental Planning Policy No. 62 – Sustainable Aquaculture

State Environmental Planning Policy No. 64 – Advertising and Signage

State Environmental Planning Policy No. 65 – Design Quality of Residential Flat Development

State Environmental Planning Policy – (Building Sustainability Index: BASIX) 2004

State Environmental Planning Policy No. 70 – Affordable Housing (Revised Schemes)

State Environmental Planning Policy – (Infrastructure) 2007

State Environmental Planning Policy – (Mining, Petroleum Production and Extractive Industries) 2007

State Environmental Planning Policy – (Miscellaneous Consent Provisions) 2007

State Environmental Planning Policy – (Affordable Rental Housing) 2009

State Environmental Planning Policy (Sydney Regional Growth Centres) 2006

State Environmental Planning Policy – (Housing for Seniors or People with a Disability) 2004

State Environmental Planning Policy – (State and Regional Development) 2011

Deemed State Environmental Planning Policies (Deemed SEPPs)

Sydney Regional Environmental Plan No. 20 – Hawkesbury – Nepean River (No. 2 – 1997)

This plan applies to all the land within the Hawkesbury – Nepean River catchment. This plan aims to protect the environment of the Hawkesbury – Nepean River system by ensuring that the impacts of future land uses are considered in regional context. The plan provides specific planning policies and strategies and development controls for specific land use.

(2) The name of each proposed environmental planning instrument that will apply to the carrying out of development on the land and that is or has been the subject of community consultation or on public exhibition under the Act (unless the Director-General has notified the council that the making of the proposed instrument has been deferred indefinitely or has not been approved).

Draft Local Environmental Plans (LEPs)

Not Applicable





Draft State Environmental Planning Policies (SEPPs)

Draft State Environmental Planning Policy (Competition) 2010

(3) The name of each development control plan that applies to the carrying out of development on the land.

Cert. No.: 7391

Page No.: 3

Liverpool Growth Centre Precincts Development Control Plan

(4) In this clause, proposed environmental planning instrument includes a planning proposal for an LEP or a draft environmental planning instrument.

2. ZONING AND LAND USE UNDER RELEVANT LOCAL ENVIRONMENTAL PLANS

Not Applicable

2A. Zoning and land use under State Environmental Planning Policy (Sydney Region Growth Centres) 2006

To the extent that the land is within any zone (however described) under:

Part 3 of the State Environmental Planning Policy (Sydney Region Growth Centres) 2006 (the 2006 SEPP), or

A Precinct Plan (within the meaning of the 2006 SEPP), or

A proposed Precinct Plan that is or has been the subject of community consultation or on public exhibition under the Act, or

State Environmental Planning Policy State Significant Precincts 2005.

The land is zoned under:

State Environmental Planning Policy (Sydney Region Growth Centres) 2006

(a) The Identity of the zone

R2 Low Density Residential.

(b) The purposes for which the instrument provides that development may be carried out within the zone without the need for development consent

Home-based child care; Home occupations.

(c) The purposes for which the instrument provides that development may not be carried out within the zone except with development consent





PLANNING CERTIFICATE UNDER SECTION 149 Cert. No.: 7391 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 Page No.: 4

Attached dwellings; Bed and breakfast accommodation; Boarding houses; Business identification signs; Child care centres; Community facilities; Drainage; Dual occupancies; Dwelling houses; Educational establishments; Environmental protection works; Exhibition homes; Exhibition villages; Group homes; Health consulting rooms; Home businesses; Home industries; Multi dwelling housing; Neighbourhood shops; Places of public worship; Roads; Secondary dwellings; Semi-detached dwellings; Seniors housing; Shop top housing; Studio dwellings.

(d) The purposes for which the instrument provides that development is prohibited within the zone

Any development not specified in item (b) or (c)

(e) Dwelling House

The development standards applying to the land that fix minimum land dimensions for the erection of a dwelling house on the land are listed below:

No development standards applying to the land fix minimum land dimensions for the erection of a dwelling house on the land.

(f) Critical Habitat

The land does not include or comprise critical habitat.

(g) Conservation Area

Land is not located in a Conservation Area.

(h) Environmental Heritage

No item of Environmental Heritage is situated on the land.

3. Complying development

The extent to which the land is land on which complying development may be carried out under each of the codes for complying development because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18(1) (C3) and 1.19 of State Environmental Planning Policy (Exempt and Complying Development Codes) 2008.

Complying development under the General Housing Code may be carried out on this land.

Complying development under the General Development Code may be carried out on this land.

Complying development under the Rural Housing Code may be carried out on this land.

Complying development under the Fire Safety Code may be carried out on this land.





Complying development under the Housing Alterations Code may be carried out on this land.

Complying Development under the Commercial and Industrial Alterations Code may be carried out on this land.

Cert. No.: 7391

Page No.: 5

Complying Development under the Commercial and Industrial (**New** Buildings and Additions) Code may be carried out on this land.

Complying Development under the Subdivisions Code may be carried out on this land.

Complying Development under the Demolition Code may be carried out on this land.

(2) The extent to which complying development may not be carried out on that land because of the provisions of clauses 1.17A (1) (c) to (e), (2), (3) and (4), 1.18 (1) (C3) and 1.19 of that Policy and the reasons why it may not be carried out under those clauses.

Not Applicable

(3) If the council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land, a statement that a restriction applies to the land, but it may not apply to all of the land, and that council does not have sufficient information to ascertain the extent to which complying development may or may not be carried out on the land.

Not Applicable

4. Coastal Protection Act 1979

There has been no notification from the Department of Public Works that the land is subject to the operation of Section 38 or 39 of the Coastal Protection Act, 1979.

4A Information relating to beaches and coasts

(1) In relation to a coastal council—whether an order has been made under Part 4D of the Coastal Protection Act 1979 in relation to temporary coastal protection works (within the meaning of that Act) on the land (or on public land adjacent to that land), except where the council is satisfied that such an order has been fully complied with.

Not Applicable

- (2) In relation to a coastal council:
 - (a) whether the council has been notified under section 55X of the Coastal Protection Act 1979 that temporary coastal protection works (within the meaning of that Act) have been placed on the land (or on public land adjacent to that land), and
 - (b) if works have been so placed, whether the council is satisfied that the works have been removed and the land restored in accordance with that Act.





Not Applicable

4B Annual charges under Local Government Act 1993 for coastal protection services that relate to existing coastal protection works

In relation to a coastal council—whether the owner (or any previous owner) of the land has consented in writing to the land being subject to annual charges under section 496B of the Local Government Act 1993 for coastal protection services that relate to existing coastal protection works (within the meaning of section 553B of that Act).

Cert. No.: 7391

Page No.: 6

Not Applicable

5. Mine Subsidence

Whether or not the land is proclaimed to be a mine subsidence district within the meaning of Section 15 of the Mine Subsidence Compensation Act 1961.

The land is not a mine subsidence district.

6. Road Widening and Road Realignment

Whether or not the land is affected by any road widening or road realignment under:

- (a) Division 2 of Part 3 of the Roads Act 1993, or
- (b) Any environmental planning instrument, or
- (c) Any resolution of the council.

The land is not affected by any road widening or road realignment.

7. Council and Other Public Authority Policies on Hazard Risk Restrictions

Whether or not the land is affected by a policy:

- (a) adopted by the council, or
- (b) adopted by any other public authority and notified to the council for the express purpose of its adoption by that authority being referred to in planning certificates issued by the council, that restricts the development of the land because of the likelihood of land slip, bushfire, tidal inundation, subsidence, acid sulphate soils or any other risk (other than flooding).

Land Slip

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of land slip.





Bushfire

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate which restricts the development of the land because of the likelihood of bushfire.

Cert. No.: 7391

Page No.: 7

Tidal Inundation

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of tidal inundation.

Subsidence

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of subsidence.

Acid Sulphate Soil

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of acid sulphate soil.

Other Risks

The land is not affected by a policy adopted by the Council, or any other public authority and notified to the council for the express purpose of its adoption being referred to in a planning certificate that restricts the development of the land because of the likelihood of any other risk.

7A. Flood Related Development Controls Information

Whether or not development on that land or part of the land for purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.

- (1) Whether or not development on that land or part of the land for purposes of dwelling houses, dual occupancies, multi dwelling housing or residential flat buildings (not including development for the purposes of group homes or seniors housing) is subject to flood related development controls.
 - Part of the land is affected by flood inundation and therefore flood related controls apply to the land.
- (2) Whether or not development on that land or part of the land for any other purpose is subject to flood related development controls.
 - Development on part of the land for any other purpose may be subject to flood related development controls as the land is subject to the PMF (Probable Maximum Flood).
- (3) Words and expressions in this clause have the same meanings as in the instrument set out in the Schedule to the Standard Instrument (Local Environmental Plans) Order 2006.





8. Land Reserved for Acquisition

Whether or not any environmental planning instrument or proposed environmental planning instrument referred to in clause 1 makes provision in relation to the acquisition of the land by a public authority, as referred to in section 27 of the Act.

Cert. No.: 7391

Page No.: 8

No environmental planning instrument or proposed environmental planning instrument applying to the land provides for the acquisition of the land by a public authority.

9. Contribution Plans

The name of each contribution plan applying to the land is/are outlined below:
Liverpool Contributions Plan 2014 (Austral and Leppington North Precinct)

9A Biodiversity certified land

If the land is biodiversity certified land (within the meaning of Part 7AA of the Threatened Species Conservation Act 1995), a statement to that effect.

The land is biodiversity certified land within the meaning of Part 7AA of the Threatened Species Conservation Act (1995).

10. Biobanking agreements

If the land is land to which a bio-banking agreement under Part 7A of the Threatened Species Conservation Act 1995 relates, a statement to that effect (but only if the council has been notified of the existence of the agreement by the Director-General of the Department of Environment, Climate Change and Water).

The land is not land to which a bio-banking agreement under part 7A of the *Threatened Species Conservation Act 1995* relates

11. Bushfire Prone Land

None of the land is bush fire prone land as defined in the Environmental Planning and Assessment Act 1979.

12. Property Vegetation Plans

If the land is land to which a Property Vegetation Plan under the Native Vegetation Act 2003 applies, a statement to that effect (but only if the council has been notified of the existence of the plan by the person or body that approved the plan under that Act).

The land is not land to which a property vegetation plan relates, as all land in the Liverpool Local Government Area is excluded from the operation of the *Native Vegetation Act 2003*.

13. Orders under Trees (Disputes between Neighbours) Act 2006

Whether an order has been made under the Trees (Disputes Between Neighbours) Act 2006 to carry out work in relation to a tree on the land (but only if the council has been notified of the order).

Council has not been notified of an order made under the Trees (Disputes between Neighbours) Act 2006 to carry out work in relation to a tree on the land.





14. Directions under Part 3A

If there is a direction by the Minister in force under section 75P (2) (c1) of the Act that a provision of an environmental planning instrument prohibiting or restricting the carrying out of a project or a stage of a project on the land under Part 4 of the Act does not have effect, a statement to that effect identifying the provision that does not have effect.

Cert. No.: 7391

Page No.: 9

No such direction applies to the land.

15. Site Compatibility Certificates and Conditions for Seniors Housing

If the land is land to which State Environmental Planning Policy (Housing for Seniors or People with a Disability) 2004 applies:

- (a) a statement of whether there is a current site compatibility certificate (seniors housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
 - (i) The period for which the certificate is current, and
 - (ii) That a copy may be obtained from the head office of the Department of Planning

Council is not aware of a current site compatibility certificate (seniors housing) on the land

(b) a statement setting out any terms of a kind referred to in clause 18 (2) of that Policy that have been imposed as a condition of consent to a development application granted after 11 October 2007 in respect of the land.

There have been no such terms imposed as a condition of consent to development on the land.

16. Site Compatibility Certificates for Infrastructure

A statement of whether there is a valid site compatibility certificate (infrastructure), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:

- (a) The period for which the certificate is valid, and
- (b) That a copy may be obtained from the head office of the Department of Planning.

Council is not aware of a current site compatibility certificate (infrastructure) on the land.

17. Site compatibility certificates and conditions for affordable rental housing

- (1) A statement of whether there is a current site compatibility certificate (affordable rental housing), of which the council is aware, in respect of proposed development on the land and, if there is a certificate, the statement is to include:
 - (a) the period for which the certificate is current, and
 - (b) that a copy may be obtained from the head office of the Department of Planning.





PLANNING CERTIFICATE UNDER SECTION 149 Cert. No.: 7391 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 Page No.: 10

Council is not aware of a current site compatibility certificate (affordable rental housing) on the land.

(2) A statement setting out any terms of a kind referred to in clause 17 (1) or 38 (1) of State Environmental Planning Policy (Affordable Rental Housing) 2009 that have been imposed as a condition of consent to a development application in respect of the land.

There have been no such terms imposed as a condition of consent to development on the land.

18. Paper subdivision information

- (1) The name of any development plan adopted by a relevant authority that applies to the land or that is proposed to be subject to a consent ballot.
 No such plan applies to the land.
- (2) The date of any subdivision order that applies to the land. No subdivision order applies to the land
- (3) Words and expressions used in this clause have the same meaning as they have in Part 16C of this Regulation.

19. Site verification certificates

A statement of whether there is a current site verification certificate, of which the council is aware, in respect of the land and, if there is a certificate, the statement is to include:

(a) The matter certified by the certificate

Council is not aware of a current site verification certificate on the land.

Note. A site verification certificate sets out the Director-General's opinion as to whether the land concerned is or is not biophysical strategic agricultural land or critical industry cluster land — see Division 3 of Part 4AA of State Environmental Planning Policy (Mining, Petroleum Production and Extractive Industries) 2007.

- (b) The date on which the certificate ceases to be current (if any), and
 - Not Applicable
- (c) That a copy may be obtained from the head office of the Department of Planning and Infrastructure.

Not Applicable

Note. The following matters are prescribed by section 59 (2) of the Contaminated Land Management Act 1997 as additional matters to be specified in a planning certificate:

(a) That the land to which the certificate relates is significantly contaminated land within the meaning of that Act—if the land (or part of the land) is significantly contaminated land at the date when the certificate is issued





Not Applicable

(b) That the land to which the certificate relates is subject to a management order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued

Cert. No.: 7391

Page No.: 11

Not Applicable

(c) That the land to which the certificate relates is the subject of an approved voluntary management proposal within the meaning of that Act—if it is the subject of such an approved proposal at the date when the certificate is issued

Not Applicable

(d) That the land to which the certificate relates is subject to an ongoing maintenance order within the meaning of that Act—if it is subject to such an order at the date when the certificate is issued

Not Applicable

(e) That the land to which the certificate relates is the subject of a site audit statement within the meaning of that Act—if a copy of such a statement has been provided at any time to the local authority issuing the certificate.

Not Applicable

Note. Section 26 of the Nation Building and Jobs Plan (State Infrastructure Delivery) Act 2009 provides that a planning certificate must include advice about any exemption under section 23 or authorisation under section 24 of that Act if the council is provided with a copy of the exemption or authorisation by the Co-ordinator General under that Act.

No such exemption or authorisation applies to the land.

20. Loose-fill Asbestos Insulation

Some residential homes located in the Liverpool may have been identified as containing loose-fill asbestos insulation, for example in the roof space. NSW Fair Trading maintains a Register of homes that are affected by loose-fill asbestos insulation.

You should make your own enquiries as to the age of the buildings on the land to which this certificate relates and, if it contains a building constructed prior to 1980, the council strongly recommends that any potential purchaser obtain advice from a licensed asbestos assessor to determine whether loose-fill asbestos is present in any building on the land and, if so, the health risks (if any) this may pose for the building's occupants.

Contact NSW Fair Trading for further information.





ADDITIONAL INFORMATION PROVIDED PURSUANT TO

Cert. No.: 7391

Page No.: 12

SECTION 149(5) OF THE

ENVIRONMENTAL PLANNING & ASSESSMENT ACT 1979

1. Threatened Species Conservation Act

It is advisable for any application intending to purchase and/or develop land within the Liverpool Local Government Area to approach Council to ascertain if the requirements of the Threatened Species Act, 1995 are likely to apply to their land.

If the land has native vegetation of any sort (i.e. trees, shrubs, ground covers etc), has recently been cleared or is vacant land, it may have impediments to development under the Threatened Species Act, 1995.

Enquiries should be directed to Council's Infrastructure and Environment Department on 1300 362 170.

2. Tree Preservation Provision

The land is subject to a tree preservation provision.

3. Controlled Access Road

The land does not have a boundary to a controlled access road.

4. Other Information in Relation to Water

The property is identified as flood prone and is within the low risk flood category. Low Flood Risk Category means the outer extent of the floodplain (within the extent of the probable maximum flood) but not identified within either the High Flood Risk or the Medium Flood Risk Category. (see Section 1 Clause 3 of the 149 Certificate for the relevant Development Control Plan for controls relating to flood prone land). For further information on flood risk contact Council on 1300 362 170.

On-Site Sewerage Management System/s

Council's records indicate that the property may not be connected to Sydney Water's sewerage system.

If the property is not connected and emits any waste water (sewerage) it must have an On-Site Sewerage Management System/s (Septic Tank(s)) that is operating satisfactorily. It is the ongoing responsibility of the current owner(s) of the property (at any given time) to ensure that any On-Site Sewerage Management System(s) (Septic Tank(s)) continually operate in compliance with the relevant provisions of the Local Government Act 1993, and the Protection of the Environment Operations Act 1997 (including regulations made there under).





It is recommended that any applicant intending to purchase the property make enquires to ascertain if the property has an On-Site Sewerage Management System/s (Septic Tank/s) and engage the services of a suitably qualified wastewater engineer or plumber to assess the condition and compliance status of those system(s).

Cert. No.: 7391

Page No.: 13

5. Sydney Water Corporation

Nil

6. Foreshore Building Line

Nil

7. Contaminated Land

Nil

8. Airport Noise Affectation

Nil

9. Airport Acquisition

Nil

10. Environmentally Significant Land

Nil

11. Archaeological Management Plan

Nil

12. Unhealthy Building Land Proclamation

Nil

A.

Luke West Administration Services Coordinator Liverpool City Council





PLANNING CERTIFICATE UNDER SECTION 149 Cert. No.: 7391 ENVIRONMENTAL PLANNING AND ASSESSMENT ACT 1979 Page No.: 14

For further information, please contact CALL CENTRE – 1300 36 2170



ANNEXURE TO SECTION 149(5) CERTIFICATE



Issue Date:

23/06/2016

Issue No:

2026951

File No:

2016/0095

Premises at

Lot 1067 DP 2475

Sixth Avenue

Austral

Further to the advice contained in the Section 149(2) Certificate and on the basis of the latest information available to the Council:

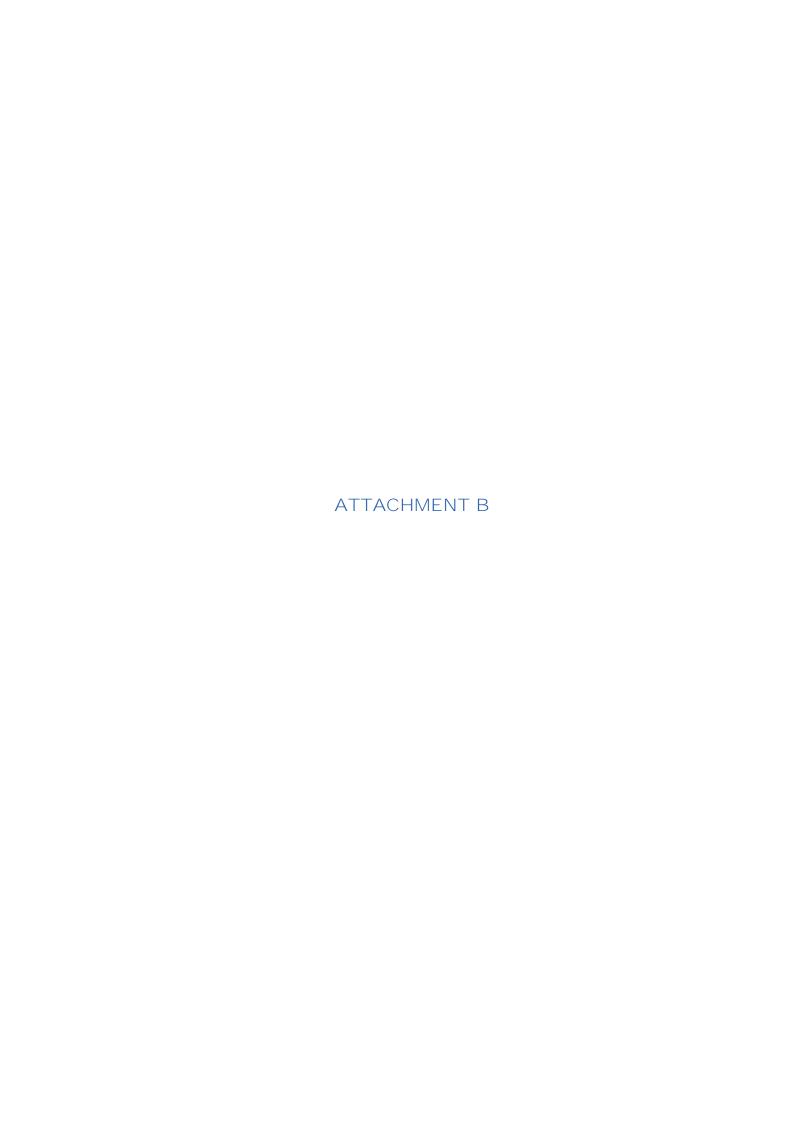
- the maximum calculated level of the probable maximum flood (PMF) in the vicinity of your property in metres AHD is **69.9.**
- the maximum calculated level of the 1% annual exceedance probability flood (previously referred to as the 1 in 100 year) in the vicinity of your property in metres AHD is **69.2.**
- 3. the maximum calculated level of the 2% annual exceedance probability flood (previously referred to as the 1 in 50 year) in the vicinity of your property in metres AHD is **Not Available.**
- the maximum calculated level of the 5% annual exceedance probability flood (previously referred to as the 1 in 20 year) in the vicinity of your property in metres AHD is 69.0.

The Council does not possess accurate information on the natural surface levels of individual allotments or on constructed building levels, and these should be established by private survey to ascertain their relationship to the above flood levels.

Flood levels are obtained from Austral Floodplain Risk Management Study & Plan-September 2003

Name of Assessor: W. Siripala

Signature



230 Sixth Avenue, Austral NSW



Plate 1 – View from Sixth Avenue towards the dwelling.



Plate 3 – Fill soil profile at S26 in front of dwelling.



Plate 5 – Typical native soil profile in the northeast corner of Plate 6 – Granny flat to the rear of the dwelling the site



Plate 2 – View north from the dwelling towards Sixth Avenue



Plate 4 – Garden area in the north east corner of the site.





Plate 7 – Fragments of ACM encountered in surface soils at S19 adjacent to the granny flat.



Plate 9 – ACM clad outhouse at the rear of the granny flat.



Plate 11 – ACM clad laundry at the rear of the granny flat.



Plate 8 – Location of S19 adjacent to the granny flat.



Plate 10 – Damaged ACM cladding on the outhouse.



Plate 12 – Pool house at the rear of the dwelling



Plate 13 – Pump house to the east of the pool.



Plate 15 – View towards the large shed showing ACM clad fence.



Plate 17 – ACM clad fence in the central portion of the site in moderate condition.



Plate 14 – Soil stockpile and possible vegetable garden adjacent to the granny flat.



Plate 16 – ACM clad fence in the central portion of the site in moderate condition.



Plate 18 – The large shed in the central portion of the site.



Plate 19 - Household items to the north of the shed



Plate 21 – Internal view of the large shed.



Plate 23 – Storage of miscellaneous items and machinery in the shed



Plate 20 – ACM fragments on asphalt north of the shed.



Plate 22 – Storage of small quantities of household chemicals and pesticides.



Plate 24 – Drums stored in front of the large shed.



Plate 25 – Chemical spray pack in the large shed.



Plate 27 – Soil profile below asphalt surface in shed.



Plate 29 - Fragment of ACM identified in fill at the rear of the truck shed at sample location S13.



Plate 26 – Sample location B2 showing coal wash fill.



Plate 28 - Extensions to the west of the truck shed



Plate 30 – Typical soil profile in the central portion of the site showing coal wash fill.



Plate 31 – Fragment of ACM identified in S16 associated with fill near the tennis court.



Plate 32 – Fill soils associated with the tennis court.



Plate 33 – Fragment of ACM identified in fill soils associated with the tennis court.



Plate 34 – View south across the tennis court.



Plate 35 – Retaining wall towards the rear of the tennis court showing filled area in the southern portion of the site.



Plate 36 – View northwest across the filled rear paddock and rear sheds.



Plate 37 – Transpiration pit located at S3.



Plate 39 – Fill soil profile showing native clays at S5.



Plate 41 – View west towards the sheds / kennels in the rear paddock.



Plate 38 – Fragment of ACM located at S4.



Plate 40 – Fragments of ACM in shallow soils at location S5.



Plate 42 - Internal view of rear shed.



Plate 43 – Fragments of ACM scattered within and surrounding the southernmost shed at sample location SS1.



Plate 45 – ACM sheet used to patch fencing in the kennels.



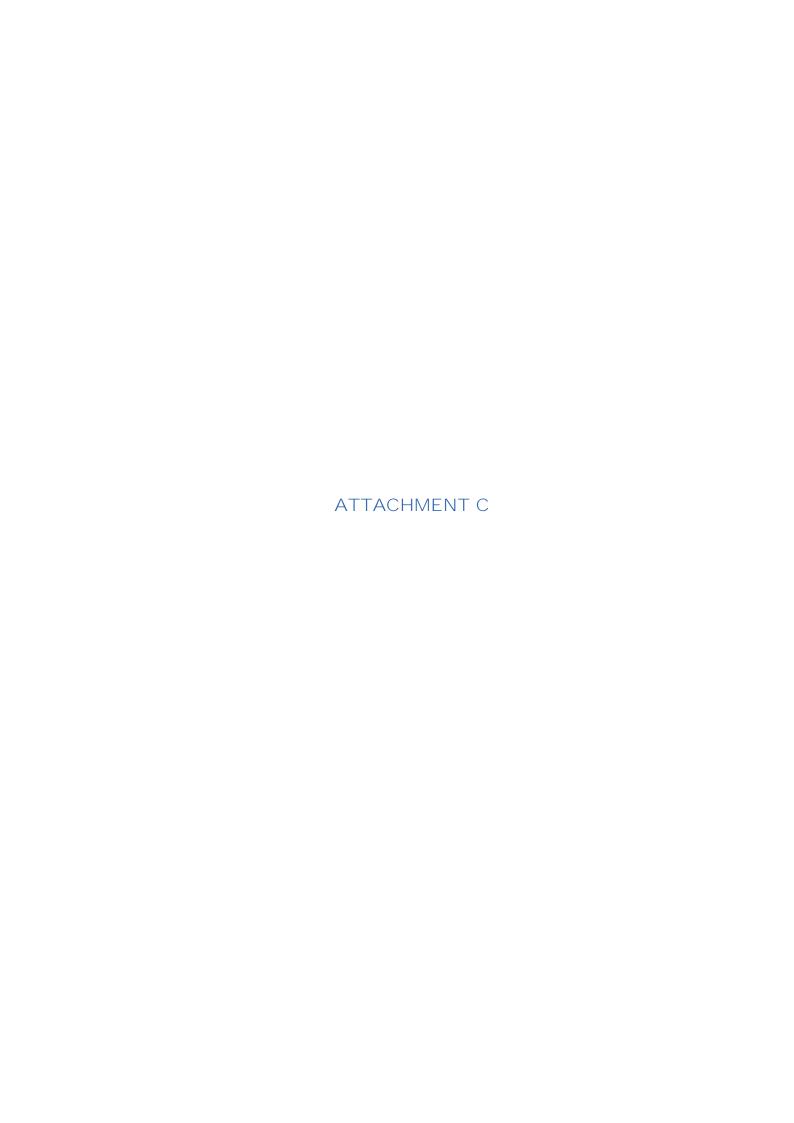
Plate 47 – ACM fragments subject to shallow burial within the rear kennels.



Plate 44 –ACM cladding in the rear shed.



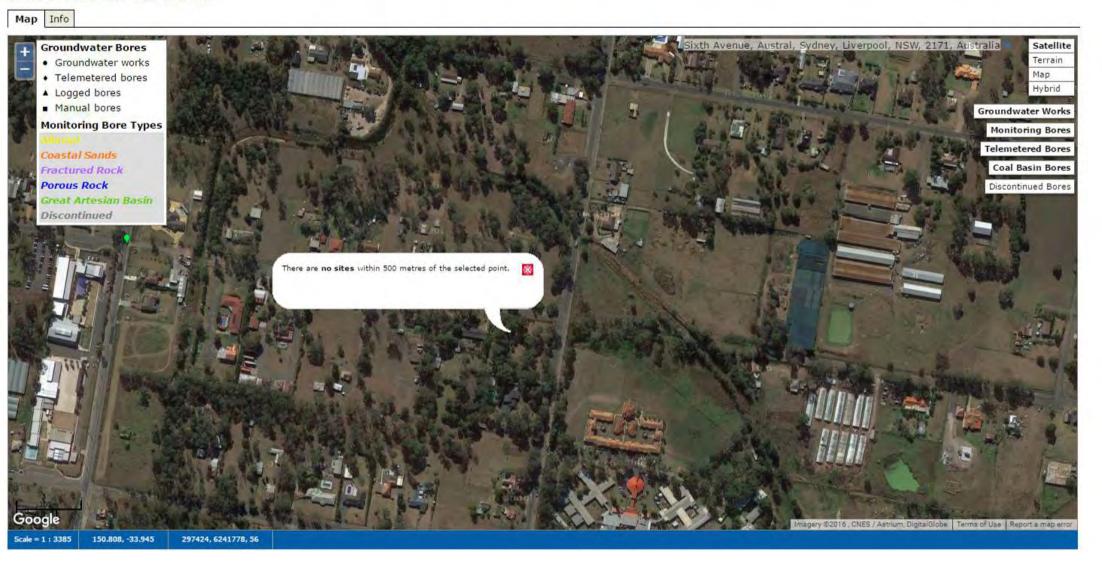
Plate 46 – Damaged ACM cladding in the rear kennels.

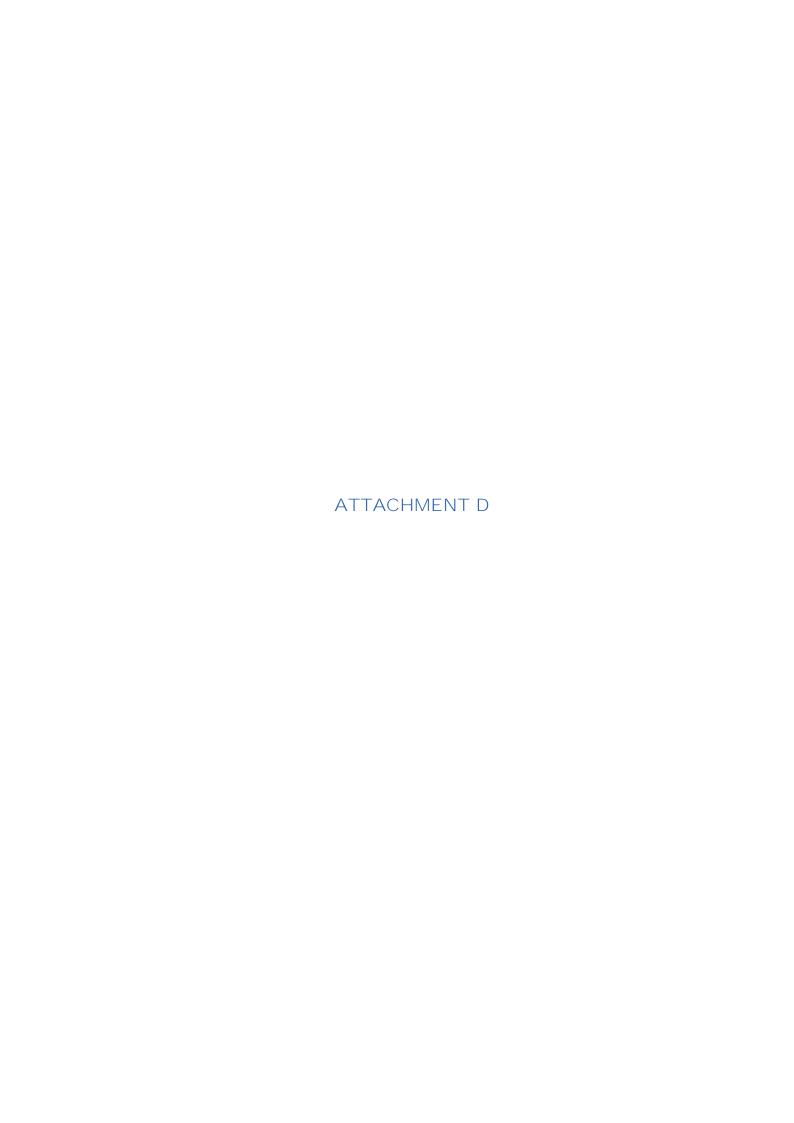


All Groundwater bookmark this page

All Groundwater Map

All data times are Eastern Standard Time







Job No 10862444

Phone: 1100 www.**1100.com.au**

Caller Details

Contact:Mr Tim GunnsCaller Id:1486843Phone:0411724429Company:Geo-LogixMobile:0411724429Fax:Not Supplied

Address: Building Q2, Level 3 Unit 2309 Daydream Stre Email: tgunns@geo-logix.com.au

Warriewood NSW 2102

Dig Site and Enquiry Details

WARNING: The map below only displays the location of the proposed dig site and does not display any asset owners' pipe or cables. The area highlighted has been used only to identify the participating asset owners, who will send information to you directly.



Notes/Description of Works:

Vertical boring 1 m

User Reference: Sixth Ave Austral

Working on Behalf of:

Private

Enquiry Date: Start Date: End Date: 22/06/2016 30/06/2016 01/07/2016

Address:

230 Sixth Avenue Austral NSW 2179

Job Purpose:ExcavationOnsite Activity:Vertical BoringLocation of Workplace:Private PropertyLocation in Road:Not Supplied

- Check that the location of the dig site is correct. If not you must submit a new enquiry.
- Should the scope of works change, or plan validity dates expire, you must submit a new enquiry.
- Do NOT dig without plans. Safe excavation is your responsibility.
 If you do not understand the plans or how to proceed safely, please contact the relevant asset owners.

Your Responsibilities and Duty of Care

- If plans are not received within 2 working days, contact the asset owners directly & quote their Sequence No.
- ALWAYS perform an onsite inspection for the presence of assets. Should you require an onsite location, contact the asset owners directly. Please remember, plans do not detail the exact location of assets.
- Pothole to establish the exact location of all underground assets using a hand shovel, before using heavy machinery.
- Ensure you adhere to any State legislative requirements regarding Duty of Care and safe digging requirements.
- If you damage an underground asset you MUST advise the asset owner immediately.
- By using this service, you agree to Privacy Policy and the terms and disclaimers set out at www.1100.com.au
- For more information on safe excavation practices, visit www.1100.com.au

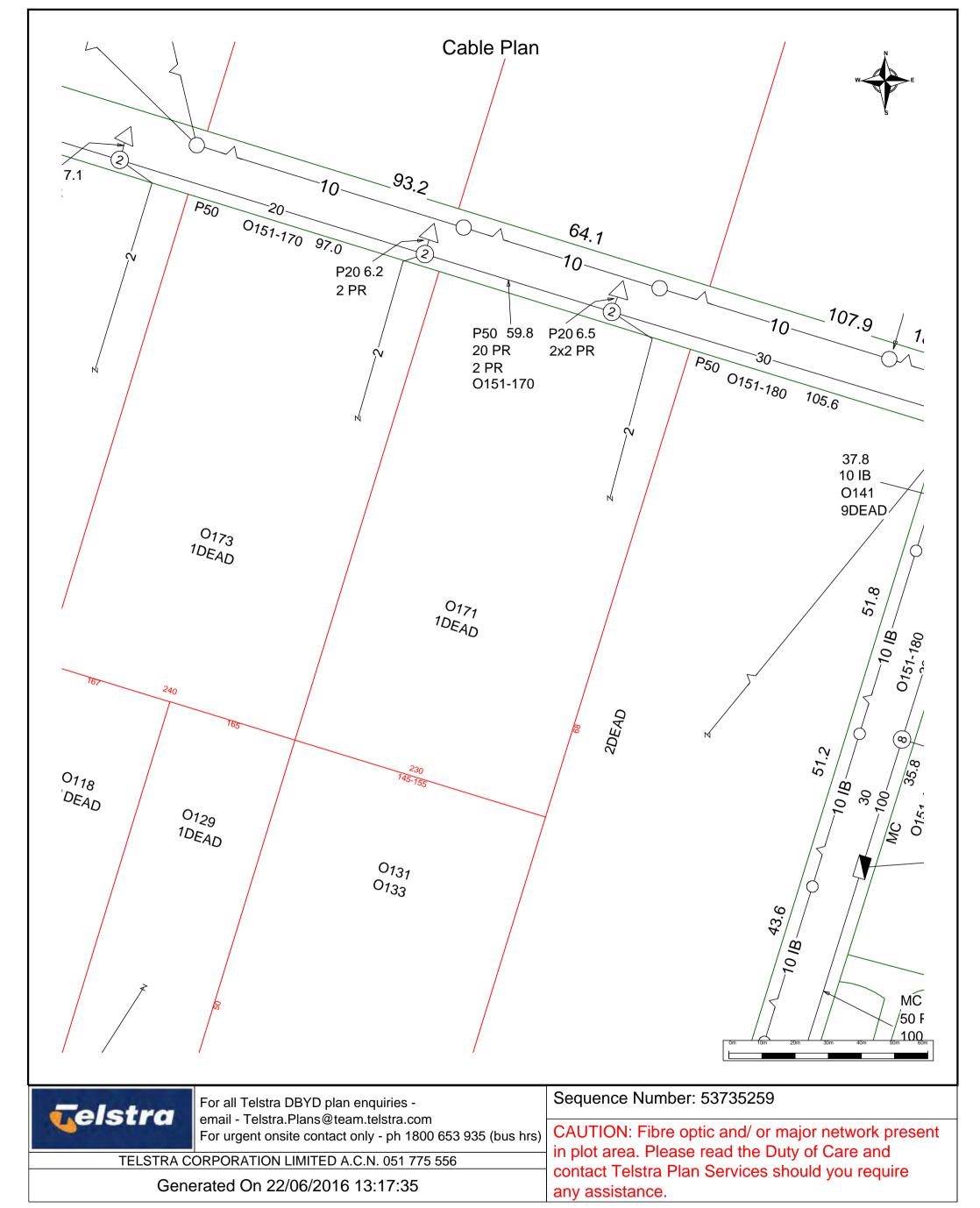
Asset Owner Details

The assets owners listed below have been requested to contact you with information about their asset locations within 2 working days. Additional time should be allowed for information issued by post. It is **your responsibility** to identify the presence of any underground assets in and around your proposed dig site. Please be aware, that not all asset owners are registered with the Dial Before You Dig service, so it is **your responsibility** to identify and contact any asset owners not listed here directly.

- ** Asset owners highlighted by asterisks ** require that you visit their offices to collect plans.
- # Asset owners highlighted with a hash require that you call them to discuss your enquiry or to obtain plans.

Seq. No.	Authority Name	Phone	Status
53735258	Endeavour Energy	0298534161	NOTIFIED
53735260	Jemena Gas West	1300880906	NOTIFIED
53735261	Sydney Water	132092	NOTIFIED
53735259	Telstra NSW, Central	1800653935	NOTIFIED

END OF UTILITIES LIST



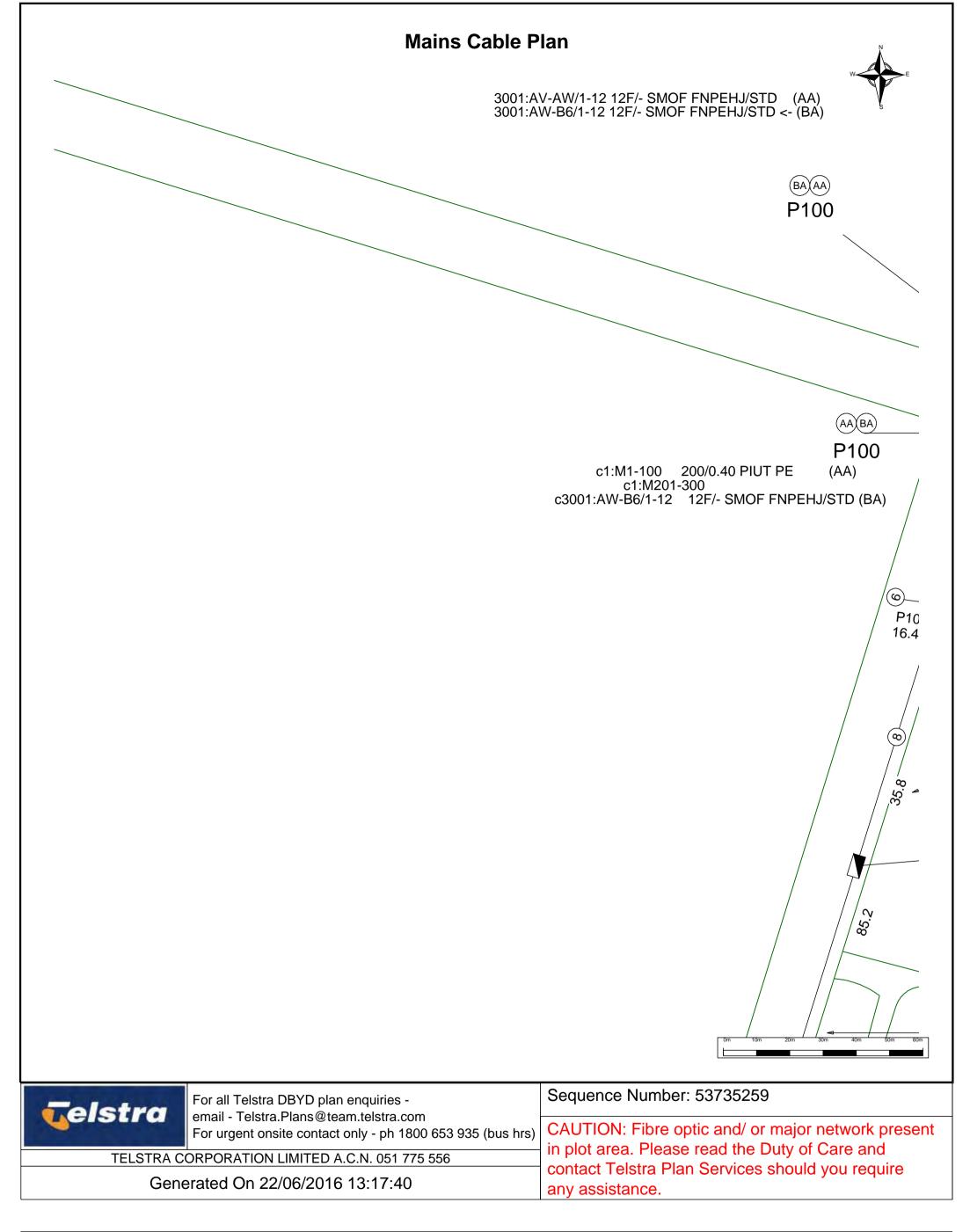
The above plan must be viewed in conjunction with the Mains Cable Plan on the following page

WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

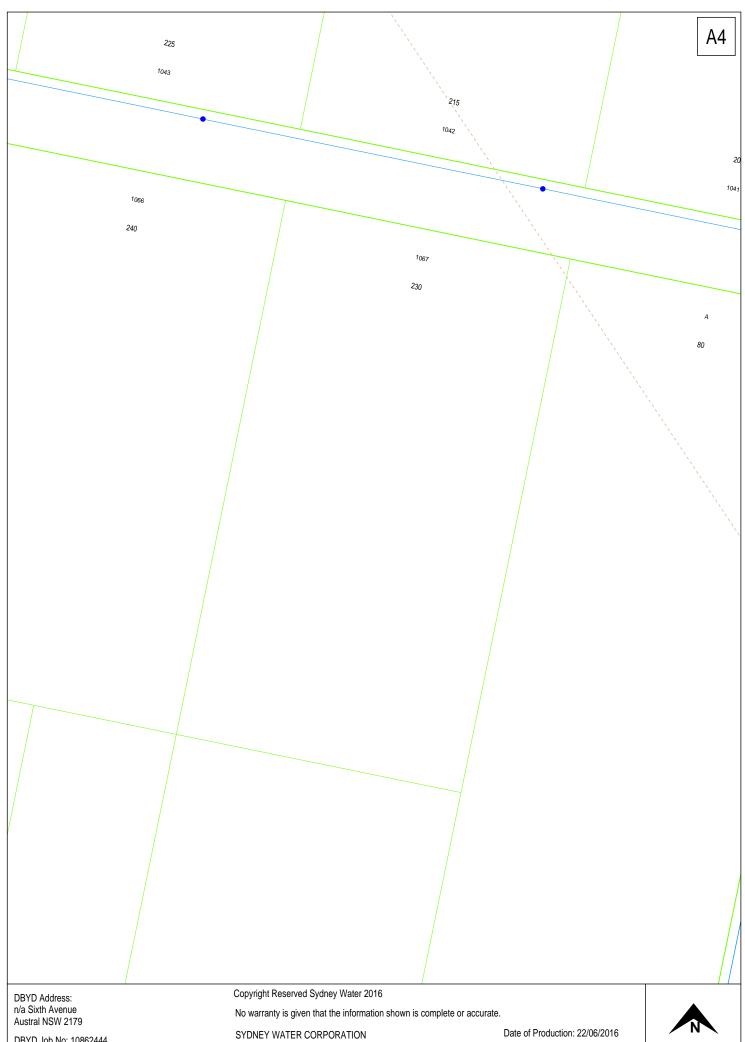


WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths and other natural landscape features may change over time, and accordingly the plans are indicative only. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans.

It is your responsibility to locate Telstra's underground plant by careful hand pot-holing prior to any excavation in the vicinity and to exercise due care during that excavation.

Please read and understand the information supplied in the duty of care statement attached with the Telstra plans. TELSTRA WILL SEEK COMPENSATION FOR LOSS CAUSED BY DAMAGE TO ITS PLANT.

Telstra plans and information supplied are valid for 60 days from the date of issue. If this timeframe has elapsed, please reapply for plans.

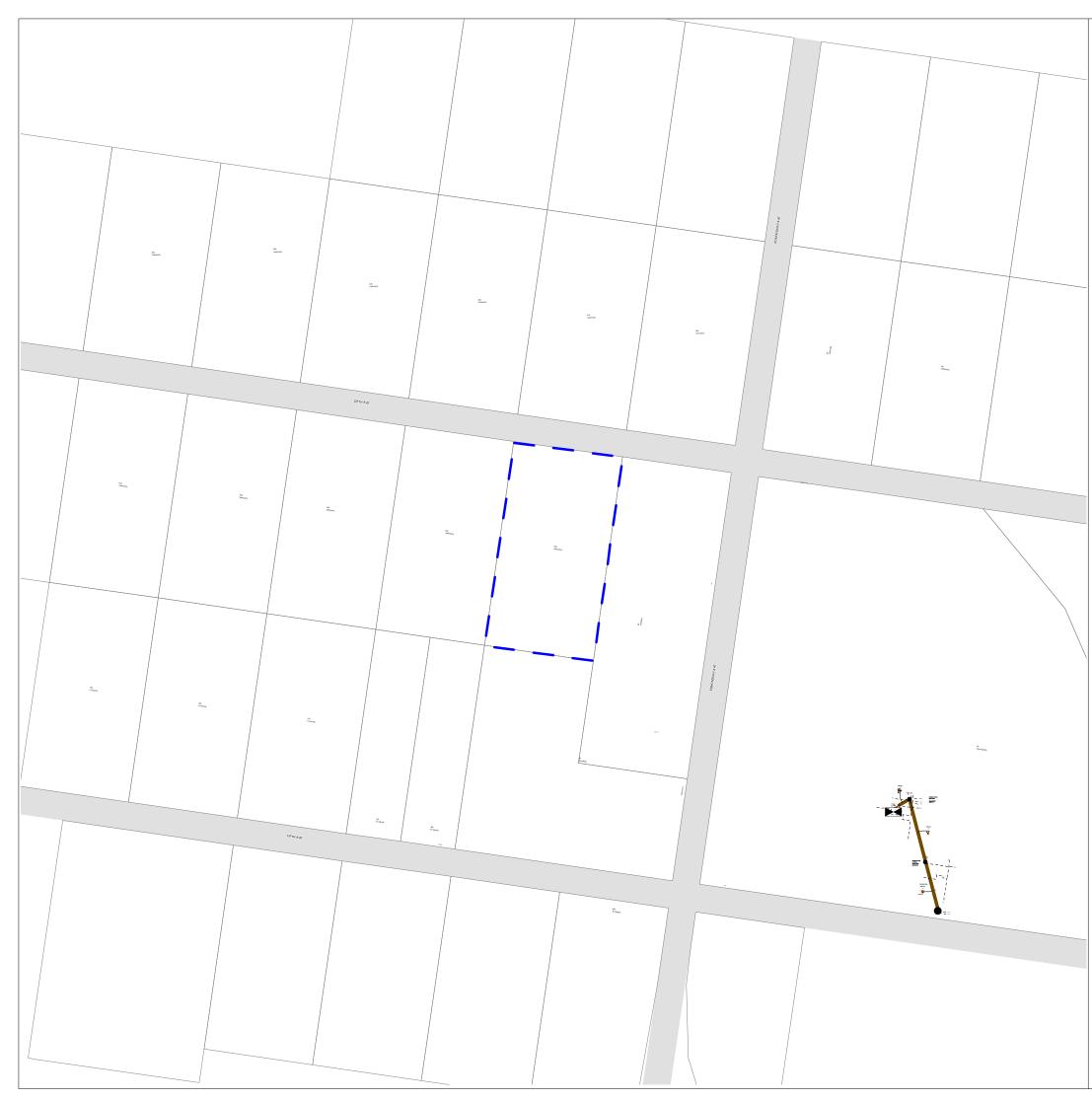


DBYD Job No: 10862444 DBYD Sequence No: 53735261

Scale: 1:1000

Plan 1 of 1







WARNING

- All electrical apparatus shall be regarded as live until proved de-energised.
 Contact with live electrical apparatus will cause severe injury or death.
- In accordance with the *Electricity Supply Act 1995*, you are obliged to report any damage to Endeavour Energy Assets immediately by calling **131 003**.
- The customer must obtain a new set of plans from Endeavour Energy if work has not been started or completed within twenty (20) working days of the original plan issue data.
- The customer must contact Endeavour Energy if any of the plans provided have blank pages, as some underground asset information may be incomplete.
- Endeavour Energy underground earth grids may exist and their location **may not** be shown on plans. Persons excavating are expected to exercise all due care, especially in the vicinity of padmount substations, pole mounted substations, pole mounted switches, transmission poles and towers.
- Endeavour Energy plans **do not** show any underground customer service mains or information relating to service mains within private property.
- Asbestos or asbestos-containing material may be present on or near Endeavour Energy's underground assets.
- Organo-Chloride Pesticides (OCP) may be present in some sub-transmission trenches.
- All plans must be printed and made available at the worksite where excavation is to be undertaken. Plans must be reviewed and understood by the crew on site prior to commencing excavation.

INFORMATION PROVIDED BY ENDEAVOUR ENERGY

- Any plans provided pursuant to this service are intended to show the approximate location of underground assets relative to road boundaries, property fences and other structures at the time of installation.
- Depth of underground assets may vary significantly from information provided on plans as a result of changes to road, footpath or surface levels subsequent to installation.
- Such plans have been prepared solely for use by Endeavour Energy staff for design, construction and maintenance purposes.
- All enquiry details and results are kept in a register.

DISCLAIMER

Whilst Endeavour Energy has taken all reasonable steps to ensure that the information contained in the plans is as accurate as possible it will accept no liability for inaccuracies in the information shown on such plans.

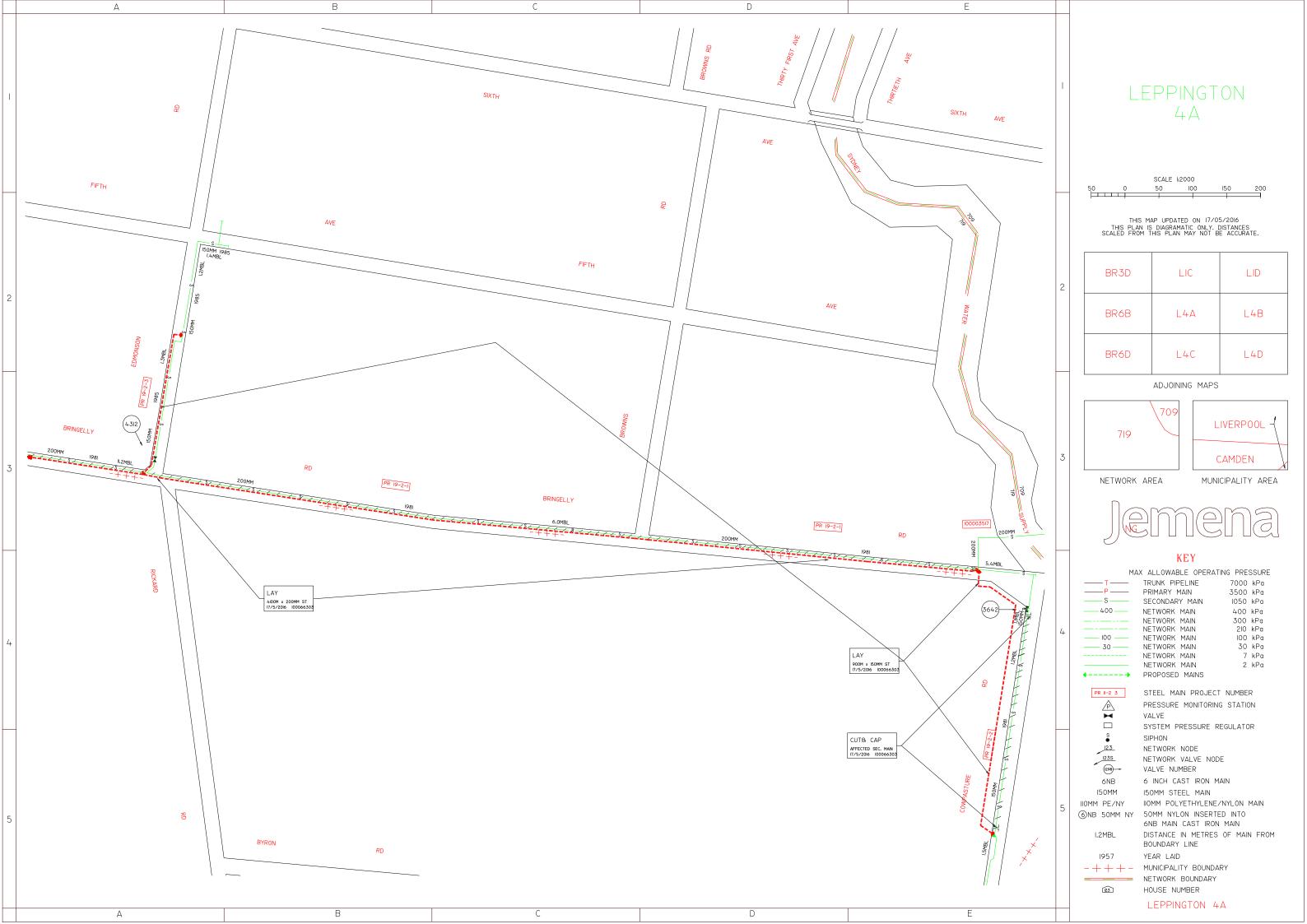
Street light column Padmount substation Or Overground pillar (O.G.Box) Underground pit Duct run Cable run Typical duct section Asbestos warning



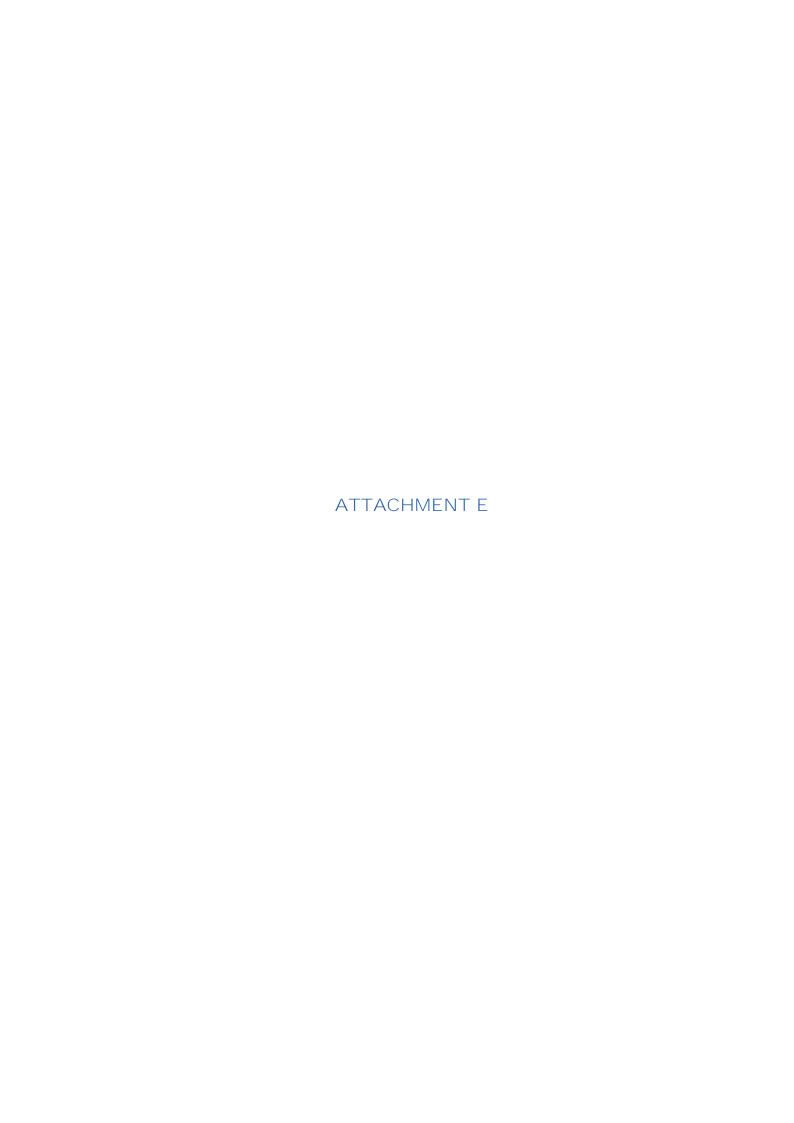
NOT TO SCALE

DBYD Sequence No.:	53735258		
Issued Date:	22/06/2016		

Cadastre: © Land and Property Information 2015, 2016









Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.5 mbg Checked by: BP

Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Silt 10%, Sand 20%, Gravel 70%, dark yellowish brown (10YR4/2), damp, medium dense			Concrete, crushed bricks and blue metal gravels.
- 0.2				-	S1/0.2-0.3	
- 0.4	Silt (ML)		Silt with Sand - 80% Silt, Sand 15%, Gravel 5%, dark yellowish brown (10YR2/2), damp, medium dense			
	Heavy Clay (CH)		Heavy Clay - Clay 75%, Silt 5%, Sand 5%, Gravel 5%, light brown (5YR5/6), damp, firm	М	S1/0.4-0.5	
0.0			End of hole at 0.5 mbg.			
- 0.6						
- 0.8						
-1						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.7 mbg

COMM						,
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Clay 15%, Silt 60%, Sand 10%, Gravel 15%, moderate brown (5YR3/4), damp, medium dense			Some gravels and concrete
- 0.2 -					S1/0.2-0.3	
- 0.4	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown (10YR2/2), damp, medium dense			
- 0.6	Heavy Clay (CH)		Heavy Clay - Clay 75%, Silt 5%, Sand 5%, Gravel 5%, light brown (5YR5/6), damp, firm	M	S2/0.5-0.6	
- 0.8			End of hole at 0.7 mbg.			
<u> </u>						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 1.1 mbg

Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Clay 5%, Silt 5%, Sand 30%, Gravel 60%, dark yellowish brown (10YR4/2), dry, loose			
- 0.2						
- 0.4					S3/0.3-0.5	
-						
0.6 						
- 0.8						
- 1	Lean Clay (CL)		Lean Clay with Gravel, trace Sand, Clay 65%, Silt 5%, Sand 10%, Gravel 20%, moderate yellowish brown (10YR5/4), moist, medium dense	L	S3/0.9-1.0	
			End of hole at 1.1 mbg.			
1.2 -						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM

Total Depth 0.6 mbg

Checked by: BP

COMM	COMMENTS						
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
- 0.2	Fill		Fill - Clay 10%, Silt 50%, Sand 10%, Gravel 30%, pale brown (5YR5/2), dry, medium dense		S4/0.2-0.3	Fragments of ACM	
- 0.4	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown (10YR2/2), damp, medium dense		S4/0.4-0.5	_	
- 0.6	Lean Clay (CL)		Lean Clay with Silt and Sand - Clay 60%, Silt 20%, Sand 15%, Gravel 5%, moderate brown (5YR4/4), damp, soft End of hole at 0.6 mbg.	L			
- 0.8							
– 1							
- 1.2 -							
- 1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.7 mbg Checked by: BP

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Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Clay 35%, Silt 40%, Sand 15%, Gravel 10%, pale brown (5YR5/2), dry, medium dense			Two fragments of corrugated ACM in top 100 mm. Bitumen, gravels, metal and crushed concrete fill.
- 0.2					\$5/0.2-0.3	
- 0.4	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown (10YR2/2), damp, medium dense		S5/0.4-0.6	
0.6	Gravelly Clay (CL)		Gravelly Clay - Clay 60%, Silt 5%, Sand 5%, Gravel 30%, moderate yellowish brown (10YR5/4), damp, firm	L		
- 0.8			End of hole at 0.7 mbg.			
- 1						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 1.1 mbg

Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
- 0.2	Fill		Fill - Clay 35%, Silt 15%, Sand 20%, Gravel 30%, pale brown (5YR5/2), damp, dense			Roof tiles, bitumen and concrete throughout fill layer and blue metal gravels.
_						
- 0.4					S6/0.4-0.6	
- 0.6						
- 0.8	Heavy Clay (CH)		Heavy Clay - Clay 75%, Silt 5%, Sand 5%, Gravel 5%, moderate yellowish brown (10YR5/4), damp, firm	M	S6/0.9-1.1	
- 1						
- 1.2 -			End of hole at 1.1 mbg.			
1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.7 mbg Checked by: BP

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COMIN	LINIO					,
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Clay 10%, Silt 30%, Sand 25%, Gravel 35%, pale brown (5YR5/2), dry, medium dense			Some crushed concrete and blue metal gravel
- 0.2					S7/0.2-0.3	
- 0.4	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown (10YR2/2), damp, medium dense		S7/0.45-0.65	
0.6	Lean Clay (CL)		Lean Clay with Sand - Clay 55%, Silt 10%, Sand 20%, Gravel 15%, moderate yellowish brown (10YR5/4), moist, soft	L		
- 0.8			End of hole at 0.7 mbg.			
- 1						
- 1.2						
- 1.4						
1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM
Total Depth 0.2 mbg
Checked by: BP

			Total Depth 0.2 mbg		Checked by: E	3P
OMN	MENTS					
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
	F		Fill - Clay 5%, Sand 5%, Gravel 90%, dusky yellow brown (10YR2/2), dry, loose		S8/0.0-0.15	
	Heavy Clay (CH)		Heavy Clay - Clay 80%, Silt 10%, Sand 10%, moderate reddish brown (10R4/6), damp, firm	М		
0.2			End of hole at 0.2 mbg.			
0.4						
0.6						
8.0						
· 1						
1.2						
1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.15 mbg

COMM	IENTS					
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
	Fill Silt (ML)		Fill - Clay 5%, Silt 40%, Sand 50%, Gravel 5%, moderate brown (5YR4/4), damp, loose silt with Gravel, trace Sand - Clay 5%, Silt		S9/0.0-0.15	
			70%, Sand 10%, Gravel 15%, moderate brown (5YR4/4), damp, medium dense			
- 0.2			End of hole at 0.15 mbg.			
- 0.4						
_						
- 0.6						
- 0.8						
_						
- 1						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.15 mbg

COMM	IENTS					
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
_	Fill		Fill - Silt 5%, Sand 5%, Gravel 90%, dusky brown (5YR2/2), damp, loose		S10/0.0-0.15	Shale gravels
- 0.2	Silt (ML)		Silt with Gravel, trace Sand - Clay 5%, Silt 70%, Sand 10%, Gravel 15%, moderate yellowish brown (10YR5/4), damp, soft End of hole at 0.15 mbg.			
- 0.4						
- 0.6						
- 0.8						
- - 1						
- - 1.2						
1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.6 mbg

			Total Depth 0.0 mbg		Officered by:	51
COMM	MENTS					
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
- 0.2	Fill		Fill - Clay 10%, Silt 65%, Sand 20%, Gravel 5%, dark yellowish brown (10YR4/2), dry, loose		S11/0.0-0.2, DS1, TS1	Some shale gravels
- 0.4	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown(10YR2/2), damp, medium dense		S11/0.3-0.5	
	Sandy Clay (CH)		Sandy Clay - Clay 60%, Silt 5%, Sand 30%, Gravel 5%, moderate yellowsh brown (10YR5/4), damp, firm	M		
0.6			End of hole at 0.6 mbg.			
- 0.8						
- 1						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.35 mbg

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Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
	F		Fill - Sand 95%, Gravel 5%, pale brown (5YR5/2), dry, loose		S13/0.0-0.15	ACM fragment. Crushed granite fill.
- 0.2	F		Fill - Clay 40%, Silt 30%, Sand 20%, Gravel 10%, moderate brown 5YR(4/4), damp, loose			Reworked natural
_	Heavy Clay (CH)		Heavy Clay with Sand - Clay 70%, Sand 20%, Gravel 10%, pale brown (5YR5/2), damp, firm	М	\$13/0.25-0.35	
- 0.4			End of hole at 0.35 mbg.			
0.6						
-						
- 0.8						
1						
- 1.2						
- 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM

Total Depth 0.5 mbg

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Check	ed by	: BP

COMM	COMMENTS						
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	F		Fill - Clay 5%, Sand 10%, Gravel 85%, pale brown (5YR5/2), dry, loose		S14/0-0.2	Shale gravels and road base fill	
- 0.2	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, dusky yellowish brown (10YR2/2), damp, medium dense		S14/0.2-0.5		
0.4	Heavy Clay (CH)		Heavy Clay - Clay 80%, Silt 10%, Sand 10%, dark yellowish orange (10YR6/6), moist, firm	M			
- 0.6			End of hole at 0.5 mbg.				
_							
- 0.8 -							
- 1							
- 1.2 -							
1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

COMMENTS

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM

Total Depth 0.35 mbg

Checked by: BP						
Sample IDs	Comments					
0.1-0.25	Coal wash fill					

Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
	Fill		Fill - Clay 5%, Silt 85%, Sand 5%, Gravel 5%, moderate brown (5YR4/4), damp, medium dense			
- 0.2	Fill		Fill - Clay 5%, Silt 5%, Sand 10%, Gravel 80%, moderate brown (5YR3/4), damp, medium dense		S15/0.1-0.25	Coal wash fill
	Silt (ML)		Silt with Clay, trace Sand - Clay 20%, Silt 70%, Sand 10%, moderate yellowish brown (10YR5/4), damp, soft		\$15/0.25-0.35	
- 0.4			End of hole at 0.35 mbg.			
- 0.6						
- 0.8						
- 1						
- 1.2						
- 1.4						
	city I = low M :					Page 1 of 1



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.3 mbg

COMM	IENTS				

Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
	Fill		Fill - Clay 10%, Silt 65%, Sand 10%, Gravel 15%, moderate brown (5YR4/4), damp, medium dense		S16/0.0-0.15	ACM fragments in surface fill. Coal wash Fill.
- 0.2	Silt (ML)		Silt with Clay, trace Sand - Clay 15%, Silt 70%, Sand 10%, Gravel 5%, moderate brown (5YR4/4), damp, medium dense		S16/0.25-0.3	
- 0.4			End of hole at 0.3 mbg.			
-						
- 0.6 -						
- 0.8						
- - 1						
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- 1.2 -						
– 1.4						
Disatio	city I = low M =	- Madiii	on II – Hick			Page 1 of 1



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.7 mbg Checked by: BP

			Total Depth 0.7 mbg		Checked by:	BP			
COMM	COMMENTS								
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments			
_	Fill		Fill - Silt 10%, Sand 20%, Gravel 70%, dusky yellow brown (10YR2/2), damp, medium dense		S17/0.0-0.2	Roadbase with crushed sandstone.			
- 0.2	Fill		Fill - Clay 10%, Sand 60%, Gravel 30%, light brown (5YR6/4), damp, medium dense						
0.4 -	Fill		Fill - Sand 20%, Gravel 80%, dusky yellowish brown (10YR2/2), damp, medium dense			Coalwash fill			
0.6	Heavy Clay (CH)		Heavy Clay, trace Silt - Clay 80%, Silt 10%, Sand 5%, Gravel 5%, moderate yellowish brown (10YR5/4), damp, firm	M	S17/0.6-0.7				
0.8 			End of hole at 0.7 mbg.						
1 -									
1.2 									
1.4									



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.8 mbg

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COMIN	OMMEN I S							
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments		
_	Fill		Fill - Silt 35%, Sand 60%, Gravel 5%, moderate brown (5YR3/4), damp, loose					
- 0.2 -	Fill		Fill - Clay 5%, Silt 75%, Sand 15%, Gravel 5%, moderate brown (5YR3/4), damp, medium dense	-	S18/0.35-0.55	Roadbase and coal wash fill		
- 0.4	FIII		Fill - Silt 5%, Sand 5%, Gravel 80%, dusky yellowish brown (10YR2/2), damp, medium dense		\$18/0.35-0.55	Roadbase and coal wash IIII		
- 0.6 -	Heavy Clay (CH)		Heavy Clay, trace Silt, trace Sand - Clay 80%, Silt 10%, Sand 10%, dark yellowish orange (10YR6/6), damp, firm	М	S18/0.6-0.8			
- 0.8 -			End of hole at 0.8 mbg.					
- 1 -								
- 1.2 -								
1.4								



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

COMMENTS

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP

Total Depth 0.4 mbg

OOWIIV	ACMINICIAT O						
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Silt 75%, Sand 20%, Gravel 5%, dusky yellow brown (10YR2/2), damp, medium dense		S19/0.0-0.15	Reworked natural with numerous ACM fragments	
- 0.2 -	Sandy Silt (ML)		Sandy Silt - Clay 5%, Silt 60%, Sand 35%, brown (5YR5/2), damp, dense				
0.4			End of hole at 0.4 mbg.				
_							
- 0.6							
- 0.8							
_							
- 1							
_							
- 1.2							
- 1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.6 mbg Checked by: BP

			Total Depth 0.6 mbg		Checked by: I	or				
COMM	COMMENTS									
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments				
- 0.2	Fill		Fill - Clay 10%, Silt 10%, Sand 40%, Gravel 40%, moderate yellowish brown (10YR5/4), damp, medium dense							
0.4	Sandy Silt (ML)		Sandy Silt - Clay 5%, Silt 60%, Sand 35%, brown (5YR5/2), damp, dense							
-0.6			End of hole at 0.6 mbg.							
0.8										
1										
1.2										
- 1.4										



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Address: 230 Sixth Avenue, Austral NSW 2179

Client Austral 1 Pty Ltd Date Completed 04/10/2016 Excavation Method Shovel

Logged by: AM Checked by: BP

Total Depth 0.2 mbg

COMM	COMMENTS							
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments		
	Fill		Fill - Silt 70%, Sand 20%, Gravel 10%, dusky brown (5YR2/2), damp, medium dense		S21/0.0-0.15	Some road base and roof tiles		
	Silt (ML)		Silt with Sand - Silt 80%, Sand 20%, dusky brown (5YR2/2), damp, medium dense					
-0.2			End of hole at 0.2 mbg.					
- 0.4								
_								
- 0.6								
-								
- 0.8								
_								
- 1								
_								
- 1.2								
- 1.4								



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.45 mbg

COMM	IEN I S					
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
- 0.2	Fill		Fill - Clay 10%, Silt 20%, Sand 20%, Gravel 50%, moderate brown (5YR3/4), damp, medium dense		S22/0.15-0.35	Crushed sandstone and road base
- 0.4	Heavy Clay (CH)		Heavy Clay trace Sand - Clay 5%, Silt 80%, Sand 10%, Gravel 5%, greyish brown (5YR3/2), damp, firm	M	S22/0.45-0.5	
- 0.6			End of hole at 0.45 mbg.			
- 0.8						
<u> </u>						
- 1.2 -						
– 1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Address: 230 Sixth Avenue, Austral NSW 2179

Client Austral 1 Pty Ltd Date Completed 04/10/2016 Excavation Method Shovel

Logged by: AM Checked by: BP

Total Depth 0.2 mbg

COMM	COMMENTS							
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments		
_	Fill		Fill - Silt 80%, Sand 20%, dusky brown (5YR2/2), damp, medium dense		S23/0.0-0.15	With rootlets		
- 0.2 -			End of hole at 0.2 mbg.					
- 0.4								
0.6								
- 0.8								
- 1								
- 1.2								
1.4								



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.2 mbg

COMM	COMMENTS							
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments		
	Fill		Fill - Clay 10%, Silt 10%, Sand 40%, Gravel 30%, greyish brown (5YR3/2), damp, medium dense		S24/0.0-0.15	Road base on surface.		
- 0.2	Silt (ML)		Silt with Sand - Silt 80%, Sand 15%, Gravel 5%, greyish brown (5YR3/2), damp, medium dense					
_			End of hole at 0.2 mbg.					
- 0.4								
- 0.6								
- 0.8								
_								
1								
1.2								
- 1.4								



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.95 mbg

COMM	ENTS			
		D		

Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments
- 0.2	Fill		Fill - Clay 30%, Silt 20%, Sand 20%, Gravel 30%, moderate brown (5YR4/4), dry, medium dense			Concrete, crushed roadbase
- 0.4					S25/0.4-0.6	
- 0.6	Silt (ML)		Silt with Sand - Silt 80%, Sand 20%, moderate brown (5YR4/4), moist, medium dense		\$25/0.78	Alluvium with charcoal fragments
- 0.8						
- 1 -			End of hole at 0.95 mbg.			
- 1.2 -						
1.4						



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016

Excavation Method 5.5 tonne excavator

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 1.3 mbg

COMMENTS

COIVIIV	OMMENTS								
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments			
_	Fill		Fill - Clay 30%, Silt 20%, Sand 20%, Gravel 30%, moderate brown (5YR4/4), dry, dense						
- 0.2 -					S26/0.3-0.5				
- 0.4									
0.6 -									
- 0.8									
- 1	Heavy Clay (CH)		Silt with Clay, trace Sand - Clay 15%, Silt 75%, Sand 10%, moderate yellowish brown (10YR5/4), moist, firm		S26/1.0-1.3				
- 1.2			End of hole at 1.3 mbg.						
- 1.4									



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Date Completed 04/10/2016 Excavation Method Shovel

Client Austral 1 Pty Ltd

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.15

	Total Depth 0.15				Checked by: BP		
COMN	MENTS						
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Silt 50%, Sand 30%, Gravel 20%, dark yellowish brown (10YR4/2), dry, medium density		SS1/0.0-0.15		
- 0.2			End of hole at 0.15 mbg.				
- 0.4							
- 0.6							
- 0.8							
_ _ 1							
- 1.2							
1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Date Completed 04/10/2016 Excavation Method Shovel

Client Austral 1 Pty Ltd

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.15

	Total Depth 0.15				Checked by: BP		
COMN	MENTS						
Depth (m)	uscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Silt 50%, Sand 40%, Gravel 10%, dark yellowish brown (10YR4/2), dry		SS2/0.0-0.15		
- 0.2			End of hole at 0.15 mbg.				
- 0.4							
0.6							
- 0.8							
- 1							
- 1.2							
_ _ 1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Date Completed 04/10/2016 Excavation Method Shovel

Client Austral 1 Pty Ltd

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Checked by: BP Total Depth 0.15

	Total Depth 0.15				Checked by: BP		
COMN	MENTS						
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Silt 80%, Sand 15%, Gravel 5%, dusky yellow brown (10YR2/2), damp		SS3/0.0-0.15		
- 0.2			End of hole at 0.15 mbg.				
- 0.4							
- 0.6							
- 0.8							
- 1							
- 1.2							
_ _ 1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Date Completed 04/10/2016 Excavation Method Shovel

Client Austral 1 Pty Ltd

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM

Total Depth 0.15	Checked by: BP

COMM	COMMENTS								
Depth (m)	nscs	OSCS Material Description		Plasticity	Sample IDs	Comments			
-	Fill		Fill - Silt 80%, Sand 15%, Gravel 5%, dusky yellow brown (10YR2/2), damp		SS4/0.0-0.15				
- 0.2 -			End of hole at 0.15 mbg.						
- 0.4 -									
- 0.6 -									
0.8 									
- 1 -									
1.2 									
1.4									



Project Number: 1601114

Project Name: Phase II Environmental Site Assessment Report

Address: 230 Sixth Avenue, Austral NSW 2179

Client Austral 1 Pty Ltd Date Completed 04/10/2016 Excavation Method Shovel

Logged by: AM

Total Depth 0.15 Checked by: BP

COMM	COMMENTS								
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments			
_	Fill		Fill - Clay 10%, Silt 70%, Sand 10%, Gravel 10%, dusky yellow brown (10YR2/2), damp		SS5/0.0-0.15				
- 0.2 -			End of hole at 0.15 mbg.						
- 0.4 -									
- 0.6 -									
- 0.8 -									
- 1 -									
- 1.2 -									
- 1.4									



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016 Excavation Method Shovel

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM
Total Depth 0.15 Checked by: BP

			Total Depth 0.15		Checked by: BP		
COM	MENTS						
Depth (m)	nscs	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Clay 10%, Silt 70%, Sand 10%, Gravel 10%, dusky yellow brown (10YR2/2), damp		SS6/0.0-0.15		
- 0.2			End of hole at 0.15 mbg.				
- 0.4							
- 0.6							
- 0.8							
- 1							
- 1.2							
- 1.4							



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Date Completed 04/10/2016 Excavation Method Shovel

Client Austral 1 Pty Ltd

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM
Total Depth 0.15 Checked by: BP

COMMENTS Graphic Log Depth (m) Sample IDs Comments Material Description Plasticity **USCS** Fill SS7/0.0-0.15 Fill - Silt 10%, Sand 40%, Gravel 40%, moderate brown (5YR4/4), dry End of hole at 0.15 mbg. - 0.2 - 0.4 - 0.6 - 0.8 - 1.2 - 1.4



Project Number: 1601114

Project Name: Phase II Environmental Site

Assessment Report

Client Austral 1 Pty Ltd Date Completed 04/10/2016 Excavation Method Shovel

Address: 230 Sixth Avenue, Austral NSW 2179

Logged by: AM Total Depth 0.15 Checked by: BP

	Total Depth 0.15				Checked by: BP		
COMN	MENTS						
Depth (m)	USCS	Graphic Log	Material Description	Plasticity	Sample IDs	Comments	
_	Fill		Fill - Silt 40%, Sand 60%, dark yellowish brown (10YR4/2), dry		SS8/0.0-0.15		
- 0.2			End of hole at 0.15 mbg.				
- 0.4							
- 0.6							
- 0.8							
- 1							
- 1.2							
_ _ 1.4							

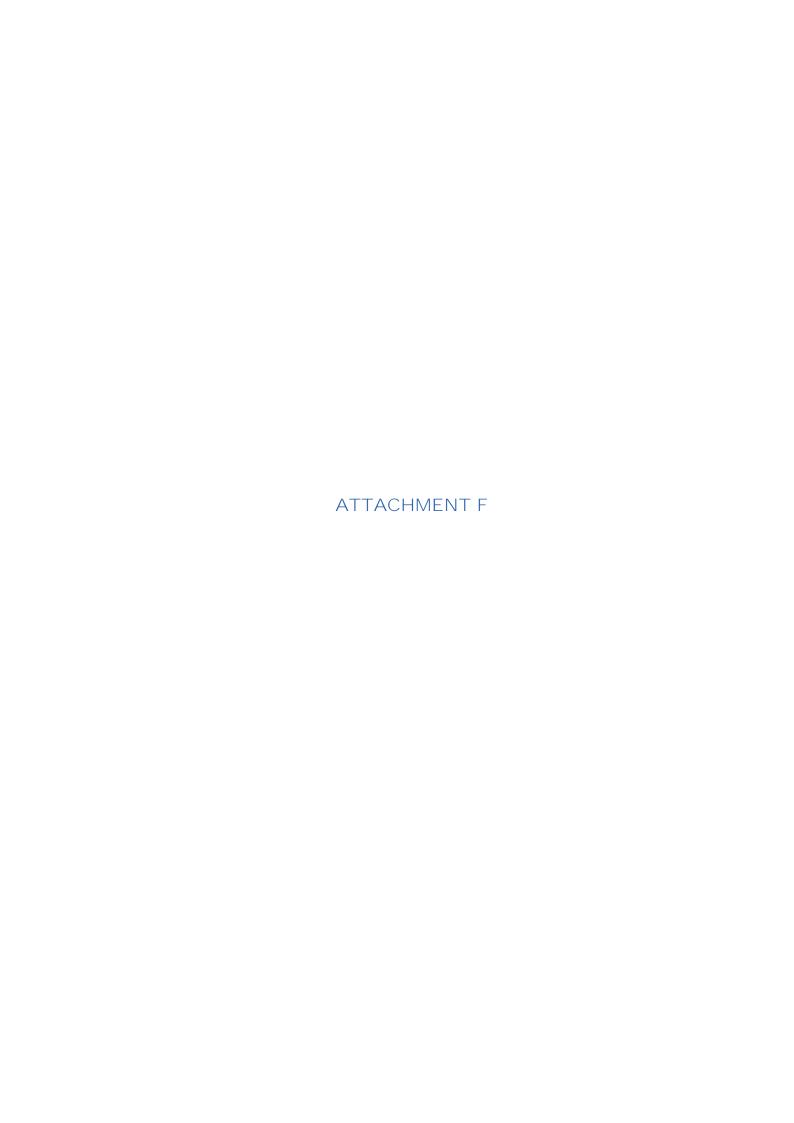
Sample ID	Sample Location	Depth	Soil Type	Description	Analysis
AF1/0.0-0.15	AF1	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
AF2/0.0-0.15	AF2	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
AF3/0.0-0.15	AF3	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
AF4/0.0-0.15	AF4	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
AF5/0.0-0.15	AF5	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
AF6/0.0-0.15	AF6	0.0-0.15	Fill	Silt 70%, Sand 25%, Gravel 5%, dark yellowish brown (10YR4/2), damp	Asbestos ID
B1/0.015	B1	0.015	Fill	Clay 5%, Silt 5%, Sand 30%, Gravel 60%, moderate brown (5YR3/4), dry	TRH/VOC/PAH/ metals (8)
B2/0.0-0.15	B2	0.0-0.15	Fill	Clay 5%, Silt 5%, Sand 20%, Gravel 70%, dusky yellow brown (10YR2/2), dry	TRH/VOC/PAH/ metals (8)
BH1/0.1-0.2	BH1	0.1-0.2	Fill	Silt 10%, Sand 20%, Gravel 70%, dark yellowish brown (10YR4/2), damp	TRH/VOC/PAH/metals (8)
S1/0.4-0.5	S1	0.4-0.5	Heavy Clay (CH)	Clay 75%, Silt 5%, Sand 5%, Gravel 5%, light brown (5YR5/6), damp	TRH/BTEX/PAH/OCP/ metals (8)
S1/0.2-0.7	S1	0.2-0.7	Fill	Clay 15%, Silt 60%, Sand 10%, Gravel 15%, moderate brown (5YR3/4), damp	Hold
S2/0.2-0.3	S2	0.2-0.3	Fill	Clay 15%, Silt 60%, Sand 10%, Gravel 15%, moderate brown (5YR3/4), damp	TRH/BTEX/PAH/OCP/ metals (8)
S2/0.5-0.6	S2	0.5-0.6	Heavy Clay (CH)	Clay 75%, Silt 5%, Sand 5%, Gravel 5%, light brown (5YR5/6), damp	Hold
\$3/0.3-0.5	S3	0.3-0.5	Fill	Clay 5%, Silt 5%, Sand 30%, Gravel 60%, dark yellowish brown (10YR4/2), dry	TRH/BTEX/PAH/OCP/ metals (8)
S3/0.9-1.0	S3	0.9-1.0	Lean Clay with Gravel (CH)	Clay 65%, Silt 5%, Sand 10%, Gravel 20%, moderate yellowish brown (10YR5/4), moist	Hold

Sample ID	Sample Location	Depth	Soil Type	Description	Analysis	
\$4/0.2-0.3	S4	0.2-0.3	Fill	Clay 10%, Silt 50%, Sand 10%, Gravel 30%, pale brown (5YR5/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S4/0.4-0.5	S4	0.4-0.5	Heavy Clay (CH)	Clay 60%, Silt 20%, Sand 15%, Gravel 5%, moderate brown (5YR4/4), damp	Hold	
S5/0.2-0.3	S5	0.2-0.3	Fill	Clay 35%, Silt 40%, Sand 15%, Gravel 10%, pale brown (5YR5/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S5/0.4-0.6	S5	0.4-0.6	Gravelly Clay (CH)	Clay 60%, Silt 5%, Sand 5%, Gravel 30%, moderate yellowish brown (10YR5/4), damp	Hold	
S6/0.4-0.6	S6	0.4-0.6	Fill	Clay 35%, Silt 15%, Sand 20%, Gravel 30%, pale brown (5YR5/2), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S6/0.9-1.1	S6	0.9-1.1	Heavy Clay (CH)	Clay 75%, Silt 5%, Sand 5%, Gravel 5%, moderate yellowish brown (10YR5/4), damp	Hold	
\$7/0.2-0.3	S7	0.2-0.3	Fill	Clay 10%, Silt 30%, Sand 25%, Gravel 35%, pale brown (5YR5/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S7/0.45-0.65	S7	0.45-0.65	Heavy Clay with Sand (CH)	Clay 55%, Silt 10%, Sand 20%, Gravel 15%, moderate yellowish brown (10YR5/4), moist	Hold	
S8/0.0-0.15	S8	0.0-0.15	Fill	Clay 5%, Sand 5%, Gravel 90%, dusky yellow brown (10YR2/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S9/0.0-0.15	S9	0.0-0.15	Fill	Clay 5%, Silt 40%, Sand 50%, Gravel 5%, moderate brown (5YR4/4), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S10/0.0-0.15	S10	0.0-0.15	Fill	Silt 5%, Sand 5%, Gravel 90%, dusky brown (5YR2/2), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S11/0.0-0.2	S11	0.0-0.2	Fill	Clay 10%, Silt 65%, Sand 20%, Gravel 5%, dark yellowish brown (10YR4/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	

Sample ID	Sample Location	Depth	Soil Type	Description	Analysis	
S11/0.3-0.5	S11	0.3-0.5	Sandy Clay (CH)	Clay 60%, Silt 5%, Sand 30%, Gravel 5%, moderate yellowish brown (10YR5/4), damp	Hold	
S12/0.0-0.2	S12	0.0-0.2	Fill	Clay 20%, Silt 20%, Sand 20%, Gravel 40%, moderate yellowish brown (10YR5/4), dry	TRH/BTEX/PAH/OCP/ metals (8)	
\$13/0.0-0.15	S13	0.0-0.15	Fill	Sand 95%, Gravel 5%, pale brown (5YR5/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S13/0.25-0.35	S13	0.25-0.35	Heavy Clay with Sand (CH)	Clay 70%, Sand 20%, Gravel 10%, pale brown (5YR5/2), damp	Hold	
S14/0.0-0.2	S14	0.0-0.2	Fill	Clay 5%, Sand 10%, Gravel 85%, pale brown (5YR5/2), dry	TRH/BTEX/PAH/OCP/ metals (8)	
S14/0.2-0.5	S14	0.2-0.5	Heavy Clay (CH)	Clay 75%, Silt 10%, Sand 10%, Gravel 5%, dark yellowish orange (10YR6/6), moist	Hold	
S15/0.1-0.25	S15	0.1-0.25	Fill	Clay 5%, Silt 5%, Sand 10%, Gravel 80%, moderate brown (5YR3/4), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S15/0.25-0.35	S15	0.25-0.35	Silt (ML)	Clay 20%, Silt 70%, Sand 10%, moderate yellowish brown (10YR5/4), damp	Hold	
S16/0.0-0.15	S16	0.0-0.15	Fill	Clay 10%, Silt 65%, Sand 10%, Gravel 15%, moderate brown (5YR4/4), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S16/0.2-0.3	S16	0.2-0.3	Silt (ML)	Clay 15%, Silt 70%, Sand 10%, Gravel 5%, moderate brown (5YR4/4), damp	Hold	
S17/0.0-0.2	S17	0.0-0.2	Fill	Silt 10%, Sand 20%, Gravel 70%, dusky yellow brown (10YR2/2), damp	TRH/BTEX/PAH/OCP/ metals (8)	
S17/0.6-0.7	S17	0.6-0.7	Heavy Clay (CH)	Clay 80%, Silt 10%, Sand 5%, Gravel 5%, moderate yellowish brown (10YR5/4), damp	Hold	

Sample ID	Sample Location	Depth	Soil Type	Description	Analysis
S18/0.35-0.55	S18	0.35-0.55	Fill	Silt 35%, Sand 60%, Gravel 5%, moderate brown (5YR3/4), damp	TRH/BTEX/PAH/OCP/ metals (8)
S18/0.6-0.8	S18	0.6-0.8	Heavy Clay (CH)	Clay 80%, Silt 10%, Sand 10%, dark yellowish orange (10YR6/6), damp	Hold
\$19/0.0-0.15	S19	0.0-0.15	Fill	Silt 75%, Sand 20%, Gravel 5%, dusky yellow brown (10YR2/2), damp	TRH/BTEX/PAH/OCP/ metals (8)
\$20/0.0-0.15	S20	0.0-0.15	Fill	Clay 10%, Silt 10%, Sand 40%, Gravel 40%, moderate yellowish brown (10YR5/4), damp	TRH/BTEX/PAH/OCP/ metals (8)
S21/0.0-0.15	S21	0.0-0.15	Fill	Silt 70%, Sand 20%, Gravel 10%, dusky brown (5YR2/2), damp	Hold
S22/0.15-0.35	S22	0.15-0.35	Fill	Clay 10%, Silt 20%, Sand 20%, Gravel 50%, moderate brown (5YR3/4), damp	TRH/BTEX/PAH/OCP/ metals (8)
S22/0.45-0.5	S22	0.45-0.5	Heavy Clay (CH)	Clay 5%, Silt 80%, Sand 10%, Gravel 5%, greyish brown (5YR3/2), damp	Hold
S23/0.0-0.15	S23	0.0-0.15	Topsoil	Silt 80%, Sand 20%, dusky brown (5YR2/2), damp	OCP/ metals (8)
S24/0.0-0.15	S24	0.0-0.15	Fill	Clay 10%, Silt 10%, Sand 40%, Gravel 30%, greyish brown (5YR3/2), damp	TRH/BTEX/PAH/OCP/ metals (8)
S25/0.4-0.6	S25	0.4-0.6	Fill	Clay 30%, Silt 20%, Sand 20%, Gravel 30%, moderate brown (5YR4/4), dry	TRH/BTEX/PAH/OCP/ metals (8)
S25/0.7-0.8	S25	0.7-0.8	Silt with sand (ML)	Silt 80%, Sand 20%, moderate brown (5YR4/4), moist	Composite with S26/0.0-0.15 as C1 (OCP/ metals (8))
S26/0.3-0.5	S26	0.3-0.5	Fill	Clay 30%, Silt 20%, Sand 20%, Gravel 30%, moderate brown (5YR4/4), dry	TRH/BTEX/PAH/OCP/ metals (8)
S26/1.0-1.3	S26	1.0-1.3	Heavy Clay (CH)	Clay 15%, Silt 75%, Sand 10%, moderate yellowish brown (10YR5/4), moist	Composite with S26/1.0-1.3 as C1 (OCP/ metals (8))

Sample ID	Sample Location	Depth	Soil Type	Description	Analysis
SS1/0.0-0.15	SS1	0.0-0.15	Fill	Silt 50%, Sand 30%, Gravel 20%, dark yellowish brown (10YR4/2), dry	Asbestos ID / Lead
SS2/0.0-0.15	SS2	0.0-0.15	Fill	Silt 50%, Sand 40%, Gravel 10%, dark yellowish brown (10YR4/2), dry	Asbestos ID / Lead
SS3/0.0-0.15	SS3	0.0-0.15	Fill	Silt 80%, Sand 15%, Gravel 5%, dusky yellow brown (10YR2/2), damp	Asbestos ID / Lead
SS4/0.0-0.15	SS4	0.0-0.15	Fill	Silt 80%, Sand 15%, Gravel 5%, dusky yellow brown (10YR2/2), damp	Asbestos ID / Lead
SS5/0.0-0.15	SS5	0.0-0.15	Fill	Clay 10%, Silt 70%, Sand 10%, Gravel 10%, dusky yellow brown (10YR2/2), damp	Asbestos ID / Lead
SS6/0.0-0.15	SS6	0.0-0.15	Fill	Clay 10%, Silt 70%, Sand 10%, Gravel 10%, dusky yellow brown (10YR2/2), damp	Asbestos ID / Lead
SS7/0.0-0.15	SS7	0.0-0.15	Fill	Silt 10%, Sand 40%, Gravel 40%, moderate brown (5YR4/4), dry	Asbestos ID / Lead
SS8/0.0-0.15	SS8	0.0-0.15	Fill	Silt 40%, Sand 60%, dark yellowish brown (10YR4/2), dry	Asbestos ID / Lead





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

Attention: **Tim Gunns**

518931-S-V2 Report **AUSTRAL PHASE 2** Project name

Project ID 1601114A Received Date Oct 07, 2016







Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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.

Client Sample ID			S1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3	
Sample Matrix			Soil	Soil	Soil	Soil	
Eurofins mgt Sample No.			S16-Oc06876	S16-Oc06877	S16-Oc06878	S16-Oc06879	
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	
Test/Reference	LOR	Unit					
Total Recoverable Hydrocarbons - 1999 NEPM F		0					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20	
TRH C10-C14	20	mg/kg	34	20	27	< 20	
TRH C15-C28	50	mg/kg	55	100	< 50	52	
TRH C29-C36	50	mg/kg	52	110	< 50	51	
TRH C10-36 (Total)	50	mg/kg	141	230	< 50	103	
BTEX		199					
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	%	69	65	64	69	
Total Recoverable Hydrocarbons - 2013 NEPM F	Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5	
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50	
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20	
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20	
Polycyclic Aromatic Hydrocarbons	1						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	1.6	< 0.5	< 0.5	
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	1.8	0.6	0.6	
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	2.1	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	0.7	< 0.5	< 0.5	
Benzo(a)pyrene	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5	
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5	
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	1.3	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	0.8	< 0.5	< 0.5	
Chrysene	0.5	mg/kg	< 0.5	0.7	< 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	1.5	< 0.5	1.5	
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	0.8	< 0.5	< 0.5	

Report Number: 518931-S-V2



Client Sample ID			\$1/0.2-0.3	S2/0.2-0.3	S3/0.3-0.5	S4/0.2-0.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06876	S16-Oc06877	S16-Oc06878	S16-Oc06879
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	1.1	< 0.5	1.0
Pyrene	0.5	mg/kg	< 0.5	1.6	< 0.5	1.3
Total PAH*	0.5	mg/kg	< 0.5	10.8	< 0.5	3.8
2-Fluorobiphenyl (surr.)	1	%	94	94	90	111
p-Terphenyl-d14 (surr.)	1	%	107	111	109	128
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	116	97	100	102
Tetrachloro-m-xylene (surr.)	1	%	100	86	83	89
Total Recoverable Hydrocarbons - 2013 NEPI	•	-				
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	180	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals	,	, 33				
Arsenic	2	mg/kg	< 2	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	19	42	11	28
Copper	5	mg/kg	25	27	34	21
Lead	5	mg/kg	47	33	26	32
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	14	31	16	22
Zinc	5	mg/kg	60	39	48	40
						.,
% Moisture	1	%	17	12	6.8	11



Client Sample ID			S5/0.2-0.3	S6/0.4-0.6	\$7/0.2-0.3	S8/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
•						
Eurofins mgt Sample No.			S16-Oc06880	S16-Oc06881	S16-Oc06882	S16-Oc06883
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM F	ractions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	34	22	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	56	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	78	< 50	< 50
BTEX		1				
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	63	64	68
Total Recoverable Hydrocarbons - 2013 NEPM F		T		+		
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	60	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
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 Benzo(k)fluoranthene	0.5	mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5
	0.5	mg/kg mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene 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	%	99	95	91	117
p-Terphenyl-d14 (surr.)	1	%	115	116	98	126
Organochlorine Pesticides	<u> </u>	,				0
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05



Client Sample ID			S5/0.2-0.3	S6/0.4-0.6	S7/0.2-0.3	S8/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06880	S16-Oc06881	S16-Oc06882	S16-Oc06883
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides	•					
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	97	105	112	109
Tetrachloro-m-xylene (surr.)	1	%	83	90	91	89
Total Recoverable Hydrocarbons - 2013 N	EPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	60	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals	-					
Arsenic	2	mg/kg	2.4	< 2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	25	23	57
Copper	5	mg/kg	14	16	20	37
Lead	5	mg/kg	33	28	32	30
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	8.1	7.8	15	50
Zinc	5	mg/kg	81	19	38	41
% Moisture	1	%	11	15	15	17

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			S9/0.0-0.15 Soil S16-Oc06884 Oct 04, 2016	S10/0.0-0.15 Soil S16-Oc06885 Oct 04, 2016	S11/0.0-0.2 Soil S16-Oc06886 Oct 04, 2016	S12/0.0-0.2 Soil S16-Oc06887 Oct 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	36	27	27	25
TRH C15-C28	50	mg/kg	71	81	< 50	52
TRH C29-C36	50	mg/kg	55	55	< 50	53
TRH C10-36 (Total)	50	mg/kg	162	163	< 50	130
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



Client Comple ID			00/0 0 0 45	040/0 0 0 45	044/0000	040/0 0 0 0
Client Sample ID			S9/0.0-0.15	S10/0.0-0.15	S11/0.0-0.2	S12/0.0-0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06884	S16-Oc06885	S16-Oc06886	S16-Oc06887
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
BTEX	·					
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	%	62	61	63	69
Total Recoverable Hydrocarbons - 2013 NEPM Fra	actions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
Polycyclic Aromatic Hydrocarbons						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.1	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.3	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.6	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	0.7	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	0.8	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.1	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	0.9	< 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	2.6	< 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	1.4	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	2.4	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	11.3	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	122	64	112	103
p-Terphenyl-d14 (surr.)	1	%	123	64	119	116
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05



Client Sample ID Sample Matrix			S9/0.0-0.15 Soil	\$10/0.0-0.15 Soil	S11/0.0-0.2 Soil	S12/0.0-0.2 Soil
Eurofins mgt Sample No.			S16-Oc06884	S16-Oc06885	S16-Oc06886	S16-Oc06887
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 04, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	127	108	109	85
Tetrachloro-m-xylene (surr.)	1	%	84	79	84	83
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	120	110	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.2	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	1.4	< 0.4	< 0.4
Chromium	5	mg/kg	45	18	28	25
Copper	5	mg/kg	200	29	21	37
Lead	5	mg/kg	180	36	42	24
Mercury	0.05	mg/kg	0.17	0.06	0.20	< 0.05
Nickel	5	mg/kg	33	14	19	24
Zinc	5	mg/kg	130	44	38	110
O/ Majatura		0/	45	40	40	47
% Moisture	1	%	15	10	13	17

Client Sample ID Sample Matrix			S13/0.0-0.15 Soil	S14/0.0-0.2 Soil	S15/0.1-0.25 Soil	S16/0.0-0.15 Soil
Eurofins mgt Sample No.			S16-Oc06888	S16-Oc06889	S16-Oc06890	S16-Oc06891
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Frac	tions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	92	39	32	21
TRH C15-C28	50	mg/kg	1500	280	58	51
TRH C29-C36	50	mg/kg	2200	71	< 50	52
TRH C10-36 (Total)	50	mg/kg	3792	390	90	124
ВТЕХ						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	62	68	63	61
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	110	82	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20



Client Sample ID			S13/0.0-0.15	S14/0.0-0.2	S15/0.1-0.25	S16/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06888	S16-Oc06889	S16-Oc06890	S16-Oc06891
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
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	0.6
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 Total PAH*	0.5 0.5	mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	0.5	mg/kg %	101	97	< 0.5 105	106
p-Terphenyl-d14 (surr.)	1	%	78	99	103	105
Organochlorine Pesticides	!	/0	70	99	107	103
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	136	96	103	106
Tetrachloro-m-xylene (surr.)	1	%	85	65	79	86
Total Recoverable Hydrocarbons - 2013 NEPN						
TRH >C10-C16	50	mg/kg	110	82	< 50	< 50
TRH >C16-C34	100	mg/kg	3500	290	< 100	< 100
TRH >C34-C40	100	mg/kg	1200	< 100	< 100	< 100



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			\$13/0.0-0.15 Soil \$16-Oc06888 Oct 05, 2016	\$14/0.0-0.2 \$0il \$16-Oc06889 Oct 04, 2016	\$15/0.1-0.25 \$0il \$16-Oc06890 Oct 04, 2016	S16/0.0-0.15 Soil S16-Oc06891 Oct 04, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.1	< 2	3.4	5.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	33	58	41
Copper	5	mg/kg	11	42	12	17
Lead	5	mg/kg	8.2	100	36	34
Mercury	0.05	mg/kg	0.07	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	40	11	9.9
Zinc	5	mg/kg	50	130	31	31
% Moisture	1	%	21	14	21	18

Client Sample ID			S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06892	S16-Oc06893	S16-Oc06894	S16-Oc06895
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 05, 2016	Oct 05, 2016
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	41	< 20	31	< 20
TRH C15-C28	50	mg/kg	230	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	350	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	621	< 50	< 50	< 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	%	74	88	86	87
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	< 50	< 50	< 50
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	< 20
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)fluorantheneN07	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



Client Sample ID			S17/0.0-0.2	S18/0.35-0.55	S19/0.0-0.15	S20/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06892	S16-Oc06893	S16-Oc06894	S16-Oc06895
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 05, 2016	Oct 05, 2016
Test/Reference	LOR	Unit	,	,		
Polycyclic Aromatic Hydrocarbons	2011	- Onne				
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	%	106	103	87	103
p-Terphenyl-d14 (surr.)	1	%	118	103	102	110
Organochlorine Pesticides	<u>'</u>					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	0.48	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	85	81	88	88
Tetrachloro-m-xylene (surr.)	1	%	77	70	86	81
Total Recoverable Hydrocarbons - 2013 NEI	PM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	540	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	220	< 100	< 100	< 100
Heavy Metals						
Arsenic	2	mg/kg	3.3	< 2	3.8	< 2
Cadmium	0.4	mg/kg	0.6	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	35	11	15	10
Copper	5	mg/kg	1300	33	40	21
Lead	5	mg/kg	58	42	95	28
Mercury	0.05	mg/kg	< 0.05	< 0.05	0.05	< 0.05
Nickel	5	mg/kg	35	23	7.4	21
Zinc	5	mg/kg	100	34	150	73
						İ



Client Sample ID			S21/0.0-0.15	S22/0.15-0.35	S23/0.0-0.15	S24/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06896	S16-Oc06897	S16-Oc06898	S16-Oc06899
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 05, 2016	Oct 04, 2016
•	1.00		OCI 05, 2016	OCI 04, 2016	Oct 05, 2016	OCI 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM						
TRH C6-C9	20	mg/kg	-	< 20	-	< 20
TRH C10-C14	20	mg/kg	-	30	-	< 20
TRH C15-C28	50	mg/kg	-	110	-	< 50
TRH C29-C36	50	mg/kg	-	68	-	< 50
TRH C10-36 (Total)	50	mg/kg	-	208	-	< 50
BTEX	0.4	1 "		0.4		0.4
Benzene	0.1	mg/kg	-	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	-	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	-	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	-	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	-	< 0.1	-	< 0.1
Xylenes - Total 4-Bromofluorobenzene (surr.)	0.3	mg/kg %	-	< 0.3 91	-	< 0.3 86
Total Recoverable Hydrocarbons - 2013 NEPM		70	-	91	=	00
•		no a // - c		.05	+	.0.5
Naphthalene ^{N02}	0.5	mg/kg	-	< 0.5	-	< 0.5
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	< 50	-	< 50
TRH C6-C10	20	mg/kg	-	< 20	-	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	< 20	=	< 20
Polycyclic Aromatic Hydrocarbons	0.5			4.4		0.5
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	1.1	-	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	1.4	-	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	<u>-</u>		-	< 0.5
Acenaphthylana	0.5	mg/kg	-	< 0.5 < 0.5	-	< 0.5
Acenaphthylene Anthracene	0.5	mg/kg mg/kg	_	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg		1.2	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg		0.8	-	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	_	0.9	-	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	_	0.7	_	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	_	0.8	-	< 0.5
Chrysene	0.5	mg/kg	_	1.4	-	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	_	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	_	3.3	_	< 0.5
Fluorene	0.5	mg/kg	_	< 0.5	_	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	_	< 0.5	_	< 0.5
Naphthalene	0.5	mg/kg	_	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	-	0.8	-	< 0.5
Pyrene	0.5	mg/kg	-	2.7	-	< 0.5
Total PAH*	0.5	mg/kg	-	12.6	-	< 0.5
2-Fluorobiphenyl (surr.)	1	%	-	109	-	95
p-Terphenyl-d14 (surr.)	1	%	-	109	-	106
Organochlorine Pesticides	1	•				
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05



Client Sample ID			S21/0.0-0.15	S22/0.15-0.35	S23/0.0-0.15	S24/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06896	S16-Oc06897	S16-Oc06898	S16-Oc06899
Date Sampled			Oct 05, 2016	Oct 04, 2016	Oct 05, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides	·					
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	116	91	91	87
Tetrachloro-m-xylene (surr.)	1	%	89	82	81	89
Total Recoverable Hydrocarbons - 2013 N	IEPM Fractions					
TRH >C10-C16	50	mg/kg	-	< 50	-	< 50
TRH >C16-C34	100	mg/kg	-	170	-	< 100
TRH >C34-C40	100	mg/kg	-	< 100	-	< 100
Heavy Metals						
Arsenic	2	mg/kg	2.4	2.8	< 2	< 2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	25	18	11	8.7
Copper	5	mg/kg	7.9	21	13	16
Lead	5	mg/kg	26	40	17	17
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	14	7.2	11
Zinc	5	mg/kg	7.5	39	31	33
% Moisture	1	%	14	11	14	15

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S25/0.4-0.6 Soil S16-Oc06900 Oct 04, 2016	S26/0.3-0.5 Soil S16-Oc06901 Oct 04, 2016	SS1/0.0-0.15 Soil S16-Oc06902 Oct 05, 2016	SS2/0.0-0.15 Soil S16-Oc06903 Oct 05, 2016
Total Recoverable Hydrocarbons - 1999 NEPM Fract		Offic				
TRH C6-C9	20	mg/kg	< 20	< 20	-	-
TRH C10-C14	20	mg/kg	27	< 20	-	-
TRH C15-C28	50	mg/kg	< 50	< 50	-	-
TRH C29-C36	50	mg/kg	< 50	< 50	-	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	-	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	-



		1				_
Client Sample ID			S25/0.4-0.6	S26/0.3-0.5	SS1/0.0-0.15	SS2/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06900	S16-Oc06901	S16-Oc06902	S16-Oc06903
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 05, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
ВТЕХ	•	•				
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-	-
4-Bromofluorobenzene (surr.)	1	%	90	90	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fr	actions					
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	_	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	_	-
TRH C6-C10	20	mg/kg	< 20	< 20	_	-
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	-	-
Polycyclic Aromatic Hydrocarbons	<u>'</u>					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	_	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	-	_
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	_	_
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	_	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	_	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	_	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	-	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	_	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	_	-
Chrysene	0.5	mg/kg	< 0.5	< 0.5	_	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	-	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	-	-
2-Fluorobiphenyl (surr.)	1	%	94	104	-	-
p-Terphenyl-d14 (surr.)	1	%	103	117	-	-
Organochlorine Pesticides						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-



Client Sample ID			S25/0.4-0.6	S26/0.3-0.5	SS1/0.0-0.15	SS2/0.0-0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06900	S16-Oc06901	S16-Oc06902	S16-Oc06903
Date Sampled			Oct 04, 2016	Oct 04, 2016	Oct 05, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-	-
Toxaphene	1	mg/kg	< 1	< 1	-	-
Dibutylchlorendate (surr.)	1	%	85	82	-	-
Tetrachloro-m-xylene (surr.)	1	%	81	78	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	< 50	< 50	-	-
TRH >C16-C34	100	mg/kg	< 100	< 100	-	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-	-
Heavy Metals						
Arsenic	2	mg/kg	< 2	2.1	-	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	-	-
Chromium	5	mg/kg	12	35	-	-
Copper	5	mg/kg	16	16	-	-
Lead	5	mg/kg	17	27	40	32
Mercury	0.05	mg/kg	< 0.05	< 0.05	-	-
Nickel	5	mg/kg	10	17	-	-
Zinc	5	mg/kg	34	26	-	-
% Moisture	1	%	13	8.9	13	9.8

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	SS3/0.0-0.15 Soil S16-Oc06904 Oct 05, 2016	SS4/0.0-0.15 Soil S16-Oc06905 Oct 05, 2016	SS5/0.0-0.15 Soil S16-Oc06906 Oct 05, 2016	SS6/0.0-0.15 Soil S16-Oc06907 Oct 05, 2016
Heavy Metals	LOIT	01.11				
Lead	5	mg/kg	57	380	98	28
% Moisture	1	%	25	29	9.6	9.3

Client Sample ID Sample Matrix			SS7/0.0-0.15 Soil	SS8/0.0-0.15 Soil	DS1 Soil	DS2 Soil
Eurofins mgt Sample No.			S16-Oc06908	S16-Oc06909	S16-Oc06916	S16-Oc06917
Date Sampled			Oct 05, 2016	Oct 05, 2016	Oct 04, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	-	-	< 20	-
TRH C10-C14	20	mg/kg	-	-	31	-
TRH C15-C28	50	mg/kg	-	-	63	-
TRH C29-C36	50	mg/kg	-	-	< 50	-
TRH C10-36 (Total)	50	mg/kg	-	-	94	-



Client Sample ID			SS7/0.0-0.15	SS8/0.0-0.15	DS1	DS2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06908	S16-Oc06909	S16-Oc06916	S16-Oc06917
						1
Date Sampled			Oct 05, 2016	Oct 05, 2016	Oct 04, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
BTEX	<u> </u>	1				
Benzene	0.1	mg/kg	-	-	< 0.1	-
Toluene	0.1	mg/kg	-	-	< 0.1	-
Ethylbenzene	0.1	mg/kg	-	-	< 0.1	-
m&p-Xylenes	0.2	mg/kg	-	-	< 0.2	-
o-Xylene	0.1	mg/kg	-	-	< 0.1	-
Xylenes - Total	0.3	mg/kg	-	-	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	-	-	81	-
Total Recoverable Hydrocarbons - 2013 NEPM F		1				
Naphthalene ^{N02}	0.5	mg/kg	-	-	< 0.5	-
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	-	-	< 50	-
TRH C6-C10	20	mg/kg	-	-	< 20	-
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	-	-	< 20	-
Polycyclic Aromatic Hydrocarbons	1					
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	-	-	< 0.5	=
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	-	-	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	-	-	1.2	=
Acenaphthene	0.5	mg/kg	-	-	< 0.5	=
Acenaphthylene	0.5	mg/kg	-	-	0.6	=
Anthracene	0.5	mg/kg	-	-	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	-	-	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	-	-	< 0.5	-
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	-	-	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	-	-	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	-	-	< 0.5	-
Chrysene	0.5	mg/kg	-	-	< 0.5	=
Dibenz(a.h)anthracene	0.5	mg/kg	-	-	< 0.5	-
Fluoranthene	0.5	mg/kg	-	-	< 0.5	=
Fluorene	0.5	mg/kg	-	-	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	-	-	< 0.5	-
Naphthalene	0.5	mg/kg	-	-	< 0.5	=
Phenanthrene	0.5	mg/kg	-	-	< 0.5	-
Pyrene	0.5	mg/kg	-	-	< 0.5	=
Total PAH*	0.5	mg/kg	-	-	0.6	=
2-Fluorobiphenyl (surr.)	1	%	-	-	99	=
p-Terphenyl-d14 (surr.)	1	%	-	-	104	-
Organochlorine Pesticides	T T					
Chlordanes - Total	0.1	mg/kg	-	-	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	-	-	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	-	-	< 0.05	< 0.05
a-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Aldrin	0.05	mg/kg	-	-	< 0.05	< 0.05
b-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
d-BHC	0.05	mg/kg	-	-	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	-	-	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin	0.05	mg/kg	-	-	< 0.05	< 0.05



Client Sample ID			SS7/0.0-0.15	SS8/0.0-0.15	DS1	DS2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06908	S16-Oc06909	S16-Oc06916	S16-Oc06917
Date Sampled			Oct 05, 2016	Oct 05, 2016	Oct 04, 2016	Oct 05, 2016
Test/Reference	LOR	Unit				
Organochlorine Pesticides						
Endrin aldehyde	0.05	mg/kg	-	-	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	-	-	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	-	-	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	-	-	< 0.2	< 0.2
Toxaphene	1	mg/kg	-	-	< 1	< 1
Dibutylchlorendate (surr.)	1	%	-	-	102	101
Tetrachloro-m-xylene (surr.)	1	%	-	-	80	78
Total Recoverable Hydrocarbons - 2013 NEPM Frac	tions					
TRH >C10-C16	50	mg/kg	-	-	< 50	-
TRH >C16-C34	100	mg/kg	-	-	100	-
TRH >C34-C40	100	mg/kg	-	-	< 100	-
Heavy Metals						
Arsenic	2	mg/kg	-	-	< 2	< 2
Cadmium	0.4	mg/kg	-	-	< 0.4	< 0.4
Chromium	5	mg/kg	-	-	22	11
Copper	5	mg/kg	-	-	17	14
Lead	5	mg/kg	57	34	32	20
Mercury	0.05	mg/kg	-	-	0.27	< 0.05
Nickel	5	mg/kg	-	-	15	7.7
Zinc	5	mg/kg	-	-	30	31
% Moisture	1	%	28	17	10	14

Client Sample ID Sample Matrix Eurofins mgt Sample No.			BH1/0.15-0.3 Soil S16-Oc06920	B1/0.0-0.15 Soil S16-Oc06921	B2/0.0-0.15 Soil S16-Oc06922	C1 Soil S16-Oc06923
Date Sampled			Oct 06, 2016	Oct 06, 2016	Oct 06, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fract	ions					
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	130	35	-
TRH C15-C28	50	mg/kg	< 50	1100	580	-
TRH C29-C36	50	mg/kg	< 50	930	920	-
TRH C10-36 (Total)	50	mg/kg	< 50	2160	1535	-
Volatile Organics						
1.1-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.1-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.1.1-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.1.1.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.1.2-Trichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.1.2.2-Tetrachloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.2-Dibromoethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.2-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.2-Dichloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
1.2-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-



Client Sample ID			BH1/0.15-0.3	B1/0.0-0.15	B2/0.0-0.15	C1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06920	S16-Oc06921	S16-Oc06922	S16-Oc06923
Date Sampled			Oct 06, 2016	Oct 06, 2016	Oct 06, 2016	Oct 04, 2016
Test/Reference	LOR	Unit	001 00, 2010	001 00, 2010	001 00, 2010	000 04, 2010
Volatile Organics	LOR	Offic				
	0.5	ma/ka	4 O F	4 O F	105	
1.2.3-Trichloropropane 1.2.4-Trimethylbenzene	0.5	mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	-
1.3-Dichlorobenzene	0.5	mg/kg mg/kg	< 0.5	< 0.5	< 0.5	
1.3-Dichloropropane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
I.3.5-Trimethylbenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
I.4-Dichlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
2-Butanone (MEK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
2-Propanone (Acetone)	5	mg/kg	< 5	< 5	< 5	_
I-Chlorotoluene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
4-Methyl-2-pentanone (MIBK)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
Allyl chloride	0.05	mg/kg	< 0.05	< 0.05	< 0.05	_
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Bromobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Bromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Bromodichloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Bromoform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Bromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Carbon disulfide	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Carbon Tetrachloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chlorobenzene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chloroethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chloroform	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Chloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
cis-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
cis-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibromochloromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibromomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dichlorodifluoromethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
odomethane	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
sopropyl benzene (Cumene)	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
Methylene Chloride	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
p-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Styrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Tetrachloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Foluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
rans-1.2-Dichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
rans-1.3-Dichloropropene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Frichloroethene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Frichlorofluoromethane /inyl chloride	0.5	mg/kg mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	-
Kylenes - Total	0.3	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluorobenzene (surr.)	1	// // // // // // // // // // // // //	96	108	97	-
I-Bromofluorobenzene (surr.)	1	%	108	71	70	
Fotoriolidoloperizerie (surr.) Total Recoverable Hydrocarbons - 2013 NEPM I		1 /0	100	''	70	<u> </u>
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	_
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50.5	170	< 50.5	
FRH C6-C10	20	mg/kg	< 20	< 20	< 20	
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	< 20	< 20	-



Client Sample ID			BH1/0.15-0.3	B1/0.0-0.15	B2/0.0-0.15	C1
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S16-Oc06920	S16-Oc06921	S16-Oc06922	S16-Oc06923
Date Sampled			Oct 06, 2016	Oct 06, 2016	Oct 06, 2016	Oct 04, 2016
Test/Reference	LOR	Unit				
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 Total PAH*	0.5	mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	< 0.5 < 0.5	-
2-Fluorobiphenyl (surr.)	1	mg/kg %	98	97	102	-
p-Terphenyl-d14 (surr.)	1	%	108	101	95	
Organochlorine Pesticides		/0	100	101	95	-
Chlordanes - Total	0.1	mg/kg	_	_	_	< 0.1
4.4'-DDD	0.05	mg/kg	_	-	_	< 0.05
4.4'-DDE	0.05	mg/kg	_	-	_	< 0.05
4.4'-DDT	0.05	mg/kg	_	-	_	< 0.05
a-BHC	0.05	mg/kg	-	-	_	< 0.05
Aldrin	0.05	mg/kg	-	-	-	< 0.05
b-BHC	0.05	mg/kg	-	-	-	< 0.05
d-BHC	0.05	mg/kg	-	-	-	< 0.05
Dieldrin	0.05	mg/kg	-	-	-	< 0.05
Endosulfan I	0.05	mg/kg	-	-	-	< 0.05
Endosulfan II	0.05	mg/kg	-	-	-	< 0.05
Endosulfan sulphate	0.05	mg/kg	-	-	-	< 0.05
Endrin	0.05	mg/kg	-	-	-	< 0.05
Endrin aldehyde	0.05	mg/kg	-	-	-	< 0.05
Endrin ketone	0.05	mg/kg	-	-	-	< 0.05
g-BHC (Lindane)	0.05	mg/kg	-	-	-	< 0.05
Heptachlor	0.05	mg/kg	-	-	-	< 0.05
Heptachlor epoxide	0.05	mg/kg	-	-	-	< 0.05
Hexachlorobenzene	0.05	mg/kg	-	-	-	< 0.05
Methoxychlor	0.2	mg/kg	-	-	-	< 0.2
Toxaphene	1	mg/kg	-	-	-	< 1
Dibutylchlorendate (surr.)	1	%	-	-	-	96
Tetrachloro-m-xylene (surr.)	1	%	-	-	-	89
Total Recoverable Hydrocarbons - 2013 NEPM Fi		 		1		
TRH >C10-C16	50	mg/kg	< 50	170	< 50	-
TRH >C16-C34	100	mg/kg	< 100	1900	1400	-
TRH >C34-C40	100	mg/kg	< 100	620	250	-



Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled			BH1/0.15-0.3 Soil S16-Oc06920 Oct 06, 2016	B1/0.0-0.15 Soil S16-Oc06921 Oct 06, 2016	B2/0.0-0.15 Soil S16-Oc06922 Oct 06, 2016	C1 Soil S16-Oc06923 Oct 04, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	2.3	13	< 2	3.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	22	23	32	29
Copper	5	mg/kg	15	50	57	22
Lead	5	mg/kg	77	86	54	49
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	7.0	26	22	9.0
Zinc	5	mg/kg	79	900	240	42
% Moisture	1	%	19	14	5.0	24



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 B8			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Oct 13, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Volatile Organics	Sydney	Oct 10, 2016	7 Day
- Method: E016 Volatile Organic Compounds (VOC)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 12, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Oct 13, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 13, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Oct 12, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY IC	CP-MS		
Eurofins mgt Suite B9			
BTEX	Sydney	Oct 12, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Organochlorine Pesticides	Sydney	Oct 13, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Heavy Metals	Sydney	Oct 12, 2016	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Sydney	Oct 10, 2016	14 Day



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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

 Company Name:
 Geo-Logix P/L
 Order No.:
 PO1543
 Received:
 Oct 7, 2016 5:25 PM

 Address:
 Bld Q2 Level 3, 2309/4 Daydream St
 Report #:
 518931
 Due:
 Oct 14, 2016

 Warriewood
 Phone:
 02 9979 1722
 Priority:
 5 Day

NSW 2102 Priority: 5 Day

Fax: 02 9979 1722 Priority: 5 Day

Contact Name: Tim Gunns

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail							HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melb	Melbourne Laboratory - NATA Site # 1254 & 14271												
	ney Laboratory					Х	Х	Х	Х	Х	Х	Х	Х
	bane Laborator		20794										
	rnal Laboratory			T	T								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	S1/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06876						Х	Х	
2	S2/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06877						Х	Х	
3	S3/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06878						Х	Х	
4	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06879						Х	Х	
5	S5/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06880						Х	Х	
6	S6/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06881						Х	Х	
7	S7/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06882						Х	Х	
8	S8/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06883						Х	Х	
9	S9/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06884						Х	Х	
10	S10/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06885						Х	Х	

Report Number: 518931-S-V2



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02 9979 1222

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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #: 518931

Due: Oct 14, 2016 Priority: 5 Day **Contact Name:**

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Tim Gunns

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71									
Sydi	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Χ	Χ	Χ	Х
Bris	bane Laboratory	y - NATA Site #	20794										
Exte	rnal Laboratory												
11	S11/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06886						Χ	Χ	
12	S12/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06887						Χ	Χ	
13	S13/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06888						Χ	Χ	
14	S14/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06889						Χ	Χ	
15	S15/0.1-0.25	Oct 04, 2016		Soil	S16-Oc06890						Χ	Χ	
16	S16/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06891						Χ	Χ	
17	S17/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06892						Χ	Χ	
18	S18/0.35-0.55	Oct 04, 2016		Soil	S16-Oc06893						Χ	Χ	
19	S19/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06894						Χ	Χ	
20	S20/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06895						Χ	Χ	
21	S21/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06896				Х	Χ	Χ		
22	S22/0.15-0.35	Oct 04, 2016		Soil	S16-Oc06897						Χ	Χ	



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	bourne Laborate	ory - NATA Site	# 1254 & 1427	71									
	ney Laboratory					Х	Х	Х	Х	Х	Х	Х	Х
	bane Laborator												
	ernal Laboratory												
23	S23/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06898				Х	Х	Х		
24	S24/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06899						Х	Х	
25	S25/0.4-0.6	Oct 04, 2016	,	Soil	S16-Oc06900						Х	Х	
26	S26/0.3-0.5	Oct 04, 2016	,	Soil	S16-Oc06901						Х	Х	
27	SS1/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06902	Х		Х			Х		
28	SS2/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06903	Х		Х			Х		
29	SS3/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06904	Х		Х			Х		
30	SS4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06905	Х		Х			Х		
31	SS5/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06906	Х		Х			Х		
32	SS6/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06907	Х		Х			Х		
33	SS7/0.0-0.15	Oct 05, 2016	;	Soil	S16-Oc06908	Х		Х			Х		
34	SS8/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06909	Х		Х			Х		



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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #:

518931 Due: Oct 14, 2016 02 9979 1722 Priority: 5 Day **Contact Name:** 02 9979 1222 Tim Gunns

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	<u> </u>											
35	AF1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06910	Х							
36	AF2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06911	Х							
37	AF3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06912	Х							
38	AF4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06913	Х							
39	AF5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06914	Х							
40	AF6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06915	Х							
41	DS1	Oct 04, 2016		Soil	S16-Oc06916						Х	Х	
42	DS2	Oct 05, 2016		Soil	S16-Oc06917				Х	Х	Х		
43	R1	Oct 04, 2016		Water	S16-Oc06918							Х	
44	R2	Oct 05, 2016		Water	S16-Oc06919							Х	
45	BH1/0.15-0.3	Oct 06, 2016		Soil	S16-Oc06920						Х		Х
46	B1/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06921						Х		Χ



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Oct 7, 2016 5:25 PM

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Company Name: Geo-Logix P/L Order No.: PO1543 Received:

Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A

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		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mel	bourne Laborate	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory												
47	B2/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06922						Х		Х
48	C1	Oct 04, 2016		Soil	S16-Oc06923				Х	Х	Х		
49	S1/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06924		Х						
50	S2/0.5-0.6	Oct 04, 2016		Soil	S16-Oc06925		Х						
51	S3/0.9-1.0	Oct 04, 2016		Soil	S16-Oc06926		Х						
52	S4/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06927		Х						
53	S5/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06928		Х						
54	S6/0.9-1.1	Oct 04, 2016		Soil	S16-Oc06929		Х						
55	S7/0.45-0.65	Oct 04, 2016		Soil	S16-Oc06930		Х						
56	S11/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06931		Х						
57	S13/0.25-0.35	Oct 05, 2016		Soil	S16-Oc06932		Х						
58	S14/0.2-0.5	Oct 04, 2016		Soil	S16-Oc06933		Х						



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

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #: 518931 Due: Oct 14, 2016

Phone: 02 9979 1722 Priority: 5 Day **Contact Name:** Fax: 02 9979 1222 Tim Gunns

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
	ourne Laborato			71				\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	.,	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	.,	X	
	ney Laboratory bane Laborator					Х	Х	X	Х	X	Х	X	Х
	rnal Laboratory		20754										
59	S15/0.25-0.35	Oct 04, 2016		Soil	S16-Oc06934		Х						
60	S16/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06935		Х						
61	S17/0.6-0.7	Oct 05, 2016		Soil	S16-Oc06936		Х						
62	S18/0.6-0.8	Oct 04, 2016		Soil	S16-Oc06937		Х						
63	S22/0.45-0.5	Oct 04, 2016		Soil	S16-Oc06938		Х						
64	S25/0.7-0.8	Oct 04, 2016		Soil	S16-Oc06939		Х						
65	S26/1.0-1.3	Oct 04, 2016		Soil	S16-Oc06940		Х						
66	R3	Oct 06, 2016		Water	S16-Oc07118							Х	
Test	Counts					14	17	8	4	4	40	28	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. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. 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.

**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

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.

Batch Duplicate

A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE

Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

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 20-130%

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.
- 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 Fr	actions				
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					
ВТЕХ					
Benzene	mg/kg	< 0.1	0.1	Pass	
Toluene	mg/kg	< 0.1	0.1	Pass	
Ethylbenzene	mg/kg	< 0.1	0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2	0.2	Pass	
o-Xylene	mg/kg	< 0.1	0.1	Pass	
Xylenes - Total	mg/kg	< 0.3	0.3	Pass	
Method Blank				1 2.22	
Volatile Organics					
1.1-Dichloroethane	mg/kg	< 0.5	0.5	Pass	
1.1-Dichloroethane	mg/kg	< 0.5	0.5	Pass	
1.1.1-Trichloroethane	mg/kg	< 0.5	0.5	Pass	
1.1.1.2-Tetrachloroethane	mg/kg	< 0.5	0.5	Pass	
1.1.2-Trichloroethane	mg/kg	< 0.5	0.5	Pass	
1.1.2Tichloroethane	mg/kg	< 0.5	0.5	Pass	
1.2-Dibromoethane	mg/kg	< 0.5	0.5	Pass	
1.2-Dichlorobenzene		< 0.5	0.5	Pass	
1.2-Dichloroethane	mg/kg	< 0.5	0.5	Pass	
1.2-Dichloropropane	mg/kg				
• •	mg/kg	< 0.5	0.5	Pass	
1.2.3-Trichloropropane	mg/kg	< 0.5	0.5	Pass	
1.2.4-Trimethylbenzene	mg/kg	< 0.5	0.5	Pass	
1.3-Dichlorobenzene	mg/kg	< 0.5	0.5	Pass	
1.3-Dichloropropane	mg/kg	< 0.5	0.5	Pass	
1.3.5-Trimethylbenzene	mg/kg	< 0.5	0.5	Pass	
1.4-Dichlorobenzene	mg/kg	< 0.5	0.5	Pass	
2-Butanone (MEK)	mg/kg	< 0.5	0.5	Pass	
2-Propanone (Acetone)	mg/kg	< 5	5	Pass	
4-Chlorotoluene	mg/kg	< 0.5	0.5	Pass	
4-Methyl-2-pentanone (MIBK)	mg/kg	< 0.5	0.5	Pass	
Allyl chloride	mg/kg	< 0.05	0.05	Pass	
Bromobenzene	mg/kg	< 0.5	0.5	Pass	
Bromochloromethane	mg/kg	< 0.5	0.5	Pass	
Bromodichloromethane	mg/kg	< 0.5	0.5	Pass	
Bromoform	mg/kg	< 0.5	0.5	Pass	
Bromomethane	mg/kg	< 0.5	0.5	Pass	
Carbon disulfide	mg/kg	< 0.5	0.5	Pass	
Carbon Tetrachloride	mg/kg	< 0.5	0.5	Pass	
Chlorobenzene	mg/kg	< 0.5	0.5	Pass	
Chloroethane	mg/kg	< 0.5	0.5	Pass	
Chloroform	mg/kg	< 0.5	0.5	Pass	
Chloromethane	mg/kg	< 0.5	0.5	Pass	
cis-1.2-Dichloroethene	mg/kg	< 0.5	0.5	Pass	
cis-1.3-Dichloropropene	mg/kg	< 0.5	0.5	Pass	
Dibromochloromethane	mg/kg	< 0.5	0.5	Pass	
Dibromomethane	mg/kg	< 0.5	0.5	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Dichlorodifluoromethane	mg/kg	< 0.5	0.5	Pass	
lodomethane	mg/kg	< 0.5	0.5	Pass	
Isopropyl benzene (Cumene)	mg/kg	< 0.5	0.5	Pass	
Methylene Chloride	mg/kg	< 0.5	0.5	Pass	
Styrene	mg/kg	< 0.5	0.5	Pass	
Tetrachloroethene	mg/kg	< 0.5	0.5	Pass	
trans-1.2-Dichloroethene	mg/kg	< 0.5	0.5	Pass	
trans-1.3-Dichloropropene	mg/kg	< 0.5	0.5	Pass	
Trichloroethene	mg/kg	< 0.5	0.5	Pass	
Trichlorofluoromethane	mg/kg	< 0.5	0.5	Pass	
Vinyl chloride	mg/kg	< 0.5	0.5	Pass	
Method Blank	Ilig/kg	<u> </u>	0.5	1 433	
Total Recoverable Hydrocarbons - 2013 NEPM Fraction	one				
Naphthalene		< 0.5	0.5	Pass	
TRH C6-C10	mg/kg				
	mg/kg	< 20		Pass	
Method Blank Polycyclic Arcmetic Hydrogerhone					
Polycyclic Aromatic Hydrocarbons		.05	25	Da:-	
Acenaphthene	mg/kg	< 0.5	0.5	Pass	
Actions	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					
Organochlorine Pesticides					
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	
4.4'-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	
			0.05		
Endrin ketone	mg/kg	< 0.05		Pass	
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor Leptachlor analyida	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor	mg/kg	< 0.2	0.2	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fra	ections				
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	1 3 3			,	
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	
Lead	mg/kg	< 5	5	Pass	
Mercury	mg/kg	< 0.05	0.05	Pass	
Nickel	mg/kg	< 5	5	Pass	
Zinc	mg/kg	< 5	5	Pass	
LCS - % Recovery	l Hig/kg	_ ` `		1 1 433	
Total Recoverable Hydrocarbons - 1999 NEPM Fra	ections	T			
TRH C6-C9	%	92	70-130	Pass	
TRH C10-C14	%	83	70-130	Pass	
	70	03	70-130	Fass	
LCS - % Recovery BTEX		Т		I	
	0/	400	70.420	Dana	
Benzene	%	106	70-130	Pass	
Toluene	%	108	70-130	Pass	
Ethylbenzene	%	102	70-130	Pass	
m&p-Xylenes	%	106	70-130	Pass	
o-Xylene	%	106	70-130	Pass	
Xylenes - Total	%	106	70-130	Pass	
LCS - % Recovery		Т		I	
Volatile Organics		 		<u> </u>	
1.1-Dichloroethane	%	112	70-130	Pass	
1.1-Dichloroethene	%	80	70-130	Pass	
1.1.1-Trichloroethane	%	106	70-130	Pass	
1.1.1.2-Tetrachloroethane	%	96	70-130	Pass	
1.1.2-Trichloroethane	%	111	70-130	Pass	
1.1.2.2-Tetrachloroethane	%	99	70-130	Pass	
1.2-Dibromoethane	%	109	70-130	Pass	
1.2-Dichlorobenzene	%	114	70-130	Pass	
1.2-Dichloroethane	%	112	70-130	Pass	
1.2-Dichloropropane	%	111	70-130	Pass	
1.2.3-Trichloropropane	%	114	70-130	Pass	
1.2.4-Trimethylbenzene	%	111	70-130	Pass	
1.3-Dichlorobenzene	%	113	70-130	Pass	
1.3-Dichloropropane	%	113	70-130	Pass	
1.3.5-Trimethylbenzene	%	109	70-130	Pass	
1.4-Dichlorobenzene	%	111	70-130	Pass	
2-Butanone (MEK)	%	96	70-130	Pass	
2-Propanone (Acetone)	%	82	70-130	Pass	
4-Chlorotoluene	%	111	70-130	Pass	
4-Methyl-2-pentanone (MIBK)	%	111	70-130	Pass	
Allyl chloride	%	78	70-130	Pass	
Bromobenzene	%	111	70-130	Pass	



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Bromochloromethane	%	106	70-130	Pass	
Bromodichloromethane	%	104	70-130	Pass	
Bromoform	%	86	70-130	Pass	
Bromomethane	%	98	70-130	Pass	
Carbon disulfide	%	73	70-130	Pass	
Carbon Tetrachloride	%	104	70-130	Pass	
Chlorobenzene	%	96	70-130	Pass	
Chloroethane	%	98	70-130	Pass	
Chloroform	%	111	70-130	Pass	
Chloromethane	%	99	70-130	Pass	
cis-1.2-Dichloroethene	%	111	70-130	Pass	
cis-1.3-Dichloropropene	%	97	70-130	Pass	
Dibromochloromethane	%	102	70-130	Pass	
Dibromomethane	%	106	70-130	Pass	
Dichlorodifluoromethane	%	84	70-130	Pass	
Iodomethane	%	74	70-130	Pass	
	%	94	70-130	Pass	
Isopropyl benzene (Cumene)	%	1			
Methylene Chloride		97	70-130	Pass	
Styrene	%	91	70-130	Pass	
Tetrachloroethene	%	102	70-130	Pass	
trans-1.2-Dichloroethene	%	96	70-130	Pass	
trans-1.3-Dichloropropene	%	101	70-130	Pass	
Trichloroethene	%	105	70-130	Pass	
Trichlorofluoromethane	%	71	70-130	Pass	
Vinyl chloride	%	98	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	1				
Naphthalene	%	113	70-130	Pass	
TRH C6-C10	%	83	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	112	70-130	Pass	
Acenaphthylene	%	112	70-130	Pass	
Anthracene	%	123	70-130	Pass	
Benz(a)anthracene	%	111	70-130	Pass	
Benzo(a)pyrene	%	108	70-130	Pass	
Benzo(b&j)fluoranthene	%	77	70-130	Pass	
Benzo(g.h.i)perylene	%	98	70-130	Pass	
Benzo(k)fluoranthene	%	118	70-130	Pass	
Chrysene	%	114	70-130	Pass	
Dibenz(a.h)anthracene	%	81	70-130	Pass	
Fluoranthene	%	123	70-130	Pass	
Fluorene	%	110	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	84	70-130	Pass	
Naphthalene	%	112	70-130	Pass	
Phenanthrene	%	116	70-130	Pass	
	%				
Pyrene	70	116	70-130	Pass	
LCS - % Recovery					
Organochlorine Pesticides	0/	0.7	70.400	Dari	
Chlordanes - Total	%	87	70-130	Pass	
4.4'-DDD	%	89	70-130	Pass	
4.4'-DDE	%	87	70-130	Pass	
4.4'-DDT	%	84	70-130	Pass	
a-BHC	%	85	70-130	Pass	<u></u>



Test			Units	Result 1	Acceptano Limits	e Pass Limits	Qualifying Code
Aldrin			%	85	70-130	Pass	
b-BHC			%	81	70-130	Pass	
d-BHC			%	114	70-130	Pass	
Dieldrin			%	88	70-130	Pass	
Endosulfan I			%	87	70-130	Pass	
Endosulfan II			%	87	70-130	Pass	
Endosulfan sulphate			%	89	70-130	Pass	
Endrin			%	89	70-130	Pass	
Endrin aldehyde			%	102	70-130	Pass	
Endrin ketone			%	88	70-130	Pass	
g-BHC (Lindane)			%	85	70-130	Pass	
Heptachlor			%	99	70-130	Pass	
Heptachlor epoxide			%	88	70-130	Pass	
Hexachlorobenzene			%	83	70-130	Pass	
Methoxychlor	-		%	78	70-130	Pass	
Toxaphene			%	84	70-130	Pass	
LCS - % Recovery					10.00		
Total Recoverable Hydrocarbons	s - 2013 NFPM Fract	ions				T	
TRH >C10-C16			%	91	70-130	Pass	
LCS - % Recovery			70	01	70 100	1 400	
Heavy Metals						T	
Arsenic			%	93	70-130	Pass	
Cadmium			%	100	70-130	Pass	
			i	92			
Chromium			%		70-130	Pass	
Copper			%	104	70-130	Pass	1
Lead			%	107	70-130	Pass	-
Lead			%	91	70-130	Pass	
Mercury			%	100	70-130	Pass	
Nickel			%	98	70-130	Pass	-
Zinc			%	82	70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptand Limits	e Pass Limits	Qualifying Code
Spike - % Recovery							
Organochlorine Pesticides						1	1
			1	Result 1			
4.4'-DDT	S16-Oc07081	NCP	%	Result 1	70-130	Pass	
4.4'-DDT Methoxychlor	S16-Oc07081 S16-Oc07081	NCP NCP	%		70-130 70-130	Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery	S16-Oc07081	NCP	 	93			
4.4'-DDT Methoxychlor	S16-Oc07081 s - 1999 NEPM Fract	NCP	%	93			
4.4'-DDT Methoxychlor Spike - % Recovery	S16-Oc07081	NCP	 	93 98			
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons	S16-Oc07081 s - 1999 NEPM Fract	NCP	%	93 98 Result 1	70-130	Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9	S16-Oc07081 s - 1999 NEPM Fract S16-Oc06882	NCP tions CP	%	93 98 Result 1	70-130	Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery	S16-Oc07081 s - 1999 NEPM Fract	NCP	%	93 98 Result 1 94	70-130	Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX	S16-Oc07081 s - 1999 NEPM Fract S16-Oc06882	NCP tions CP	%	93 98 Result 1 94	70-130	Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882	NCP tions CP CP	% %	93 98 Result 1 94 Result 1 93	70-130 70-130 70-130	Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP CP CP	% % %	93 98 Result 1 94 Result 1 93 88	70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP CP CP CP	% % % %	93 98 Result 1 94 Result 1 93 88 86	70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP CP CP CP CP	% % % % %	93 98 Result 1 94 Result 1 93 88 86 88	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP CP CP CP CP CP	% % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	CP CP CP CP CP CP CP	% % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike - % Recovery Total Recoverable Hydrocarbons	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	CP CP CP CP CP CP CP	% % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86	70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike - % Recovery Total Recoverable Hydrocarbons Naphthalene	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP CP CP CP CP CP CP CP	% % % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86 88	70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike - % Recovery Total Recoverable Hydrocarbons Naphthalene TRH C6-C10	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP	% % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86 88	70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike - % Recovery Total Recoverable Hydrocarbons Naphthalene TRH C6-C10 Spike - % Recovery	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP	% % % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86 88 87 88	70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	
4.4'-DDT Methoxychlor Spike - % Recovery Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene m&p-Xylenes o-Xylene Xylenes - Total Spike - % Recovery Total Recoverable Hydrocarbons Naphthalene TRH C6-C10	\$16-Oc07081 \$ - 1999 NEPM Fract \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882 \$16-Oc06882	NCP tions CP	% % % % % % % %	93 98 Result 1 94 Result 1 93 88 86 88 86 88	70-130 70-130 70-130 70-130 70-130 70-130 70-130	Pass Pass Pass Pass Pass Pass Pass Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
4.4'-DDE	S16-Oc06882	CP	%	103	70-130	Pass	
a-BHC	S16-Oc06882	CP	%	91	70-130	Pass	
Aldrin	S16-Oc06882	CP	%	88	70-130	Pass	
b-BHC	S16-Oc06882	CP	%	83	70-130	Pass	
d-BHC	S16-Oc06882	CP	%	119	70-130	Pass	
Dieldrin	S16-Oc06882	СР	%	97	70-130	Pass	
Endosulfan I	S16-Oc06882	СР	%	92	70-130	Pass	
Endosulfan II	S16-Oc06882	СР	%	91	70-130	Pass	
Endosulfan sulphate	S16-Oc06882	СР	%	89	70-130	Pass	
Endrin	S16-Oc06882	СР	%	94	70-130	Pass	
Endrin aldehyde	S16-Oc06882	СР	%	102	70-130	Pass	
Endrin ketone	S16-Oc06882	СР	%	89	70-130	Pass	
g-BHC (Lindane)	S16-Oc06882	СР	%	87	70-130	Pass	
Heptachlor	S16-Oc06882	CP	%	104	70-130	Pass	
Heptachlor epoxide	S16-Oc06882	CP	%	99	70-130	Pass	
Hexachlorobenzene	S16-Oc06882	CP	%	87	70-130	Pass	
Spike - % Recovery	1 010 0000002	<u> </u>	70	0,	70 100	1 455	
Heavy Metals				Result 1			
Arsenic	S16-Oc06882	СР	%	90	70-130	Pass	
Chromium	S16-Oc06882	CP	<u> </u>	106	70-130	Pass	
		CP			70-130	1	
Copper	S16-Oc06882		%	93		Pass	
Lead	\$16-Oc06882	CP	%	81	70-130	Pass	
Mercury	S16-Oc06882	CP	%	92	70-130	Pass	
Nickel	S16-Oc06882	CP	<u>%</u>	77	70-130	Pass	
Spike - % Recovery				I 5 11 1		I	
Total Recoverable Hydrocarbo				Result 1		<u> </u>	
TRH C10-C14	S16-Oc06883	CP	%	82	70-130	Pass	
Spike - % Recovery				Ι Τ		ı	
Polycyclic Aromatic Hydrocart		1		Result 1			
Acenaphthene	S16-Oc06883	CP	%	112	70-130	Pass	
Acenaphthylene	S16-Oc06883	CP	%	113	70-130	Pass	
Anthracene	S16-Oc06883	CP	%	108	70-130	Pass	
Benz(a)anthracene	S16-Oc06883	CP	%	98	70-130	Pass	
Benzo(a)pyrene	S16-Oc06883	CP	%	97	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Oc06883	CP	%	73	70-130	Pass	
Benzo(g.h.i)perylene	S16-Oc06883	CP	%	95	70-130	Pass	
Benzo(k)fluoranthene	S16-Oc06883	CP	%	123	70-130	Pass	
Chrysene	S16-Oc06883	CP	%	119	70-130	Pass	
Dibenz(a.h)anthracene	S16-Oc06883	CP	%	78	70-130	Pass	
Fluoranthene	S16-Oc06883	CP	%	112	70-130	Pass	
Fluorene	S16-Oc06883	CP	%	112	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Oc06883	CP	%	85	70-130	Pass	
Naphthalene	S16-Oc06883	СР	%	116	70-130	Pass	
Phenanthrene	S16-Oc06883	СР	%	113	70-130	Pass	
Pyrene	S16-Oc06883	СР	%	105	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbo	ns - 2013 NEPM Fract	ions		Result 1			
TRH >C10-C16	S16-Oc06883	СР	%	87	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Arsenic	S16-Oc06892	СР	%	103	70-130	Pass	
Cadmium	S16-Oc06892	CP	%	82	70-130	Pass	
			%	1		Pass	
Lead	S16-Oc06892	CP	%	84	70-130	I Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbo	ons - 1999 NEPM Fract	ions		Result 1			
TRH C10-C14	S16-Oc06893	CP	%	86	70-130	Pass	
Spike - % Recovery							
Polycyclic Aromatic Hydrocar	bons			Result 1			
Acenaphthene	S16-Oc06893	CP	%	121	70-130	Pass	
Acenaphthylene	S16-Oc06893	СР	%	124	70-130	Pass	
Anthracene	S16-Oc06893	СР	%	117	70-130	Pass	
Benz(a)anthracene	S16-Oc06893	СР	%	112	70-130	Pass	
Benzo(a)pyrene	S16-Oc06893	СР	%	101	70-130	Pass	
Benzo(b&j)fluoranthene	S16-Oc06893	СР	%	84	70-130	Pass	
Benzo(g.h.i)perylene	S16-Oc06893	СР	%	92	70-130	Pass	
Benzo(k)fluoranthene	S16-Oc06893	CP	%	118	70-130	Pass	
Chrysene	S16-Oc06893	CP	%	121	70-130	Pass	
Dibenz(a.h)anthracene	S16-Oc06893	CP	%	79	70-130	Pass	
Fluoranthene	S16-Oc06893	CP	 %	119	70-130	Pass	
Fluorene	S16-Oc06893	CP	%	120	70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Oc06893	CP	% 	86	70-130	Pass	
Naphthalene	S16-Oc06893	CP	%	124	70-130	Pass	
Phenanthrene	S16-Oc06893	CP	%	125	70-130	Pass	
Pyrene	S16-Oc06893	CP	// 0	113	70-130	Pass	
Spike - % Recovery	310-0000093	CF	/0	113	10-130	Fass	
	ana 2012 NEDM Frank	lono		Dogult 1		I	
Total Recoverable Hydrocarbo			0/	Result 1	70.400	Dana	
TRH >C10-C16	S16-Oc06893	CP	%	90	70-130	Pass	
Spike - % Recovery				Donali 4		l	
Organochlorine Pesticides	040.0.0000	0.0	0,	Result 1	70,400	_	
Chlordanes - Total	S16-Oc06900	CP	%	78	70-130	Pass	
4.4'-DDD	S16-Oc06900	CP	%	85	70-130	Pass	
4.4'-DDE	S16-Oc06900	CP	%	79	70-130	Pass	
a-BHC	S16-Oc06900	CP	%	73	70-130	Pass	
Aldrin	S16-Oc06900	CP	%	75	70-130	Pass	
b-BHC	S16-Oc06900	CP	%	78	70-130	Pass	
d-BHC	S16-Oc06900	CP	%	100	70-130	Pass	
Dieldrin	S16-Oc06900	CP	%	85	70-130	Pass	
Endosulfan I	S16-Oc06900	CP	%	78	70-130	Pass	
Endosulfan II	S16-Oc06900	CP	%	77	70-130	Pass	
Endosulfan sulphate	S16-Oc06900	CP	%	75	70-130	Pass	
Endrin	S16-Oc06900	CP	%	74	70-130	Pass	
Endrin aldehyde	S16-Oc06900	CP	%	83	70-130	Pass	
Endrin ketone	S16-Oc06900	CP	%	81	70-130	Pass	
g-BHC (Lindane)	S16-Oc06900	CP	%	72	70-130	Pass	
Heptachlor	S16-Oc06900	CP	%	79	70-130	Pass	
Heptachlor epoxide	S16-Oc06900	CP	%	82	70-130	Pass	
Hexachlorobenzene	S16-Oc06900	CP	%	72	70-130	Pass	
Spike - % Recovery							
Heavy Metals				Result 1			
Mercury	S16-Oc06902	CP	%	93	70-130	Pass	
Spike - % Recovery							
Organochlorine Pesticides				Result 1			
Chlordanes - Total	S16-Oc06916	СР	%	87	70-130	Pass	
4.4'-DDD	S16-Oc06916	СР	%	89	70-130	Pass	
4.4'-DDE	S16-Oc06916	СР	%	88	70-130	Pass	
a-BHC	S16-Oc06916	СР	%	81	70-130	Pass	
Aldrin	S16-Oc06916	CP	%	83	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
b-BHC	S16-Oc06916	CP	%	76	70-130	Pass	
d-BHC	S16-Oc06916	CP	%	111	70-130	Pass	
Endosulfan I	S16-Oc06916	CP	%	86	70-130	Pass	
Endosulfan II	S16-Oc06916	CP	%	86	70-130	Pass	
Endosulfan sulphate	S16-Oc06916	CP	%	87	70-130	Pass	
Endrin	S16-Oc06916	СР	%	74	70-130	Pass	
Endrin aldehyde	S16-Oc06916	СР	%	105	70-130	Pass	
Endrin ketone	S16-Oc06916	СР	%	95	70-130	Pass	
g-BHC (Lindane)	S16-Oc06916	СР	%	80	70-130	Pass	
Heptachlor	S16-Oc06916	СР	%	81	70-130	Pass	
Heptachlor epoxide	S16-Oc06916	СР	%	90	70-130	Pass	
Hexachlorobenzene	S16-Oc06916	СР	%	79	70-130	Pass	
Spike - % Recovery						7 0.00	
Volatile Organics				Result 1			
1.1-Dichloroethane	S16-Oc03157	NCP	%	83	70-130	Pass	
1.1-Dichloroethene	S16-Oc03157	NCP	%	70	70-130	Pass	
1.1.1-Trichloroethane	S16-Oc03157	NCP	%	102	70-130	Pass	
1.1.1.2-Tetrachloroethane	S16-Oc03157	NCP	%	102	70-130	Pass	
1.1.2-Tetrachioroethane	S16-Oc03157	NCP	%	100	70-130	Pass	
1.1.2.2-Tetrachloroethane	S16-Oc03157	NCP	%	83	70-130	Pass	
				1			
1.2-Dibromoethane	S16-Oc03157	NCP	%	99	70-130	Pass	
1.2-Dichlorobenzene	S16-Oc03157	NCP	%	110	70-130	Pass	
1.2-Dichloroethane	S16-Oc03157	NCP	%	87	70-130	Pass	
1.2-Dichloropropane	S16-Oc03157	NCP	%	116	70-130	Pass	
1.2.3-Trichloropropane	S16-Oc03157	NCP	%	112	70-130	Pass	
1.2.4-Trimethylbenzene	S16-Oc03157	NCP	%	112	70-130	Pass	
1.3-Dichlorobenzene	S16-Oc03157	NCP	%	112	70-130	Pass	
1.3-Dichloropropane	S16-Oc03157	NCP	%	108	70-130	Pass	
1.3.5-Trimethylbenzene	S16-Oc03157	NCP	%	111	70-130	Pass	
1.4-Dichlorobenzene	S16-Oc03157	NCP	%	110	70-130	Pass	
2-Propanone (Acetone)	S16-Oc03157	NCP	%	75	70-130	Pass	
4-Chlorotoluene	S16-Oc03157	NCP	%	111	70-130	Pass	
4-Methyl-2-pentanone (MIBK)	S16-Oc03157	NCP	%	78	70-130	Pass	
Allyl chloride	S16-Oc03157	NCP	%	71	70-130	Pass	
Bromobenzene	S16-Oc03157	NCP	%	119	70-130	Pass	
Bromochloromethane	S16-Oc03157	NCP	%	80	70-130	Pass	
Bromodichloromethane	S16-Oc03157	NCP	%	97	70-130	Pass	
Bromoform	S16-Oc03157	NCP	%	82	70-130	Pass	
Bromomethane	S16-Oc03157	NCP	%	88	70-130	Pass	
Carbon Tetrachloride	S16-Oc03157	NCP	%	97	70-130	Pass	
Chlorobenzene	S16-Oc03157	NCP	%	107	70-130	Pass	
Chloroethane	S16-Oc03157	NCP	%	74	70-130	Pass	
Chloroform	S16-Oc03157	NCP	%	83	70-130	Pass	
Chloromethane	S16-Oc03157	NCP	%	122	70-130	Pass	
cis-1.2-Dichloroethene	S16-Oc03157	NCP	%	79	70-130	Pass	
cis-1.3-Dichloropropene	S16-Oc03157	NCP	%	91	70-130	Pass	
Dibromochloromethane	S16-Oc03157	NCP	%	90	70-130	Pass	
Dibromomethane	S16-Oc03157	NCP	%	99	70-130	Pass	
Dichlorodifluoromethane	S16-Oc03157	NCP	%	93	70-130	Pass	
Isopropyl benzene (Cumene)	S16-Oc03157	NCP	%	106	70-130	Pass	
Methylene Chloride	S16-Oc03157	NCP	%	92	70-130	Pass	
Styrene	S16-Oc03157	NCP	%	102	70-130	Pass	
Tetrachloroethene	S16-Oc03157	NCP	%	94	70-130	Pass	
retractionoethene	\$16-0c03157 \$16-0c03157	NCP	%	72	70-130	Pass	



		QA					Acceptance	Pass	Qualifying
Test	Lab Sample ID	Source	Units	Result 1			Limits	Limits	Code
trans-1.3-Dichloropropene	S16-Oc03157	NCP	%	97			70-130	Pass	
Trichloroethene	S16-Oc03157	NCP	%	121			70-130	Pass	
Trichlorofluoromethane	S16-Oc03157	NCP	%	74			70-130	Pass	
Vinyl chloride	S16-Oc03157	NCP	%	95			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Oc06920	CP	%	96			70-130	Pass	
Chromium	S16-Oc06920	CP	%	112			70-130	Pass	
Copper	S16-Oc06920	CP	%	118			70-130	Pass	
Mercury	S16-Oc06920	CP	%	97			70-130	Pass	
Nickel	S16-Oc06920	CP	%	84			70-130	Pass	
Zinc	S16-Oc06920	CP	%	80			70-130	Pass	
Spike - % Recovery									
Volatile Organics				Result 1					
2-Butanone (MEK)	S16-Oc11156	NCP	%	102			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1					
TRH C10-C14	S16-Oc06922	СР	%	70			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons	}			Result 1					
Acenaphthene	S16-Oc06922	СР	%	110			70-130	Pass	
Acenaphthylene	S16-Oc06922	СР	%	113			70-130	Pass	
Anthracene	S16-Oc06922	СР	%	100			70-130	Pass	
Benz(a)anthracene	S16-Oc06922	СР	%	100			70-130	Pass	
Benzo(a)pyrene	S16-Oc06922	СР	%	111			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Oc06922	CP	%	99			70-130	Pass	
Benzo(g.h.i)perylene	S16-Oc06922	CP	%	79			70-130	Pass	
Benzo(k)fluoranthene	S16-Oc06922	CP	%	118			70-130	Pass	
Chrysene	S16-Oc06922	CP	%	119			70-130	Pass	
Dibenz(a.h)anthracene	S16-Oc06922	CP	%	77			70-130	Pass	
Fluoranthene	S16-Oc06922	CP	%	101			70-130	Pass	
Fluorene	S16-Oc06922	CP	%	108			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Oc06922	CP	%	81			70-130	Pass	
Naphthalene	S16-Oc06922	CP	%	109			70-130	Pass	
Phenanthrene	S16-Oc06922	CP	%	89			70-130	Pass	
Pyrene	S16-Oc06922	CP	%	96			70-130	Pass	
Spike - % Recovery	010 0000022	Ų,	70				70 100	1 455	
Total Recoverable Hydrocarbons -	2013 NFPM Fract	ions		Result 1					
TRH >C10-C16	S16-Oc06922	CP	%	75			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate							•		
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-Oc06881	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate		-	פיי פי						
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Oc06881	СР	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Oc06881	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Oc06881	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Oc06881	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
o-Xylene	S16-Oc06881	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Xylenes - Total	S16-Oc06881	CP	mg/kg	< 0.1	< 0.1	<u><1</u> <1	30%	Pass	
Duplicate	310-000001	UF	my/ky	_ < 0.3	_ \ 0.3	<u> </u>	JU /0	1 455	
Total Recoverable Hydrocarbons -	2013 NEDM Front	ione		Result 1	Result 2	RPD			
· ·	S16-Oc06881	CP	ma/ka	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene		CP	mg/kg						
TRH C6-C10	S16-Oc06881	LCP	mg/kg	< 20	< 20	<1	30%	Pass	l .



Demilianta									
Duplicate Organish Posticidas				Daguit 4	D	DDD			
Organochlorine Pesticides	C4C O-00004	CD		Result 1	Result 2	RPD	200/	B	
Chlordanes - Total	S16-Oc06881 S16-Oc06881	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD		CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	\$16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	\$16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Oc06881	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Oc06881	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Oc06881	CP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	S16-Oc06881	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Oc06881	CP	mg/kg	25	28	13	30%	Pass	
Copper	S16-Oc06881	CP	mg/kg	16	17	3.0	30%	Pass	
Lead	S16-Oc06881	CP	mg/kg	28	23	20	30%	Pass	
Mercury	S16-Oc06881	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-Oc06881	СР	mg/kg	7.8	6.8	13	30%	Pass	
Zinc	S16-Oc06881	СР	mg/kg	19	17	13	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	· 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	S16-Oc06882	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Oc06882	СР	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Oc06882	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate		_	<u> </u>						
Total Recoverable Hydrocarbons	· 2013 NEPM Fract	ions		Result 1	Result 2	RPD		T	
TRH >C10-C16	S16-Oc06882	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Oc06882	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Oc06882	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate Duplicate	7 2.2 3330002	<u> </u>	9,119	, , , , , ,	1.00			. 255	
- uphono				Result 1	Result 2	RPD		T	
% Moisture	S16-Oc06882	СР	%	15	14	3.0	30%	Pass	
Duplicate	310-000002	_ OF	/0	1 10	14	5.0	JU /0	1 033	
Total Recoverable Hydrocarbons	. 1999 NEDM Eroot	ione		Pocult 1	Result 2	RPD		T	
			ma/ka	Result 1			200/	Page	
TRH C6-C9	S16-Oc06891	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate				Descrit 4	Descrit 0	DDD			
BTEX	040 0-00004	05	n	Result 1	Result 2	RPD	0001	 	
Benzene	S16-Oc06891	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Oc06891	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Oc06891	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Oc06891	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Oc06891	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Oc06891	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	



- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
		ma/ka	1			30%	Pagg	
010 0000001	Oi	l ilig/kg	\ 20	<u> </u>		3070	1 433	
			Result 1	Result 2	RPD			
\$16-0006891	CP	ma/ka	1			30%	Page	
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310-0000091	CF	l llig/kg	<u> </u>	<u> </u>	<1	30%	Fass	
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\$16-0006891	CP	ma/ka				30%	Pagg	
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ns			Result 1	Result 2	RPD			
	CP	ma/ka				30%	Pagg	
	(:P		1 < 115			1 00/0	i ass	
						30%	Page	
S16-Oc06892	СР	mg/kg	< 0.5	< 0.5	<1	30% 30%	Pass	
\$16-Oc06892 \$16-Oc06892	CP CP	mg/kg mg/kg	< 0.5 < 0.5	< 0.5 < 0.5	<1 <1	30%	Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP	mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	<1 <1 <1	30% 30%	Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP CP	mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1	30% 30% 30%	Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1	30% 30% 30% 30%	Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1	30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP CP CP CP CP CP CP CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
\$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892 \$16-Oc06892	CP	mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg mg/kg	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5 < 0.5	<1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <1 <	30% 30% 30% 30% 30% 30% 30% 30%	Pass Pass Pass Pass Pass Pass Pass Pass	
	\$16-Oc06891 \$16-Oc06891	S16-Oc06891	\$16-Oc06891 CP mg/kg \$16-Oc06891	S16-Oc06891 CP mg/kg < 0.5 S16-Oc06891 CP mg/kg < 20 S16-Oc06891 CP mg/kg < 0.1 S16-Oc06891 CP mg/kg < 0.05 S16-Oc06891 CP mg/kg < 0.05	S16-Oc06891 CP mg/kg < 0.5 < 0.5 S16-Oc06891 CP mg/kg < 20 < 20 S16-Oc06891 CP mg/kg < 0.1 < 0.1 S16-Oc06891 CP mg/kg < 0.05 < 0.05 S16-Oc06891 CP mg/kg < 0.	S16-Oc06891 CP mg/kg < 0.5 < 0.5 < 1	S16-Oc06891 CP mg/kg < 0.5 < 0.5 < 1 30%	S16-Oc06891 CP mg/kg < 0.5 < 0.5 < 1 30% Pass



Duplicate				_			1		
			1	Result 1	Result 2	RPD			
% Moisture	S16-Oc06892	CP	%	8.7	10.0	13	30%	Pass	
Duplicate				_					
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Oc06901	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Oc06901	СР	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Oc06901	СР	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Oc06901	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Oc06901	СР	mg/kg	2.1	< 2	200	30%	Fail	Q15
Cadmium	S16-Oc06901	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Oc06901	CP	mg/kg	35	20	56	30%	Fail	Q15
Copper	S16-Oc06901	CP	mg/kg	16	17	7.0	30%	Pass	
Lead	S16-Oc06901	СР	mg/kg	27	17	42	30%	Fail	Q15
Mercury	S16-Oc06901	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-Oc06901	СР	mg/kg	17	15	11	30%	Pass	
Zinc	S16-Oc06901	CP	mg/kg	26	25	5.0	30%	Pass	
Duplicate									
-				Result 1	Result 2	RPD			
% Moisture	S16-Oc06902	СР	%	13	12	2.0	30%	Pass	
Duplicate									
Volatile Organics				Result 1	Result 2	RPD			
1.1-Dichloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1-Dichloroethene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1-Trichloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.1.2-Tetrachloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2-Trichloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.1.2.2-Tetrachloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dibromoethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichlorobenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2-Dichloropropane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.3-Trichloropropane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.2.4-Trimethylbenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichlorobenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
1.3-Dichloropropane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



-									
Duplicate					l _				
Volatile Organics				Result 1	Result 2	RPD			
1.4-Dichlorobenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Butanone (MEK)	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
2-Propanone (Acetone)	S16-Oc07109	NCP	mg/kg	< 5	< 5	<1	30%	Pass	
4-Chlorotoluene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
4-Methyl-2-pentanone (MIBK)	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Allyl chloride	S16-Oc07109	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Bromobenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromochloromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromodichloromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromoform	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Bromomethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon disulfide	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Carbon Tetrachloride	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chlorobenzene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloroform	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chloromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.2-Dichloroethene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
cis-1.3-Dichloropropene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromochloromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibromomethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dichlorodifluoromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
lodomethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Isopropyl benzene (Cumene)	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Methylene Chloride	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Styrene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Tetrachloroethene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.2-Dichloroethene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
trans-1.3-Dichloropropene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichloroethene	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Trichlorofluoromethane	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Vinyl chloride	S16-Oc07109	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate	1 0.0 00000	.,		1 0.0	1 0.0		0070		
Duplioute				Result 1	Result 2	RPD			
% Moisture	S16-Oc06920	СР	%	19	17	10	30%	Pass	
Duplicate	1 010 0000020	01	/0	10	1,	10	0070	1 455	
Total Recoverable Hydrocarbons	. 1999 NFPM Fract	ions		Result 1	Result 2	RPD			
TRH C10-C14	S16-Oc06921	CP	mg/kg	130	160	18	30%	Pass	
TRH C15-C28	S16-Oc06921	CP	mg/kg	1100	1100	2.0	30%	Pass	
TRH C29-C36	S16-Oc06921	CP	mg/kg	930	1000	10	30%	Pass	
Duplicate	310-000921	_ Ci	l llig/kg] 930	1000	10	3078	1 033	
Polycyclic Aromatic Hydrocarbons	•			Popult 1	Result 2	RPD			
		CD	m a/lea	Result 1			200/	Door	
Acenaphthulana	\$16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	\$16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	



Duplicate									
Polycyclic Aromatic Hydrocarbon	s			Result 1	Result 2	RPD			
Indeno(1.2.3-cd)pyrene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Oc06921	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-Oc06921	CP	mg/kg	170	200	14	30%	Pass	·
TRH >C16-C34	S16-Oc06921	CP	mg/kg	1900	2000	5.0	30%	Pass	
TRH >C34-C40	S16-Oc06921	CP	mg/kg	620	730	16	30%	Pass	



Comments

This report has been revised to amend Sample IDs for samples S16-Oc06921 and S16-Oc06922.

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	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												

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
Rhys Thomas Senior Analyst-Asbestos (NSW)
Ryan Hamilton Senior Analyst-Inorganic (NSW)
Ryan Hamilton Senior Analyst-Organic (NSW)
Ryan Hamilton Senior Analyst-Volatile (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.

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Certificate of Analysis





NATA Accredited Accreditation Number 1261 Site Number 18217

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.

Page 1 of 12

Report Number: 518931-V2-AID

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

Attention: Tim Gunns

Report 518931-V2-AID

Project Name AUSTRAL PHASE 2

 Project ID
 1601114A

 Received Date
 Oct 07, 2016

 Date Reported
 Oct 17, 2016

Methodology:

Asbestos ID

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. Bulk samples include building materials, soils and ores.

Subsampling Soil Samples

The whole sample submitted is first dried and then sieved through a 10mm sieve followed by a 2mm sieve. All fibrous matter viz 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) Iron ores - Sampling and Sample preparation procedures is employed. 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 asbestoscontaining material (ACM) The material is first examined and any fibres isolated and where required interfering organic fibres or matter may be removed by treating the sample for several hours at a temperature not exceeding 400 ± 30 °C. The resultant material is then ground and examined in accordance with AS 4964-2004.

Limit of Reporting

The nominal detection limit of the AS4964 method is around 0.01%. The examination of large sample sizes (at least 500 ml is recommended) may improve the likelihood of identifying asbestos material in the greater than 2 mm fraction. The NEPM screening level of 0.001% w/w asbestos in soil for FA and AF (i.e. non-bonded/friable asbestos) only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. NOTE: NATA News, September 2011 – page 34, states, "Weighing of fibres is problematic and can lead to loss of fibres and potential exposure for laboratory analysts. To request laboratories to report information which is outside the scope of AS 4964-2004 and the scope of their accreditation is misleading and is most unwise" therefore such values reported are outside the scope of Eurofins | mgt NATA accreditation as designated by an asterisk.







NATA Accredited Accreditation Number 1261 Site Number 18217

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

Project Name AUSTRAL PHASE 2

 Project ID
 1601114A

 Date Sampled
 Oct 05, 2016

 Report
 518931-V2-AID

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
SS1/0.0-0.15	16-Oc06902	Oct 05, 2016	Approximate Sample 83g Sample consisted of: Brown coarse grain soil and rocks	Chrysotile, amosite and crocidolite asbestos detected in weathered fibre cement fragments Approximate raw weight of asbestos containing material = 0.0190g Organic fibre detected. No respirable fibres detected.
SS2/0.0-0.15	16-Oc06903	Oct 05, 2016	Approximate Sample 58g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS3/0.0-0.15	16-Oc06904	Oct 05, 2016	Approximate Sample 70g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS4/0.0-0.15	16-Oc06905	Oct 05, 2016	Approximate Sample 55g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS5/0.0-0.15	16-Oc06906	Oct 05, 2016	Approximate Sample 53g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS6/0.0-0.15	16-Oc06907	Oct 05, 2016	Approximate Sample 84g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS7/0.0-0.15	16-Oc06908	Oct 05, 2016	Approximate Sample 52g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
SS8/0.0-0.15	16-Oc06909	Oct 05, 2016	Approximate Sample 68g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
AF1/0.0-0.15	16-Oc06910	Oct 05, 2016	Approximate Sample 59g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
AF2/0.0-0.15	16-Oc06911	Oct 05, 2016	Approximate Sample 58g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.







NATA Accredited Accreditation Number 1261 Site Number 18217

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.

Client Sample ID	Eurofins mgt Sample No.	Date Sampled	Sample Description	Result
AF3/0.0-0.15	16-Oc06912	Oct 05, 2016	Approximate Sample 58g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
AF4/0.0-0.15	16-Oc06913	Oct 05, 2016	Approximate Sample 88g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
AF5/0.0-0.15	16-Oc06914	Oct 05, 2016	Approximate Sample 51g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.
AF6/0.0-0.15	16-Oc06915	Oct 05, 2016	Approximate Sample 93g Sample consisted of: Brown coarse grain soil and rocks	No asbestos detected. Organic fibre detected. No respirable fibres detected.

Report Number: 518931-V2-AID



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.

DescriptionTesting SiteExtractedHolding TimeAsbestos - LTM-ASB-8020SydneyOct 10, 2016Indefinite

Report Number: 518931-V2-AID



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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

Warriewood NSW 2102

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A

Order No.: PO1543 **Received:** Oct 7, 2016 5:25 PM

Report #: 518931 **Due:** Oct 14, 2016

 Phone:
 02 9979 1722
 Priority:
 5 Day

 Fax:
 02 9979 1222
 Contact Name:
 Tim Gunns

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

	Sample Detail								Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
	ourne Laborato			271									
_	ney Laboratory					Х	Х	Х	Х	Х	Х	Х	Х
	bane Laborator		20794										
	rnal Laboratory			I	1								
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	S1/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06876						Х	Х	
2	S2/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06877						Х	Х	
3	S3/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06878						Х	Х	
4	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06879						Х	Х	
5	S5/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06880						Х	Х	
6	S6/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06881						Х	Х	
7	S7/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06882						Х	Х	
8	S8/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06883						Х	Х	
9	S9/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06884						Х	Х	
10	S10/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06885						Х	Х	



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 Oct 14, 2016

 Warriewood
 Phone:
 02 9979 1722
 Priority:
 5 Day

NSW 2102 Fax: 02 9979 1722 Friority: 5 Day

Friority: 5 Day

Contact Name: Tim Gunns

Project Name: AUSTRAL PHASE 2
Project ID: 1601114A

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

	Sample Detail							Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	1											
11	S11/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06886						Х	Х	
12	S12/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06887						Х	Х	
13	S13/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06888						Х	Х	
14	S14/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06889						Х	Х	
15	S15/0.1-0.25	Oct 04, 2016		Soil	S16-Oc06890						Х	Х	
16	S16/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06891						Х	Х	
17	S17/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06892						Х	Х	
18	S18/0.35-0.55	Oct 04, 2016		Soil	S16-Oc06893						Х	Х	
19	S19/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06894						Х	Х	
20	S20/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06895						Х	Х	
21	S21/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06896				Х	Х	Х		
22	S22/0.15-0.35	Oct 04, 2016		Soil	S16-Oc06897						Х	Х	



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Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: PO1543 Received:

Oct 7, 2016 5:25 PM Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016

> Warriewood Phone: 02 9979 1722 Priority: 5 Day NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

Project Name: **AUSTRAL PHASE 2**

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

	Sample Detail							Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	oourne Laborate	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	/											
23	S23/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06898				Х	Х	Х		
24	S24/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06899						Х	Х	
25	S25/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06900						Х	Х	
26	S26/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06901						Х	Х	
27	SS1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06902	Х		Х			Х		
28	SS2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06903	Х		Х			Х		
29	SS3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06904	Х		Х			Х		
30	SS4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06905	Х		Х			Х		
31	SS5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06906	Х		Х			Х		
32	SS6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06907	Х		Х			Х		
33	SS7/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06908	Х		Х			Х		
34	SS8/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06909	Х		Х			Х		



AUSTRAL PHASE 2

Project Name:

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

Melbourne

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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

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 Address:
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 Report #:
 518931
 Due:
 Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day

NSW 2102 **Fax:** 02 9979 1222 **Contact Name:** Tim Gunns

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

	Sample Detail							Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	71									
Sydı	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	<u>'</u>											
35	AF1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06910	Х							
36	AF2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06911	Х							
37	AF3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06912	Х							
38	AF4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06913	Х							
39	AF5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06914	Х							
40	AF6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06915	Х							
41	DS1	Oct 04, 2016		Soil	S16-Oc06916						Х	Х	
42	DS2	Oct 05, 2016		Soil	S16-Oc06917				Х	Х	Х		
43	R1	Oct 04, 2016		Water	S16-Oc06918							Х	
44	R2	Oct 05, 2016		Water	S16-Oc06919							Х	
45	BH1/0.15-0.3	Oct 06, 2016		Soil	S16-Oc06920						Х		Х
46	B1/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06921						Х		Х



Geo-Logix P/L

AUSTRAL PHASE 2

Warriewood

NSW 2102

Bld Q2 Level 3, 2309/4 Daydream St

Company Name:

Project Name:

Address:

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 Priority:
 5 Day

Fax: 02 9979 1222 Contact Name: Tim Gunns

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

														_
	Sample Detail								Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8	
Mell	ourne Laborato	ory - NATA Site	# 1254 & 142	71										
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х	
Bris	bane Laborator	y - NATA Site #	20794											
Exte	rnal Laboratory													
47	B2/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06922						Х		Х	
48	C1	Oct 04, 2016		Soil	S16-Oc06923				Х	Х	Х			
49	S1/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06924		Х							
50	S2/0.5-0.6	Oct 04, 2016		Soil	S16-Oc06925		Х						\sqcup	
51	S3/0.9-1.0	Oct 04, 2016		Soil	S16-Oc06926		Х						\sqcup	
52	S4/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06927		Х						\sqcup	
53	S5/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06928		Х							
54	S6/0.9-1.1	Oct 04, 2016		Soil	S16-Oc06929		Х							
55	S7/0.45-0.65	Oct 04, 2016		Soil	S16-Oc06930		Х						\sqcup	
56	S11/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06931		Х						\vdash	
57	S13/0.25-0.35	Oct 05, 2016		Soil	S16-Oc06932		Х						\longmapsto	
58	S14/0.2-0.5	Oct 04, 2016		Soil	S16-Oc06933		Х						oxdot	J



Address:

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Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

> Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016 Warriewood Phone: 02 9979 1722 Priority: 5 Day

NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

	Sample Detail								Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
	ourne Laborato			71			.,	.,	.,	.,		.,	, , ,
	ney Laboratory					Х	Х	Х	Х	Х	Х	Х	X
	bane Laboratory rnal Laboratory		20194										
59	S15/0.25-0.35	Oct 04, 2016		Soil	S16-Oc06934		Х						
60	S16/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06935		Х						
61	S17/0.6-0.7	Oct 05, 2016		Soil	S16-Oc06936		Х						
62	S18/0.6-0.8	Oct 04, 2016		Soil	S16-Oc06937		Х						
63	S22/0.45-0.5	Oct 04, 2016		Soil	S16-Oc06938		Х						
64	S25/0.7-0.8	Oct 04, 2016		Soil	S16-Oc06939		Х						
65													
66	66 R3 Oct 06, 2016 Water \$16-Oc07118											Х	
Test	est Counts								4	4	40	28	3



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

ΑF

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 Stardards 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.

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 substantial 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).

Report Number: 518931-V2-AID



Comments

This report has been revised to amend Sample IDs for samples S16-Oc06921 and S16-Oc06922.

The samples received were not collected in approved asbestos bags and were therefore sub-sampled from the 250mL glass jars. Valid sub-sampling procedures were applied so as to ensure that the sub-samples to be analysed accurately represented the samples received.

Sample Integrity

1 0 7	
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

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glonn Jackson

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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Page 12 of 12

Report Number: 518931-V2-AID



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



Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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: Tim Gunns

Report 518931-W-V2
Project name AUSTRAL PHASE 2

Project ID 1601114A Received Date Oct 07, 2016

Client Sample ID			R1	R2	R3
Sample Matrix			Water	Water	Water
•					
Eurofins mgt Sample No.			S16-Oc06918	S16-Oc06919	S16-Oc07118
Date Sampled			Oct 04, 2016	Oct 05, 2016	Oct 06, 2016
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM	Fractions				
TRH C6-C9	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C10-C14	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C15-C28	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C29-C36	0.1	mg/L	< 0.1	< 0.1	< 0.1
TRH C10-36 (Total)	0.1	mg/L	< 0.1	< 0.1	< 0.1
BTEX					
Benzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Toluene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Ethylbenzene	0.001	mg/L	< 0.001	< 0.001	< 0.001
m&p-Xylenes	0.002	mg/L	< 0.002	< 0.002	< 0.002
o-Xylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Xylenes - Total	0.003	mg/L	< 0.003	< 0.003	< 0.003
4-Bromofluorobenzene (surr.)	1	%	106	105	106
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions				
Naphthalene ^{N02}	0.01	mg/L	< 0.01	< 0.01	< 0.01
TRH >C10-C16 less Naphthalene (F2)N01	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH C6-C10	0.02	mg/L	< 0.02	< 0.02	< 0.02
TRH C6-C10 less BTEX (F1)N04	0.02	mg/L	< 0.02	< 0.02	< 0.02
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Acenaphthylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benz(a)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(a)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(b&j)fluorantheneN07	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(g.h.i)perylene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Benzo(k)fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Chrysene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Dibenz(a.h)anthracene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluoranthene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Fluorene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Indeno(1.2.3-cd)pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Naphthalene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Phenanthrene	0.001	mg/L	< 0.001	< 0.001	< 0.001
Pyrene	0.001	mg/L	< 0.001	< 0.001	< 0.001



Client Sample ID			R1	R2	R3
Sample Matrix			Water	Water	Water
Eurofins mgt Sample No.			S16-Oc06918	S16-Oc06919	S16-Oc07118
Date Sampled			Oct 04, 2016	Oct 05, 2016	Oct 06, 2016
•	LOR	Linit	001 04, 2010	OCI 03, 2010	OCI 00, 2010
Test/Reference Polycyclic Aromatic Hydrocarbons	LOR	Unit			
Total PAH*	0.001	mg/L	< 0.001	< 0.001	< 0.001
2-Fluorobiphenyl (surr.)	1	111g/L %	75	68	76
p-Terphenyl-d14 (surr.)	1	%	70	65	73
Organochlorine Pesticides		70	10	- 00	10
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	143	108	117
Tetrachloro-m-xylene (surr.)	1	%	131	96	105
Total Recoverable Hydrocarbons - 2013 NEPM F			. 0.05	. 0.05	. 0.05
TRH > C16 C24	0.05	mg/L	< 0.05	< 0.05	< 0.05
TRH >C16-C34 TRH >C34-C40	0.1	mg/L	< 0.1 < 0.1	< 0.1	< 0.1
Heavy Metals	0.1	mg/L	< U.1	< 0.1	< 0.1
Arsenic	0.001	mg/L	< 0.001	< 0.001	< 0.001
Cadmium	0.0001	mg/L	< 0.001	< 0.001	< 0.001
Chromium	0.0002	mg/L	< 0.0002	< 0.0002	< 0.0002
Copper	0.001	mg/L	< 0.001	< 0.001	< 0.001
Lead	0.001	mg/L	< 0.001	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 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 B8			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: TRH C6-C36 - LTM-ORG-2010	Sydney	Oct 13, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 10, 2016	7 Day
Polycyclic Aromatic Hydrocarbons - Method: E007 Polyaromatic Hydrocarbons (PAH)	Sydney	Oct 13, 2016	7 Day
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 13, 2016	7 Day
Metals M8 - Method: LTM-MET-3040 Metals in Waters by ICP-MS	Sydney	Oct 10, 2016	28 Day
Eurofins mgt Suite B9			
BTEX - Method: TRH C6-C40 - LTM-ORG-2010	Sydney	Oct 10, 2016	14 Day
Organochlorine Pesticides - Method: E013 Organochlorine Pesticides (OC)	Sydney	Oct 13, 2016	7 Day



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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

> Warriewood NSW 2102

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Report #: 518931 Due: Oct 14, 2016

Phone: 02 9979 1722 Priority: 5 Day 02 9979 1222 **Contact Name:** Tim Gunns

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	271									
Sydi	ney Laboratory	- NATA Site # 1	8217			Х	Х	Χ	Х	Х	Х	Χ	Χ
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory												
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	S1/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06876						Х	Х	
2	S2/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06877						Х	Х	
3	S3/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06878						Х	Х	
4	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06879						Х	Х	
5	S5/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06880						Х	Х	
6	S6/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06881						Х	Х	
7	S7/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06882						Х	Х	
8	S8/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06883						Х	Х	
9	S9/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06884						Х	Х	
10	S10/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06885						Х	Χ	



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	bourne Laborate	ory - NATA Site	# 1254 & 142										
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
	ernal Laboratory												
11	S11/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06886						Х	Х	
12	S12/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06887						Х	Х	
13	S13/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06888						Х	Х	
14	S14/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06889						Х	Х	
15	S15/0.1-0.25	Oct 04, 2016		Soil	S16-Oc06890						Х	Х	
16	S16/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06891						Х	Х	
17	S17/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06892						Х	Х	
18	S18/0.35-0.55	Oct 04, 2016		Soil	S16-Oc06893						Х	Х	
19	S19/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06894						Х	Х	
20	S20/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06895						Х	Х	
21	S21/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06896				Х	Х	Х		
22	S22/0.15-0.35	Oct 04, 2016		Soil	S16-Oc06897						Х	Х	



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02 9979 1722

02 9979 1222

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NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Address: Bld Q2 Level 3, 2309/4 Daydream St

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #: 518931

Due: Oct 14, 2016 Priority: 5 Day

Contact Name: Tim Gunns

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Melk	ourne Laborate	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Χ	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory												
23	S23/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06898				Х	Х	Х		
24	S24/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06899						Χ	Χ	
25	S25/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06900						Χ	Χ	
26	S26/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06901						Χ	Χ	
27	SS1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06902	Х		Х			Х		
28	SS2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06903	Х		Χ			Χ		
29	SS3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06904	Х		Χ			Χ		
30	SS4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06905	Х		Х			Х		
31	SS5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06906	Х		Х			Х		
32	SS6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06907	Х		Х			Х		
33	SS7/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06908	Х		Х			Х		
34	SS8/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06909	Х		Х			Х		



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016 Warriewood Phone: 02 9979 1722 Priority: 5 Day

Contact Name: NSW 2102 Fax: 02 9979 1222 Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	ourne Laborate	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	,		T									
35	AF1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06910	Х							
36	AF2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06911	Х							
37	AF3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06912	Х							
38	AF4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06913	Х							
39	AF5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06914	Х							
40	AF6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06915	Х							
41	DS1	Oct 04, 2016		Soil	S16-Oc06916						Х	Х	
42	DS2	Oct 05, 2016		Soil	S16-Oc06917				Х	Х	Х		
43	R1	Oct 04, 2016		Water	S16-Oc06918							Х	
44	R2	Oct 05, 2016		Water	S16-Oc06919							Х	
45	BH1/0.15-0.3	Oct 06, 2016		Soil	S16-Oc06920						Х		Х
46	B1/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06921						Х		Х



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NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Address: Bld Q2 Level 3, 2309/4 Daydream St Report #: 518931 Due: Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day **Contact Name:** NSW 2102 Fax: 02 9979 1222 Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A

Eurofins	mgt Analytical	Services	Manager	: Nibha	Vaidya
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		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mel	bourne Laborate	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	<u>, </u>											
47	B2/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06922						Х		Х
48	C1	Oct 04, 2016		Soil	S16-Oc06923				Х	Х	Х		
49	S1/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06924		Х						
50	S2/0.5-0.6	Oct 04, 2016		Soil	S16-Oc06925		Х						
51	S3/0.9-1.0	Oct 04, 2016		Soil	S16-Oc06926		Х						
52	S4/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06927		Х						
53	S5/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06928		Х						
54	S6/0.9-1.1	Oct 04, 2016		Soil	S16-Oc06929		Х						
55	S7/0.45-0.65	Oct 04, 2016		Soil	S16-Oc06930		Х						
56	S11/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06931		Х						
57	S13/0.25-0.35	Oct 05, 2016		Soil	S16-Oc06932		Х						
58	S14/0.2-0.5	Oct 04, 2016		Soil	S16-Oc06933		Х						



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Company Name: Geo-Logix P/L Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Bld Q2 Level 3, 2309/4 Daydream St Address: Report #: 518931 Due: Oct 14, 2016

Warriewood Phone: 02 9979 1722 Priority: 5 Day NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8	
Melk	ourne Laborato	ory - NATA Site	# 1254 & 142	.71]
Sydi	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х	
Bris	bane Laborator	y - NATA Site #	20794										<u> </u>	
Exte	rnal Laboratory	1	ı	I									<u> </u>	
59	S15/0.25-0.35	Oct 04, 2016		Soil	S16-Oc06934		Х							
60	S16/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06935		Х							
61	S17/0.6-0.7	Oct 05, 2016		Soil	S16-Oc06936		Х							
62	S18/0.6-0.8	Oct 04, 2016		Soil	S16-Oc06937		Х						<u> </u>	
63	S22/0.45-0.5	Oct 04, 2016		Soil	S16-Oc06938		Х						<u> </u>	
64	S25/0.7-0.8	Oct 04, 2016		Soil	S16-Oc06939		Х						<u> </u>	
65	S26/1.0-1.3	Oct 04, 2016		Soil	S16-Oc06940		Х							
66	R3	Oct 06, 2016		Water	S16-Oc07118							Х		
Test	Counts					14	17	8	4	4	40	28	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. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. 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

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.

**NOTE: pH duplicates are reported as a range NOT as RPD

Units

mg/kg: milligrams per Kilogram ma/l: milligrams per litre ug/I: micrograms per litre ppm: Parts per million ppb: Parts per billion %: Percentage

ora/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

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.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis. Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody SRA Sample Receipt Advice

CP Client Parent - QC was performed on samples pertaining to this report

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 NCP

TFO 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 20-130%

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.
- 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.
- 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.

Report Number: 518931-W-V2



Quality Control Results

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Method Blank					
Total Recoverable Hydrocarbons - 1999 NEPM Frac	tions				
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 Frac	tions				
Naphthalene	mg/L	< 0.01	0.01	Pass	
TRH C6-C10	mg/L	< 0.02	0.02	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					
Organochlorine Pesticides					
Chlordanes - Total	mg/L	< 0.001	0.001	Pass	
4.4'-DDD	mg/L	< 0.0001	0.0001	Pass	
4.4'-DDE	mg/L	< 0.0001	0.0001	Pass	
4.4'-DDT	mg/L	< 0.0001	0.0001	Pass	
a-BHC	mg/L	< 0.0001	0.0001	Pass	
Aldrin	mg/L	< 0.0001	0.0001	Pass	
b-BHC	mg/L	< 0.0001	0.0001	Pass	
d-BHC	mg/L	< 0.0001	0.0001	Pass	
Dieldrin	mg/L	< 0.0001	0.0001	Pass	
Endosulfan I	mg/L	< 0.0001	0.0001	Pass	
Endosulfan II	mg/L	< 0.0001	0.0001	Pass	
Endosulfan sulphate	mg/L	< 0.0001	0.0001	Pass	
Endrin	mg/L	< 0.0001	0.0001	Pass	
Endrin aldehyde	mg/L	< 0.0001	0.0001	Pass	



	1		Accontance	Pass	Qualifying
Test	Units	Result 1	Acceptance Limits	Limits	Code
Endrin ketone	mg/L	< 0.0001	0.0001	Pass	
g-BHC (Lindane)	mg/L	< 0.0001	0.0001	Pass	
Heptachlor	mg/L	< 0.0001	0.0001	Pass	
Heptachlor epoxide	mg/L	< 0.0001	0.0001	Pass	
Hexachlorobenzene	mg/L	< 0.0001	0.0001	Pass	
Methoxychlor	mg/L	< 0.0001	0.0001	Pass	
Toxaphene	mg/L	< 0.01	0.01	Pass	
Method Blank					
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	_				
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					
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	,g/ =	10.000	0.000	1 466	
Total Recoverable Hydrocarbons - 1999 NEPM Fractions			T		
TRH C6-C9	%	114	70-130	Pass	
TRH C10-C14	%	72	70-130	Pass	
LCS - % Recovery	,,,		1.0.00	1 466	
BTEX			T		
Benzene	%	100	70-130	Pass	
Toluene	%	105	70-130	Pass	
Ethylbenzene	%	105	70-130	Pass	
m&p-Xylenes	%	103	70-130	Pass	
o-Xylene	%	107	70-130	Pass	
Xylenes - Total	%	104	70-130	Pass	
LCS - % Recovery	/0	104	10-130	1 ass	
Total Recoverable Hydrocarbons - 2013 NEPM Fractions		T			
Naphthalene	%	95	70-130	Pass	
TRH C6-C10	%	101	70-130	Pass	
LCS - % Recovery	/0	101	70-130	Fass	
		T I	T	l	
Polycyclic Aromatic Hydrocarbons Acenaphthene	%	130	70-130	Pass	
			70-130		
Acenaphthylene	%	124		Pass	
Anthracene	%	129	70-130	Pass	
Benz(a)anthracene	%	106	70-130	Pass	
Benzo(a)pyrene	%	104	70-130	Pass	
Benzo(b&j)fluoranthene	%	91	70-130	Pass	
Benzo(g.h.i)perylene	%	128	70-130	Pass	
Benzo(k)fluoranthene	%	115	70-130	Pass	
Chrysene	%	124	70-130	Pass	
Dibenz(a.h)anthracene	%	115	70-130	Pass	
Fluoranthene	%	120	70-130	Pass	
Fluorene	%	126	70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	122	70-130	Pass	
Naphthalene	%	130	70-130	Pass	1



Test			Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Phenanthrene			%	129	70-130	Pass	
Pyrene			%	123	70-130	Pass	
LCS - % Recovery			,,			7 0.00	
Organochlorine Pesticides				Τ			
4.4'-DDD			%	130	70-130	Pass	
4.4'-DDE			%	120	70-130	Pass	
4.4'-DDT			%	110	70-130	Pass	
a-BHC			%	120	70-130	Pass	
Aldrin			%	120	70-130	Pass	
b-BHC			%	120	70-130	Pass	
d-BHC			%	130	70-130	Pass	
Dieldrin			%	120	70-130	Pass	
Endosulfan I			%	120	70-130	Pass	
Endosulfan II			%	130	70-130	Pass	
Endosulfan sulphate			%	130	70-130	Pass	
Endrin			%	120	70-130	Pass	
Endrin aldehyde			%	130	70-130	Pass	
Endrin ketone			%	120	70-130	Pass	
g-BHC (Lindane)			%	120	70-130	Pass	
Heptachlor			%	130	70-130	Pass	
Heptachlor epoxide			%	120	70-130	Pass	
Hexachlorobenzene			%	120	70-130	Pass	
Methoxychlor			%	120	70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	tions					
TRH >C10-C16			%	71	70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic			%	97	70-130	Pass	
Cadmium			%	95	70-130	Pass	
Chromium			%	100	70-130	Pass	
Copper			%	96	70-130	Pass	
Lead			%	96	70-130	Pass	
Mercury			%	102	70-130	Pass	
Nickel			%	90	70-130	Pass	
Zinc			%	93	70-130	Pass	
		QA			Acceptance	Pass	Qualifying
Test	Lab Sample ID	Source	Units	Result 1	Limits	Limits	Code
Spike - % Recovery	4000 115515			T D. ,			
Total Recoverable Hydrocarbons			6.1	Result 1	70.100		
TRH C10-C14	S16-Oc06733	NCP	%	121	70-130	Pass	
Spike - % Recovery				T I			
Total Recoverable Hydrocarbons				Result 1			
TRH >C10-C16	S16-Oc06733	NCP	%	126	70-130	Pass	
Spike - % Recovery				1			
Spike - 1/8 Recovery				Result 1			
Total Recoverable Hydrocarbons			1	+			l
-	S16-Oc07118	CP	%	96	70-130	Pass	
Total Recoverable Hydrocarbons			%	96	70-130	Pass	
Total Recoverable Hydrocarbons TRH C6-C9			%	96 Result 1	70-130	Pass	
Total Recoverable Hydrocarbons - TRH C6-C9 Spike - % Recovery			%		70-130	Pass	
Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX	S16-Oc07118	СР		Result 1			
Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene	S16-Oc07118 S16-Oc07118	СР	%	Result 1	70-130	Pass	
Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene Ethylbenzene	\$16-Oc07118 \$16-Oc07118 \$16-Oc07118 \$16-Oc07118	CP CP CP	% %	Result 1 89 94	70-130 70-130	Pass Pass	
Total Recoverable Hydrocarbons TRH C6-C9 Spike - % Recovery BTEX Benzene Toluene	\$16-Oc07118 \$16-Oc07118 \$16-Oc07118	CP CP CP	% % %	Result 1 89 94 94	70-130 70-130 70-130	Pass Pass Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1					
Naphthalene	S16-Oc07118	CP	%	75			70-130	Pass	
TRH C6-C10	S16-Oc07118	CP	%	85			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons	- 1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	S16-Oc07117	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
TRH C10-C14	S16-Oc06732	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH C15-C28	S16-Oc06732	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH C29-C36	S16-Oc06732	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
ВТЕХ				Result 1	Result 2	RPD			
Benzene	S16-Oc07117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Toluene	S16-Oc07117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Ethylbenzene	S16-Oc07117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
m&p-Xylenes	S16-Oc07117	NCP	mg/L	< 0.002	< 0.002	<1	30%	Pass	
o-Xylene	S16-Oc07117	NCP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Xylenes - Total	S16-Oc07117	NCP	mg/L	< 0.003	< 0.003	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	S16-Oc07117	NCP	mg/L	< 0.01	< 0.01	<1	30%	Pass	
TRH C6-C10	S16-Oc07117	NCP	mg/L	< 0.02	< 0.02	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons	- 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	S16-Oc06732	NCP	mg/L	< 0.05	< 0.05	<1	30%	Pass	
TRH >C16-C34	S16-Oc06732	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	
TRH >C34-C40	S16-Oc06732	NCP	mg/L	< 0.1	< 0.1	<1	30%	Pass	



Comments

This report has been revised to amend Sample IDs for samples S16-Oc06921 and S16-Oc06922.

Sample Integrity

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

Qualifier Codes/Comments

Code	Description

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

N01

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

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

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

N02

N07

Nibha Vaidva Analytical Services Manager Ryan Hamilton Senior Analyst-Organic (NSW) Ryan Hamilton Senior Analyst-Volatile (NSW)



National Operations Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested
- * Indicates NATA accreditation does not cover the performance of this service

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

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CHAIN OF CUSTODY

Date Submitted:

Page 1 of 4

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

NSW 2102

ABN: 86 116 892 936

P: (02) 9979 1722

Project Manager:
Contact Email:
Project Name:

Project Number:

Tim Gunns
tgunns@geo-logix.com.au

Austral Phase 2

1601114A

Purchase Order No: PO1543

Quote Reference: 161006GLX

Invoice to:

accounts@geo-logix.com.au

TAT required:

\$TD

519931.

ANALYSIS REQUIRED

			Ī	N	latri	x				Щ						T					T	П	Т	1	
Lab ID	Sample ID	Date	Soil	Water	Air	Paint / ACM	Other	Comments	НОГР	COMPOSITE	OCP/M8	B9													Eurofins MGT Suite Codes
	\$1/0.2-0.3	04-10-16	Х									Х								\neg				B1	TRH/BTEXN
	\$1/0,4-0.5	04-10-16	×						х				 	\top	+	+		+			+	\Box		B1A	TRH/MAH
			╌			_			^				\vdash	+	+	+	-	+	\vdash	+	+	+	_	B2	TRH/BTEXN/Pb
	S2/0.2-0.3	04-10-16	X	_								Х		\rightarrow	+	+			\vdash	\rightarrow		\vdash	+	B2A B3	TRH/MAH/Pb PAH/Phenois
	S2/0.5-0.6	04-10-16	Х						X												\perp			B4	TRH/BTEXN/PAH
	\$3/0.3-0.5	04-10-16	Х									x							1					B4A	TRH/BTEXN/PAH/Phenois
	S3/0.9-1.0	04-10-16	х						х															B5	TRH/BTEXN/M7
	\$4/0.2-0.3	04-10-16	Tx						T			Х				\top								B6	TRH/BTEXN/M8
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	S5/0.4-0.6	04-10-16	Х						X												ľ			B9	TRH/BTEXN/PAH/OCP/M8
	\$6/0.4-0.6	04-10-16	х									Х			- [B10 B11	TRH/BTEXN/PAH/OCP/OPP/M8 Na/K/Ca/Mg/Cl/SO4/CO3/HCO3/NH3/NO3
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	S13/0.0-0.15	05-10-16	X									X												R21	%Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay

07-10-16

CHAIN OF CUSTODY

Relinquished by: 174

Date/Time:

7 - 10-16 Signature:

Received by

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1795 March 2009

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

ABN: 86 116 892 936 P: (02) 9979 1722 CHAIN OF CUSTODY

Project Manager: Tim Gunns

Contact Email:

Project Name:

im Gunns

tgunns@geo-logix.com.au

Austral Phase 2

Project Number: 1601114A

Date Submitted: 07-10-16

Page _2 of _4

Purchase Order No: PO1543

Quote Reference:

161006GLX

Invoice to:

accounts@geo-logix.com.au

TAT required: STD

PTO -D

ANALYSIS REQUIRED

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Łab ID	Sample ID	Date	Soil	Water	Air	Paint / ACM	Other	Comments	НОГР	COMPOSITE	OCP/M8	B3	STOS	LEAD							!								Eurofins MGT Suite Codes
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į	S18/0.6-0.8	04-10-16	×						Х																			89	TRH/BTEXN/PAH/OCP/M8
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	\$25/0,4-0,6	04-10-16	Х									Х							+	_	-		\dashv	_	_	_	-	816	TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB
	\$25/0.7-0.8	04-10-16	X					Composite with \$26/0.0-0.15		Х						_		\perp	\perp	\perp		Ш	_	_	\perp	\perp		B17	SO4/NO3/Fe++/HPC/CUB
	\$26/0.3-0.5	04-10-16	X									Х																B18	CI-/SO4/pH
	\$26/1.0-1.3	04-10-16	х					Composite with S25/0.7-0.8		Х																		B19 B20	N/P/K CEC!%ESP/Ca/Ma/Na/K
	SS1/0.0-0.15	05-10-16	х										Х	х						\top							T	R21	%Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay

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Relinquished by: T4	Date/Time: 7-15-(6	Signature:	Received by:	Date/Time: 7- (0 - (6	Signature:
			- '		

CHAIN OF CUSTODY

Page 3 of 4

Unit	2309/4	
	and the	

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

ABN: 86 116 892 936 P: (02) 9979 1722

Tim Gunns Project Manager:

tgunns@geo-logix.com.au

Austral Phase 2

1601114A Project Number:

Contact Email:

Project Name:

07-10-16 Date Submitted:

Purchase Order No: PO1543

161006GLX **Quote Reference:**

Invoice to:

accounts@geo-logix.com.au

STD TAT required:

ANALYSIS REQUIRED

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Lab ID	Sample ID	Date	Soil	Water	Air	Paint / ACM	Other	Comments	НОГР	COMPOSITE	OCP/M8	B9	ASBESTOS ID	LEAD	B8															Eurofins MGT Suite Codes
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	SS6/0.0-0.15	05-10-16	X										x	х						ľ								- 11	B4A	TRH/BTEXN/PAH/Phenols
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CHAIN OF CUSTODY

Relinquished by: 74 D	Date/Time: 7-10-6	Signature:	Received by:	Date/Time: 1-16-L6	Signature:
_			1		

Building Q2, Level 3 Unit 2309/4

Daydream St, Warriewood

Geo-Logix Pty Ltd

ABN: 86 116 892 936

NSW 2102

CHAIN OF CUSTODY

Page 4 of 4

Project Manager:

Tim Gunns tgunns@geo-logix.com.au **Contact Email:**

1601114A

Austral Phase 2

Purchase Order No: PO1543 161006GLX

Project Name:

Quote Reference:

Project Number:

Invoice to:

accounts@geo-logix.com.au

TAT required:

Date Submitted: 07-10-16 P: (02) 9979 1722 ANALYSIS REQUIRED **Matrix** \Box COMPOSITE ASBESTOS ACM **Eurofins | MGT** OCP/M8 **Suite Codes** HOLD Paint / / LEAD Other Soil B3 88 Αij Lab ID Sample ID Date Comments TRH/BTEXN **B1** C1 Х COMPOSITE OF \$24/\$25 AS ABOVE Х BIA TRH/MAH B2 TRH/BTEXN/Pb B2A TRH/MAH/Pb B3 PAH/Phenois B4 TRH/BTEXN/PAH B4A TRH/BTEXN/PAH/Phenois B5 TRH/BTEXN/M7 B6 TRH/BTEXN/M8 B7 TRH/BTEXN/PAH/M8 B7A TRH/8TEXN/PAH/Phenois/M8 B8 TRH/VOC/PAH/M8 89 TRH/BTEXN/PAH/OCP/M8 810 TRH/BTEXN/PAH/OCP/OPP/M8 811 Na/K/Ca/Mg/Cl/SO4/CO3/HCO3/NH3/NO3 B11A B11/Alkalinity B11B B11/EC/TDS B12 TRH/BTEXN/Oxygenates/Ethanol B12A TRH/BTEXN/Oxygenates B13 OCP/PCB B14 OCP/OPP OCP/OPP/PCB B15 B16 TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB SO4/NO3/Fe++/HPC/CUB B17 B18 CI-/SO4/pH B19 N/P/K B20 CEC/%ESP/Ca/Ma/Na/K %Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay **CHAIN OF CUSTODY**

7-10-6 Signature:

UND Date/Time: 7-10-16 Signature:

Building Q2, Level 3 Unit 2309/4

Daydream St, Warriewood

Geo-Logix Pty Ltd

ABN: 86 116 892 936

P: (02) 9979 1722

NSW 2102

CHAIN OF CUSTODY

_1_of _1_

er:

tgunns@geo-logix.com.au

Purchase Order No: PO1544

Contact Email:

Quote Reference:

161006GLX

Project Name:

Austral Phase 2

Invoice to:

accounts@geo-logix.com.au

Project Number:

1601114A

Tim Gunns

07-10-16 Date Submitted:

TAT required:

STD

ANALYSIS REQUIRED

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Lab ID	Sample ID	Date	Soil	Water	Air	Paint / ACM	Other	Comments	НОГР	COMPOSITE	OCP/M8	B9	ASBESTOS ID	LEAD	B8		:			, L		,	:			-			Eurofins MGT Suite Codes
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CHAIN OF CUSTODY

	11/1		7		. ~		
Relinquished by		Date/Time	- (<u> </u>	10	-11	Signatu

Ellen Wandala Gamage

From: Nibha Vaidya

Sent:Tuesday, 11 October 2016 10:30 AMTo:!AU04_CAU001_EnviroSampleNSWSubject:FW: AUSTRAL PHASE 2 (1601114A)

Attachments: 10102016141153 0001.pdf

Update on this batch -

Composite '\$25/0.7-0.8' and '\$26/1.0-1.3' to make up sample 'C1'. Test 'C1' for OCP/M8.

Kind Regards,

Nibha Vaidya

Phone: +61 2 9900 8415 Mobile: +61 499 900 805

Email: NibhaVaidya@eurofins.com

From: Tim Gunns [mailto:tqunns@geo-logix.com.au]

Sent: Monday, 10 October 2016 3:50 PM

To: Nibha Vaidya

Subject: Re: AUSTRAL PHASE 2 (1601114A)

Hi Nibha

Apologies. Typo I meant s25 and s26 as per page 1.

Cheers

Tim

Sent from my iPhone

On 10 Oct. 2016, at 3:41 pm, Nibha Vaidya < Nibha Vaidya @eurofins.com > wrote:

Hi Tim,

Hope your weekend was good.

For sample 'C1' in the attached COC, could you please clarify which samples are to be composited? Cheers.

Kind Regards,

Nibha Vaidya

Analytical Services Manager

Eurofins | mgt
Unit F3, Parkview Building
16 Mars Road
LANE COVE WEST NSW 2066



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

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 Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Geo-Logix P/L

Contact name: Tim Gunns

Project name: AUSTRAL PHASE 2

Project ID: 1601114A COC number: Not provided

Turn around time: 5 Day

Date/Time received: Oct 7, 2016 5:25 PM

Eurofins | mgt reference: 518931

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 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.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Jar ID received as S5/0.2-0.35 labelled as S15/0.2-0.35

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 Tim Gunns - tgunns@geo-logix.com.au.







web : www.eurofins.com.au

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Received:

Brisbane I/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Oct 7, 2016 5:25 PM

Company Name: Geo-Logix P/L Order No.: PO1543

Bld Q2 Level 3, 2309/4 Daydream St Address: Report #: 518931 Due: Oct 14, 2016 Warriewood Phone: 02 9979 1722 Priority: 5 Day

Contact Name: NSW 2102 Fax: 02 9979 1222 Tim Gunns

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

			mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
		ory - NATA Site		271				.,		.,	.,		<u> </u>
_		- NATA Site # 1				Х	Х	Х	Х	Х	Х	Х	Х
	rnal Laboratory	y - NATA Site #	20794										
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID								
1	S1/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06876						Х	Х	
2	S2/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06877						Х	Х	
3	S3/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06878						Х	Х	
4	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06879						Х	Х	
5	S5/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06880						Х	Х	
6	S6/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06881						Х	Х	
7	S7/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06882						Х	Х	
8	S8/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06883						Х	Х	
9	S9/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06884						Х	Х	
10	S10/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06885						Х	Х	



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #:

518931 Due: Oct 14, 2016 02 9979 1722 Priority: 5 Day

Phone: **Contact Name:** Fax: 02 9979 1222 Tim Gunns

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	oourne Laborato	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laboratory	y - NATA Site #	20794										
Exte	rnal Laboratory												
11	S11/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06886						Х	Х	
12	S12/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06887						Х	Х	
13	S13/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06888						Х	Х	
14	S14/0.0-0.2	Oct 04, 2016		Soil	S16-Oc06889						Х	Х	
15	S15/0.1-0.25	Oct 04, 2016		Soil	S16-Oc06890						Х	Х	
16	S16/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06891						Х	Х	
17	S17/0.0-0.2	Oct 05, 2016		Soil	S16-Oc06892						Х	Х	
18	S18/0.35-0.55	Oct 04, 2016		Soil	S16-Oc06893						Х	Х	
19	S19/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06894						Х	Χ	
20	S20/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06895						Х	Х	
21	S21/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06896				Х	Х	Х		
22	S22/0.15-0.35	Oct 04, 2016		Soil	S16-Oc06897						Х	Χ	



Phone:

Fax:

web : www.eurofins.com.au

02 9979 1722

02 9979 1222

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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #: 518931

Due: Oct 14, 2016

Priority: 5 Day **Contact Name:** Tim Gunns

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	ourne Laborate	ory - NATA Site	# 1254 & 142	271									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	rnal Laboratory	/	ı	1									
23	S23/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06898				Х	Х	Х		
24	S24/0.0-0.15	Oct 04, 2016		Soil	S16-Oc06899						Х	Χ	
25	S25/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06900						Х	Х	
26	S26/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06901						Х	Х	
27	SS1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06902	Х		Х			Х		
28	SS2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06903	Х		Х			Х		
29	SS3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06904	Х		Х			Х		
30	SS4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06905	Х		Х			Х		
31	SS5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06906	Х		Х			Х		
32	SS6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06907	Х		Х			Х		
33	SS7/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06908	Х		Х			Х		
34	SS8/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06909	Х		Х			Х		



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Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM Report #:

518931 Due: Oct 14, 2016 02 9979 1722 Priority: 5 Day

Phone: **Contact Name:** Fax: 02 9979 1222 Tim Gunns

			mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	oourne Laborate	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
		y - NATA Site #	20794										
Exte	rnal Laboratory	/		T									
35	AF1/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06910	Х							
36	AF2/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06911	Х							
37	AF3/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06912	Х							
38	AF4/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06913	Х							
39	AF5/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06914	Х							
40	AF6/0.0-0.15	Oct 05, 2016		Soil	S16-Oc06915	Х							
41	DS1	Oct 04, 2016		Soil	S16-Oc06916						Х	Х	
42	DS2	Oct 05, 2016		Soil	S16-Oc06917				Х	Х	Х		
43	R1	Oct 04, 2016		Water	S16-Oc06918							Х	
44	R2	Oct 05, 2016		Water	S16-Oc06919							Х	
45	BH1/0.15-0.3	Oct 06, 2016		Soil	S16-Oc06920						Х		Х
46	B1/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06921						Х		Х



web : www.eurofins.com.au

Melbourne Melbourne
2-5 Kingston Town Close
Oakleigh VIC 3166
Phone: +61 3 8564 5000
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Brisbane I/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

AUSTRAL PHASE 2 Project Name:

Project ID: 1601114A

Order No.:	PO1543	Received:	Oct 7, 2016 5:25 PM
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Report #: 518931 Due: Oct 14, 2016 Phone: 02 9979 1722 Priority: 5 Day Fax: 02 9979 1222 **Contact Name:** Tim Gunns

		Sa	mple Detail			Asbestos Absence / Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
Mell	bourne Laborato	ory - NATA Site	# 1254 & 142	71									
Syd	ney Laboratory	- NATA Site # 1	8217			Х	Х	Х	Х	Х	Х	Х	Х
Bris	bane Laborator	y - NATA Site #	20794										
Exte	ernal Laboratory	1											
47	B2/0.0-0.15	Oct 06, 2016		Soil	S16-Oc06922						Х		Х
48	C1	Oct 04, 2016		Soil	S16-Oc06923				Х	Х	Х		
49	S1/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06924		Х						
50	S2/0.5-0.6	Oct 04, 2016		Soil	S16-Oc06925		Х						
51	S3/0.9-1.0	Oct 04, 2016		Soil	S16-Oc06926		Х						
52	S4/0.4-0.5	Oct 04, 2016		Soil	S16-Oc06927		Х						
53	S5/0.4-0.6	Oct 04, 2016		Soil	S16-Oc06928		Х						
54	S6/0.9-1.1	Oct 04, 2016		Soil	S16-Oc06929		Х						
55	S7/0.45-0.65	Oct 04, 2016		Soil	S16-Oc06930		Х						
56	S11/0.3-0.5	Oct 04, 2016		Soil	S16-Oc06931		Х						
57	S13/0.25-0.35	Oct 05, 2016		Soil	S16-Oc06932		Х						
58	S14/0.2-0.5	Oct 04, 2016		Soil	S16-Oc06933		Х						



Fax:

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Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane I/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

Project Name: **AUSTRAL PHASE 2**

Project ID: 1601114A Order No.: PO1543 Received: Oct 7, 2016 5:25 PM

Report #: 518931 Due: Oct 14, 2016 Phone: 02 9979 1722 Priority: 5 Day

Contact Name: 02 9979 1222 Tim Gunns

		Sa	mple Detail			Asbestos Absence /Presence	HOLD	Lead	Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9	Eurofins mgt Suite B8
	ourne Laborato			271									
	ney Laboratory					Х	Х	Х	Х	Х	Х	Х	Х
	bane Laboratory		20794										\vdash
	rnal Laboratory			1									\vdash
59	S15/0.25-0.35	Oct 04, 2016		Soil	S16-Oc06934		Х						Ш
60	S16/0.2-0.3	Oct 04, 2016		Soil	S16-Oc06935		Х						\sqcup
61	S17/0.6-0.7	Oct 05, 2016		Soil	S16-Oc06936		Х						
62	S18/0.6-0.8	Oct 04, 2016		Soil	S16-Oc06937		Х						Ш
63	S22/0.45-0.5	Oct 04, 2016		Soil	S16-Oc06938		Х						
64	S25/0.7-0.8	Oct 04, 2016		Soil	S16-Oc06939		Х						
65	S26/1.0-1.3	Oct 04, 2016		Soil	S16-Oc06940		Х						
66	R3	Oct 06, 2016		Water	S16-Oc07118							Х	
Test	Counts					14	17	8	4	4	40	28	3



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



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.

Attention: Tim Gunns

Report 519056-S

Project name AUSTRAL PHASE 2

Project ID 1601114A
Received Date Oct 11, 2016

Client Sample ID			TS1	TS2
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M16-Oc08606	M16-Oc08607
Date Sampled			Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit		
Total Recoverable Hydrocarbons - 1999 NEPM		J 0		
TRH C6-C9	20	mg/kg	< 20	-
TRH C10-C14	20	mg/kg	< 20	-
TRH C15-C28	50	mg/kg	< 50	-
TRH C29-C36	50	mg/kg	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	-
ВТЕХ				
Benzene	0.1	mg/kg	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	72	-
Total Recoverable Hydrocarbons - 2013 NEPM	Fractions			
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)N01	50	mg/kg	< 50	-
TRH C6-C10	20	mg/kg	< 20	-
TRH C6-C10 less BTEX (F1)N04	20	mg/kg	< 20	-
Polycyclic Aromatic Hydrocarbons				
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	< 0.5	-
Benzo(b&j)fluorantheneN07	0.5	mg/kg	< 0.5	-
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	-
Chrysene	0.5	mg/kg	< 0.5	-
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	-
Fluoranthene	0.5	mg/kg	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	-



Client Sample ID			TS1	TS2
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			M16-Oc08606	M16-Oc08607
				Oct 04, 2016
Date Sampled			Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons		1		
Naphthalene	0.5	mg/kg	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	92	-
p-Terphenyl-d14 (surr.)	1	%	88	-
Organochlorine Pesticides	<u> </u>	1		
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05
Methoxychlor	0.05	mg/kg	< 0.05	< 0.05
Toxaphene	1	mg/kg	< 1	< 1
Dibutylchlorendate (surr.)	1	%	93	112
Tetrachloro-m-xylene (surr.)	1	%	71	91
Total Recoverable Hydrocarbons - 2013 I	NEPM Fractions			
TRH >C10-C16	50	mg/kg	< 50	-
TRH >C16-C34	100	mg/kg	< 100	-
TRH >C34-C40	100	mg/kg	< 100	-
Heavy Metals				
Arsenic	2	mg/kg	4.7	23
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	12	53
Copper	5	mg/kg	12	14
Lead	5	mg/kg	15	41
Mercury	0.1	mg/kg	< 0.1	0.2
Nickel	5	mg/kg	7.9	16
Zinc	5	mg/kg	36	33
% Moisture	1	%	12	15



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 B9			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Oct 12, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Melbourne	Oct 12, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 12, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Oct 12, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Organochlorine Pesticides	Melbourne	Oct 12, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Oct 12, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Oct 12, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Oct 11, 2016	14 Day

⁻ Method: LTM-GEN-7080 Moisture



Date Reported:Oct 18, 2016

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

web: www.eurofins.com.au

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney
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16 Mars Road
Lane Cove West NSW 2066
Phone: +61 2 9900 8400
NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

 Company Name:
 Geo-Logix P/L
 Order No.:
 PO1544
 Received:
 Oct 11, 2016 8:30 AM

 Address:
 Bld Q2 Level 3, 2309/4 Daydream St
 Report #:
 519056
 Due:
 Oct 18, 2016

 Warriewood
 Phone:
 02 9979 1722
 Priority:
 5 Day

 NSW 2102
 Fax:
 02 9979 1222
 Contact Name:
 Tim Gunns

Project Name: AUSTRAL PHASE 2

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

		Sa	mple Detail			Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	71		Χ	Х	Х	Х
Sydr	ney Laboratory	- NATA Site # 1	8217						
Brisl	oane Laboratory	y - NATA Site #	20794						
Exte	rnal Laboratory	·							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	TS1	Oct 04, 2016		Soil	M16-Oc08606			Х	Х
2	TS2	Oct 04, 2016		Soil	M16-Oc08607	Х	Х	Х	
Test	Counts							2	1



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. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. 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.

**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

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.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

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 20-130%

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.

Report Number: 519056-S



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	
Method Blank	1g,g	120			
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		< 0.5	0.5	Pass	
Fluoranthene	mg/kg	< 0.5	0.5	Pass	
Fluorene	mg/kg	< 0.5	0.5	Pass	
	mg/kg				
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 Marke of Plants	mg/kg	< 0.5	0.5	Pass	
Method Blank			1		
Organochlorine Pesticides		0.4	0.4	D	
Chlordanes - Total	mg/kg	< 0.1	0.1	Pass	
4.4'-DDD	mg/kg	< 0.05	0.05	Pass	
4.4'-DDE	mg/kg	< 0.05	0.05	Pass	
4.4'-DDT	mg/kg	< 0.05	0.05	Pass	
a-BHC	mg/kg	< 0.05	0.05	Pass	
Aldrin	mg/kg	< 0.05	0.05	Pass	
b-BHC	mg/kg	< 0.05	0.05	Pass	
d-BHC	mg/kg	< 0.05	0.05	Pass	
Dieldrin	mg/kg	< 0.05	0.05	Pass	
Endosulfan I	mg/kg	< 0.05	0.05	Pass	
Endosulfan II	mg/kg	< 0.05	0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05	0.05	Pass	
Endrin	mg/kg	< 0.05	0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05	0.05	Pass	1



Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05	0.05	Pass	5545
g-BHC (Lindane)	mg/kg	< 0.05	0.05	Pass	
Heptachlor	mg/kg	< 0.05	0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05	0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05	0.05	Pass	
Methoxychlor	mg/kg	< 0.05	0.05	Pass	
Toxaphene	mg/kg	< 1	1	Pass	
Method Blank	Ilig/ikg			1 400	
Total Recoverable Hydrocarbons - 2013 NEPM Fr	actions			Т	
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	IIIg/kg	< 100	100	Fass	
				Т	
Heavy Metals		- 2		Poss	
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		ı		<u> </u>	
Total Recoverable Hydrocarbons - 1999 NEPM Fr					
TRH C6-C9	%	105	70-130	Pass	
TRH C10-C14	%	106	70-130	Pass	
LCS - % Recovery		1			
BTEX					
Benzene	%	122	70-130	Pass	
Toluene	%	110	70-130	Pass	
Ethylbenzene	%	103	70-130	Pass	
m&p-Xylenes	%	102	70-130	Pass	
Xylenes - Total	%	102	70-130	Pass	
LCS - % Recovery					
Total Recoverable Hydrocarbons - 2013 NEPM Fr	actions				
Naphthalene	%	120	70-130	Pass	
TRH C6-C10	%	96	70-130	Pass	
LCS - % Recovery					
Polycyclic Aromatic Hydrocarbons					
Acenaphthene	%	96	70-130	Pass	
Acenaphthylene	%	103	70-130	Pass	
Anthracene	%	105	70-130	Pass	
Benz(a)anthracene	%	107	70-130	Pass	
Benzo(a)pyrene	%	106	70-130	Pass	
	%	107	70-130	Pass	
Benzo(b&j)fluoranthene		75	70-130	Pass	
` "	%				
Benzo(g.h.i)perylene	% %	130		Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene	%	130 104	70-130 70-130	Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene	% %	104	70-130	Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene	% % %	104 86	70-130 70-130	Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene	% % % %	104 86 101	70-130 70-130 70-130	Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene Fluorene	% % % % %	104 86 101 102	70-130 70-130 70-130 70-130	Pass Pass Pass Pass	
Benzo(g.h.i)perylene Benzo(k)fluoranthene Chrysene Dibenz(a.h)anthracene Fluoranthene	% % % %	104 86 101	70-130 70-130 70-130	Pass Pass Pass	



Test			Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Pyrene			%	100	70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD			%	97	70-130	Pass	
4.4'-DDE			%	85	70-130	Pass	
4.4'-DDT			%	90	70-130	Pass	
a-BHC			%	91	70-130	Pass	
Aldrin			%	87	70-130	Pass	
b-BHC			%	77	70-130	Pass	
d-BHC			%	89	70-130	Pass	
Dieldrin			%	93	70-130	Pass	
Endosulfan I			%	125	70-130	Pass	
Endosulfan II			%	86	70-130	Pass	
Endosulfan sulphate			%	91	70-130	Pass	
Endrin			%	72	70-130	Pass	
Endrin aldehyde			%	124	70-130	Pass	
Endrin ketone			%	119	70-130	Pass	
g-BHC (Lindane)			%	89	70-130	Pass	
Heptachlor			%	82	70-130	Pass	
Heptachlor epoxide			%	89	70-130	Pass	
Hexachlorobenzene			%	86	70-130	Pass	
Methoxychlor			%	88	70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons -	· 2013 NEPM Fract	tions					
TRH >C10-C16			%	113	70-130	Pass	
LCS - % Recovery			,,	1.10	70 100	1 400	
Heavy Metals							
Arsenic			%	108	80-120	Pass	
Cadmium			%	106	80-120	Pass	
Chromium			%	105	80-120	Pass	
Copper			%	104	80-120	Pass	
Lead			%	107	80-120	Pass	
Mercury			%	100	75-125	Pass	
Nickel			%	100	80-120		
Zinc					80-120	Pass	
ZINC		0.4	%	107		Pass	Overlife size or
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery							
Total Recoverable Hydrocarbons -				Result 1		_	
TRH C6-C9	B16-Oc09191	NCP	%	99	70-130	Pass	
TRH C10-C14	B16-Oc09188	NCP	%	97	70-130	Pass	
Spike - % Recovery							
ВТЕХ	1			Result 1			
Benzene	B16-Oc09191	NCP	%	125	70-130	Pass	
Toluene	B16-Oc09191	NCP	%	117	70-130	Pass	
Ethylbenzene	B16-Oc09191	NCP	%	113	70-130	Pass	
m&p-Xylenes	B16-Oc09191	NCP	%	111	70-130	Pass	
o-Xylene	B16-Oc09191	NCP	%	111	70-130	Pass	
Xylenes - Total	B16-Oc09191	NCP	%	111	70-130	Pass	
Spike - % Recovery							
Total Recoverable Hydrocarbons -	2013 NEPM Fract	ions		Result 1			
Naphthalene	B16-Oc09191	NCP	%	105	70-130	Pass	
TRH C6-C10	B16-Oc09191	NCP	%	91	70-130	Pass	
Spike - % Recovery					 		



Test	Lab Sample ID	QA Source	Units	Result 1	Ac	ceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	M16-Oc06610	NCP	%	107		70-130	Pass	
Acenaphthylene	M16-Oc06610	NCP	%	106		70-130	Pass	
Anthracene	M16-Oc06610	NCP	%	123		70-130	Pass	
Benz(a)anthracene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Benzo(a)pyrene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Benzo(b&j)fluoranthene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Benzo(g.h.i)perylene	M16-Oc06610	NCP	%	118		70-130	Pass	
Benzo(k)fluoranthene	M16-Oc06610	NCP	%	112		70-130	Pass	
Chrysene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Dibenz(a.h)anthracene	M16-Oc06610	NCP	%	104		70-130	Pass	
Fluoranthene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Fluorene	M16-Oc06610	NCP	%	108		70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc06610	NCP	%	116		70-130	Pass	
Naphthalene	M16-Oc06610	NCP	%	85		70-130	Pass	
Phenanthrene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Pyrene	M16-Oc06610	NCP	%	int		70-130	Fail	Q08
Spike - % Recovery								
Organochlorine Pesticides				Result 1				
4.4'-DDD	M16-Oc08917	NCP	%	111		70-130	Pass	
4.4'-DDE	M16-Oc08917	NCP	%	100		70-130	Pass	
4.4'-DDT	M16-Oc08917	NCP	%	77		70-130	Pass	
a-BHC	M16-Oc08917	NCP	%	86		70-130	Pass	
Aldrin	M16-Oc08917	NCP	%	101		70-130	Pass	
b-BHC	M16-Oc08917	NCP	%	94		70-130	Pass	
d-BHC	M16-Oc08917	NCP	%	104		70-130	Pass	
Dieldrin	M16-Oc08917	NCP	%	107		70-130	Pass	
Endosulfan I	M16-Oc08917	NCP	%	102		70-130	Pass	
Endosulfan II	M16-Oc08917	NCP	%	108		70-130	Pass	
Endosulfan sulphate	M16-Oc08917	NCP	%	101		70-130	Pass	
Endrin	M16-Oc08917	NCP	%	86		70-130	Pass	
Endrin aldehyde	M16-Oc08917	NCP	%	91		70-130	Pass	
Endrin ketone	M16-Oc08917	NCP	%	123		70-130	Pass	
g-BHC (Lindane)	M16-Oc08917	NCP	%	102		70-130	Pass	
Heptachlor	M16-Oc08917	NCP	%	98		70-130	Pass	
Heptachlor epoxide	M16-Oc08917	NCP	%	100		70-130	Pass	
Hexachlorobenzene	M16-Oc08917	NCP	%	98		70-130	Pass	
Methoxychlor	M16-Oc08917	NCP	%	80		70-130	Pass	
Spike - % Recovery								
Total Recoverable Hydrocarboi	ns - 2013 NEPM Fract	ions		Result 1				
TRH >C10-C16	B16-Oc09188	NCP	%	89		70-130	Pass	
Spike - % Recovery								
Heavy Metals				Result 1				
Arsenic	A16-Oc09073	NCP	%	106		75-125	Pass	
Cadmium	A16-Oc09073	NCP	%	104		75-125	Pass	
Chromium	A16-Oc09073	NCP	%	104		75-125	Pass	
Copper	A16-Oc09073	NCP	%	101		75-125	Pass	
Lead	A16-Oc09073	NCP	%	101		75-125	Pass	
Mercury	A16-Oc09073	NCP	%	103		70-130	Pass	
Nickel	A16-Oc09073	NCP	%	106		75-125	Pass	
Zinc	A16-Oc09073	NCP	%	107		75-125	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons -	1999 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH C6-C9	M16-Oc09044	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	B16-Oc09186	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	B16-Oc09186	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	B16-Oc09186	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Oc09044	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Oc09044	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Oc09044	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Oc09044	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Oc09044	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Oc09044	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons -	· 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
Naphthalene	M16-Oc09044	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Oc09044	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate	•	•							
Polycyclic Aromatic Hydrocarbons	S			Result 1	Result 2	RPD			
Acenaphthene	M16-Oc06609	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Oc06609	NCP	mg/kg	< 0.5	0.5	23	30%	Pass	
Anthracene	M16-Oc06609	NCP	mg/kg	0.6	0.7	20	30%	Pass	
Benz(a)anthracene	M16-Oc06609	NCP	mg/kg	2.3	2.4	5.0	30%	Pass	
Benzo(a)pyrene	M16-Oc06609	NCP	mg/kg	2.7	2.8	7.0	30%	Pass	
Benzo(b&j)fluoranthene	M16-Oc06609	NCP	mg/kg	2.5	2.5	2.0	30%	Pass	
Benzo(g.h.i)perylene	M16-Oc06609	NCP	mg/kg	1.3	1.8	33	30%	Fail	Q15
Benzo(k)fluoranthene	M16-Oc06609	NCP	mg/kg	2.2	2.2	2.0	30%	Pass	<u> </u>
Chrysene	M16-Oc06609	NCP	mg/kg	2.2	2.4	8.0	30%	Pass	
Dibenz(a.h)anthracene	M16-Oc06609	NCP	mg/kg	0.5	0.6	4.0	30%	Pass	
Fluoranthene	M16-Oc06609	NCP	mg/kg	4.5	4.9	7.0	30%	Pass	
Fluorene	M16-Oc06609	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Oc06609	NCP	mg/kg	1.4	1.4	5.0	30%	Pass	
Naphthalene	M16-Oc06609	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Oc06609	NCP	mg/kg	1.6	2.2	32	30%	Fail	Q15
Pyrene	M16-Oc06609	NCP	mg/kg	4.2	4.6	8.0	30%	Pass	QIJ
Duplicate	W10-Ocoooo3	INCI	ilig/kg	4.2	4.0	0.0	3078	1 033	
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Oc08917	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Oc08917	NCP				<1	30%		
4.4'-DDT	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	1		mg/kg	< 0.05	< 0.05			Pass	
Aldrin	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin Endeaulten I	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	



Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Heptachlor	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Oc08917	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Oc08917	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarl	bons - 2013 NEPM Fract	ions		Result 1	Result 2	RPD			
TRH >C10-C16	B16-Oc09186	NCP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	B16-Oc09186	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	B16-Oc09186	NCP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	A16-Oc09073	NCP	mg/kg	9.5	9.4	1.0	30%	Pass	
Cadmium	A16-Oc09073	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	A16-Oc09073	NCP	mg/kg	25	25	<1	30%	Pass	
Copper	A16-Oc09073	NCP	mg/kg	12	12	<1	30%	Pass	
Lead	A16-Oc09073	NCP	mg/kg	9.8	9.7	1.0	30%	Pass	
Mercury	A16-Oc09073	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	A16-Oc09073	NCP	mg/kg	15	15	<1	30%	Pass	
Zinc	A16-Oc09073	NCP	mg/kg	23	23	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	M16-Oc08525	NCP	%	18	17	3.0	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

n
)

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).

N01

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

F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes. N04

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 N07

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 Q08

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

N02

Nibha Vaidya Analytical Services Manager Alex Petridis Senior Analyst-Metal (VIC) Alex Petridis Senior Analyst-Organic (VIC) Harry Bacalis Senior Analyst-Volatile (VIC) Huong Le Senior Analyst-Inorganic (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.

Euroffins. Impt shall not be liable for loss, cost, damages or expenses incurred by the client, or any other person or company, resulting from the use of any information or interpretation given in this report. In no case shall Euroffins Img be liable for consequential damages including, but no limited to, lots profits, damages for tentative to meet decidenties and lot she reported or relates only to the tentes tested. Unless indicated otherwise, the tests were performed on the samples as received in full and relates only to the tentes tested. Unless indicated otherwise, the tests were performed on the samples as received.

Daydream St, Warriewood

ABN: 86 116 892 936

P: (02) 9979 1722

NSW 2102

Project Manager:

Tim Gunns

Austral Phase 2

Purchase Order No: PO1544

1 of 1

Geo-Logix Pty Ltd Building Q2, Level 3 Unit 2309/4

Contact Email:

tgunns@geo-logix.com.au

Quote Reference:

161006GLX

Project Name:

Invoice to:

accounts@geo-logix.com.au

Project Number:

1601114A 07-10-16 Date Submitted:

CHAIN OF CUSTODY

TAT required:

STD

ANALYSIS REQUIRED

												15-24			AINALIC	N CI	EQUIRED	the inst	- 100		
			_	M	atrix	(0									
Lab ID	Sample ID	Date	Soil	Water	Air	Paint / ACM	Other	Comments	НОГО	COMPOSITE	OCP/M8	B9 ASBESTOS II		B8							Eurofins MGT Suite Codes
	TS1	04-10-16	X		_		-	ND TO TO MELBOURNE AS TRIPLIC	-			X						1	1		B1 TRH/BTEXN
-	TS2	05-10-16	X	-	-	-	-		-	-	X	6	+	+-		-		-	-		B1A TRH/MAH
-	152	05-10-16	1^	-	-	-	-			_	^		-	-		-		+	-		B2 TRH/BTEXN/Pb
																				V	B2A TRH/MAH/Pb
																					B3 PAH/Phenois
						+	7		-												B4 TRH/BTEXN/PAH
			-	-	-	-	-		7	-	-			-		-		+	-		B4A TRH/BTEXN/PAH/PhenoIs
							_		9,5				11	•							B5 TRH/BTEXN/M7
										1		1	7								B6 TRH/BTEXN/M8
										100											B7 TRH/BTEXN/PAH/M8
			1			-			0				-	1		1		+	-		B8 TRH/VOC/PAH/M8
		-	+-	-	-	-	-		-	-	-	-	-	+		-	\rightarrow	++	-		B8 TRH/VOC/PAH/M8 B9 TRH/BTEXN/PAH/OCP/M8
			-				10														B10 TRH/BTEXN/PAH/OCP/OPP/M8
												1		4							B11 Na/K/Ca/Mg/Cl/SO4/CO3/HCO3/NH3/NO3
												3									B11A B11/Alkalinity
P1			-	-	+	+	1		-		-		1	+		1		+++	-		B11B B11/EC/TDS
			-		-	-	-		-	-	-,		-	-				-	-		B12 TRH/BTEXN/Oxygenates/Ethanol
										1					16:1	2					B12A TRH/BTEXN/Oxygenates
																					B13 OCP/PCB
																					B14 OCP/OPP
			-	-	+	+	-		-	-		-	+	+		-		+++	-	-	B15 OCP/OPP/PCB
			-		-	-	-		-	-	-		-			-		11			B16 TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB
	k	4																			B17 SO4/NO3/Fe++/HPC/CUB
											J						- 1				B18 CI-/SO4/pH
					1	1							1			11		1			B19 N/P/K
			-		-	-	-		-	-	-		+	+-		+		+	-		B20 CEC/%ESP/Ca/Ma/Na/K
								45					1			1					R21 %Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay

CHAIN OF CUSTODY

Received by:



ABN - 50 005 085 521

e.mail: EnviroSales@eurofins.com

web: www.eurofins.com.au

Melbourne 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 Murarrie QLD 4172 Phone: +61 7 3902 4600 NATA # 1261 Site # 20794

Sample Receipt Advice

Company name: Geo-Logix P/L

Contact name: Tim Gunns

AUSTRAL PHASE 2 Project name:

Project ID: 1601114A COC number: Not provided

Turn around time: 5 Day

Oct 11, 2016 8:30 AM Date/Time received:

Eurofins | mgt reference: 519056

Sample information

- \mathbf{V} A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- \mathbf{V} Sample Temperature of a random sample selected from the batch as recorded by Eurofins | mgt Sample Receipt: 11.9 degrees Celsius.
- \mathbf{V} All samples have been received as described on the above COC.
- \square COC has been completed correctly.
- \square Attempt to chill was evident.
- \mathbf{V} Appropriately preserved sample containers have been used.
- \mathbf{V} All samples were received in good condition.
- \square Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- \mathbf{V} Appropriate sample containers have been used.
- \boxtimes Some samples have been subcontracted.
- Custody Seals intact (if used). N/A

Contact notes

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

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

Results will be delivered electronically via e.mail to Tim Gunns - tgunns@geo-logix.com.au.





web : www.eurofins.com.au

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NATA # 1261 Site # 18217

Brisbane I/21 Smallwood Place
Murarrie QLD 4172
Phone: +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

Project Name: **AUSTRAL PHASE 2**

Project ID: 1601114A Order No.: PO1544 Received: Oct 11, 2016 8:30 AM Report #: 519056 Due: Oct 18, 2016

Phone: 02 9979 1722 Priority: 5 Day **Contact Name:** Fax: 02 9979 1222 Tim Gunns

Eurofins	mgt Anal	lytical Services	Manager :	Nibha Vaidya
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		Organochlorine Pesticides	Metals M8	Moisture Set	Eurofins mgt Suite B9				
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271		Χ	Х	Χ	Χ
Sydn	ney Laboratory	- NATA Site # 1	8217						
Brisk	oane Laborator	y - NATA Site #	20794						
Exte	rnal Laboratory	,							
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID				
1	TS1	Oct 04, 2016		Soil	M16-Oc08606			Χ	Х
2	TS2	Oct 04, 2016		Soil	M16-Oc08607	Х	Х	Х	
Test	Counts					1	1	2	1



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





Certificate of Analysis

NATA Accredited Accreditation Number 1261 Site Number 18217

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: Tim Gunns

Report 519960-S

Project name ADDITIONAL: AUSTRAL PHASE 2

Project ID 1601114A Received Date Oct 14, 2016

Client Sample ID Sample Matrix Eurofins mgt Sample No.			S4/0.2-0.3 Soil S16-Oc15381	S23/0.0-0.15 Soil S16-Oc15382
Date Sampled			Oct 04, 2016	Oct 04, 2016
Test/Reference	LOR	Unit		
% Clay	1	%	20	10
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	100	18
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	6.2	4.8
Total Organic Carbon	0.1	%	2.1	1.2
% Moisture	1	%	13	13
Heavy Metals				
Iron	20	mg/kg	36000	15000
Heavy Metals				
Iron (%)	0.01	%	3.6	1.5
Ion Exchange Properties	·			
Cation Exchange Capacity	0.05	meq/100g	17	7.2



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
NEPM Screen for Soil Classification			
% Clay	Brisbane	Oct 19, 2016	6 Day
- Method: LTM-GEN-7040			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	Oct 19, 2016	7 Day
- Method: LTM-INO-4030			
pH (units)(1:5 soil:CaCl2 extract)	Sydney	Oct 19, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Total Organic Carbon	Melbourne	Oct 19, 2016	28 Day
- Method: APHA 5310B Total Organic Carbon			
Heavy Metals	Sydney	Oct 20, 2016	180 Day
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
Ion Exchange Properties	Melbourne	Oct 19, 2016	
% Moisture	Sydney	Oct 18, 2016	14 Day

⁻ Method: LTM-GEN-7080 Moisture



Address:

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

web : www.eurofins.com.au

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone : +61 2 9900 8400 NATA # 1261 Site # 18217

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Company Name: Geo-Logix P/L Order No.: Received: Oct 14, 2016 10:45 AM

Bld Q2 Level 3, 2309/4 Daydream St Report #: 519960 Due: Oct 21, 2016 Warriewood Phone: 02 9979 1722 Priority: 5 Day

NSW 2102 Fax: 02 9979 1222 **Contact Name:** Tim Gunns

ADDITIONAL: AUSTRAL PHASE 2 **Project Name:**

Project ID: 1601114A Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail							
Melb	ourne Laborato	ry - NATA Site	# 1254 & 142	71			Χ
Sydr	ney Laboratory	- NATA Site # 1	8217			Χ	Х
Brisk	oane Laboratory	y - NATA Site #	20794				Х
Exte	rnal Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc15381	Х	Х
2	S23/0.0-0.15	Oct 04, 2016		Soil	S16-Oc15382	Х	Х
Test	Counts					2	2

Eurofins | mgt Unit F3, Building F, 16 Mars Road, Lane Cove West, NSW, Australia, 2066 ABN: 50 005 085 521 Telephone: +61 2 9900 8400 Facsimile: +61 2 9420 2977

Page 3 of 6



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. Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- 4. Results are uncorrected for matrix spikes or surrogate recoveries.
- 5. SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise
- 6. Samples were analysed on an 'as received' basis. 7. 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.

**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

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.

DuplicateA second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

Batch SPIKE Spike recovery reported on a sample from outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environmental Protection Agency

APHA American Public Health Association

TCLP Toxicity Characteristic Leaching Procedure

COC Chain of Custody
SRA Sample Receipt Advice

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 20-130%

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.
- 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.

Report Number: 519960-S



Quality Control Results

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank									
% Clay			%	< 1			1	Pass	
Conductivity (1:5 aqueous extract at	: 25°C)		uS/cm	< 5			5	Pass	
Total Organic Carbon			%	< 0.1			0.1	Pass	
Method Blank									
Heavy Metals									
Iron			mg/kg	< 20			20	Pass	
Method Blank									
Ion Exchange Properties									
Cation Exchange Capacity			meq/100g	< 0.05			0.05	Pass	
LCS - % Recovery									
% Clay			%	100			70-130	Pass	
Total Organic Carbon			%	99			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Iron			%	91			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
				Result 1	Result 2	RPD			
Conductivity (1:5 aqueous extract at 25°C)	S16-Oc15381	СР	uS/cm	100	110	4.0	30%	Pass	
Total Organic Carbon	S16-Oc15461	NCP	%	3.6	3.4	4.0	30%	Pass	
% Moisture	S16-Se26786	NCP	%	8.8	8.9	1.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Clay	S16-Oc15382	CP	%	10	9.8	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

Authorised By

Nibha Vaidya Analytical Services Manager
Alex Petridis Senior Analyst-Metal (VIC)
Huong Le Senior Analyst-Inorganic (VIC)
Jonathon Angell Senior Analyst-Inorganic (QLD)
Ryan Hamilton Senior Analyst-Inorganic (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.

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Report Number: 519960-S

Esther Yew

519960

From: Nibha Vaidya

Sent: Friday, 14 October 2016 10:45 AM **To:** !AU04_CAU001_EnviroSampleNSW

Subject: Geologix - Additional Analysis

Additional R21 suite (% Fe/ CEC/ pH(CaCl2)/ TOC/ % Clay Content) for the following samples please. Analysis on the discrete samples.

Report	Samples
518931	\$4 0.2-0.3
	S23 0.0-0.15
518936	S4 0.015
	S22 015
518939	S4 0-0.15
	S21 0-0.15

Cheers!

Kind Regards,

Nibha Vaidya

Analytical Services Manager

Eurofins | mgt

Unit F3, Parkview Building 16 Mars Road LANE COVE WEST NSW 2066 AUSTRALIA

Phone: +61 2 9900 8415 Mobile: +61 499 900 805 Fax: +61 2 9420 2977

Email: NibhaVaidya@eurofins.com

Website: www.eurofins.com.au/environmental-testing

extration was



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web: www.eurofins.com.au

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Sample Receipt Advice

Company name: Geo-Logix P/L

Contact name: -INVOICES cc'd

Project name: ADDITIONAL: AUSTRAL PHASE 2

Project ID: 1601114A COC number: Not provided

Turn around time: 5 Day

Date/Time received: Oct 14, 2016 10:45 AM

Eurofins | mgt reference: 519960

Sample information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- 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.
- Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Additional report from 518931

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: Nibha Vaidya@eurofins.com

Results will be delivered electronically via e.mail to -INVOICES cc'd - accounts@geo-logix.com.au.







web : www.eurofins.com.au

Melbourne 2-5 Kingston Town Close Oakleigh VIC 3166 Phone: +61 3 8564 5000 NATA # 1261 Site # 1254 & 14271 Sydney Unit F3, Building F 16 Mars Road Lane Cove West NSW 2066 Phone: +61 2 9900 8400 NATA # 1261 Site # 18217

Received:

Priority:

Contact Name:

Due:

Brisbane 1/21 Smallwood Place Murarrie QLD 4172 Phone : +61 7 3902 4600 NATA # 1261 Site # 20794

Oct 14, 2016 10:45 AM

Oct 21, 2016

-INVOICES cc'd

5 Day

Company Name: Geo-Logix P/L

Bld Q2 Level 3, 2309/4 Daydream St Address:

> Warriewood NSW 2102

Project Name: ADDITIONAL: AUSTRAL PHASE 2

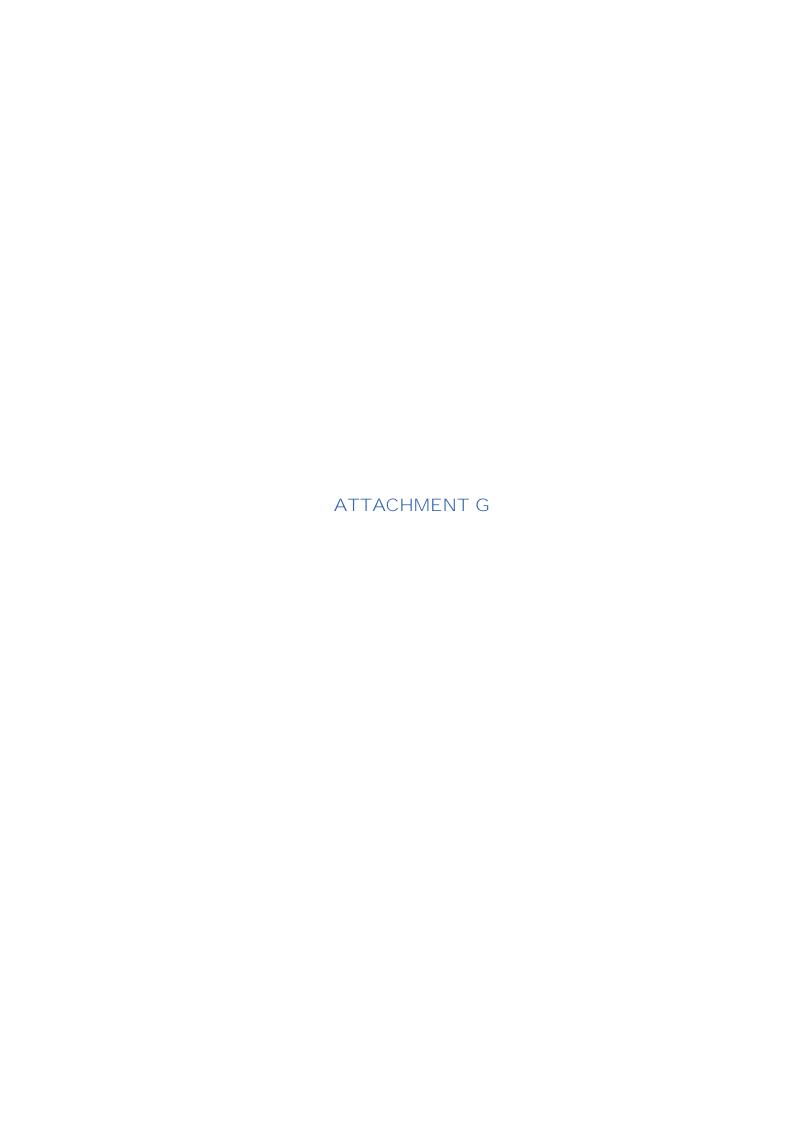
1601114A Project ID:

Order No.:

Report #: 519960

Phone: 02 9979 1722 Fax: 02 9979 1222

Sample Detail							
Melb	ourne Laborato	ory - NATA Site	# 1254 & 142	271			Х
Sydr	ney Laboratory	- NATA Site # 1	8217			Χ	Χ
Brisl	oane Laboratory	y - NATA Site #	20794				Χ
Exte	rnal Laboratory						
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	S4/0.2-0.3	Oct 04, 2016		Soil	S16-Oc15381	Х	Х
2	S23/0.0-0.15	Oct 04, 2016		Soil	S16-Oc15382	Х	Х
Test	Counts					2	2



	АВС	D E	F	G H I J K	L					
1		UCL Statistic	cs for Data	Sets with Non-Detects						
2										
3	User Selected Options									
4	Date/Time of Computation	25/10/2016 10:44:02 AM								
5	From File	WorkSheet.xls								
6	Full Precision	OFF								
7	Confidence Coefficient	95%								
8	Number of Bootstrap Operations	2000								
9										
10	Arsenic									
11										
12			General							
13	Total N	Number of Observations	26	Number of Distinct Observations	9					
14		Number of Detects	10	Number of Non-Detects	16					
15	Nui	mber of Distinct Detects	8	Number of Distinct Non-Detects	1					
16		Minimum Detect	2.1	Minimum Non-Detect	2					
17		Maximum Detect	5.3	Maximum Non-Detect	2					
18		Variance Detects	1.075	Percent Non-Detects	61.54%					
19		Mean Detects	3.18	SD Detects	1.037					
20		Median Detects	3.05	CV Detects	0.326					
21		Skewness Detects	0.912	Kurtosis Detects	0.365					
22		Mean of Logged Detects	1.112	SD of Logged Detects	0.312					
23										
24				t on Detects Only						
25		apiro Wilk Test Statistic	0.911							
26	5% Sn	apiro Wilk Critical Value Lilliefors Test Statistic	0.842							
27	E0/		0.174	Detected Data appear Normal at 5% Significance Level						
28	5%	6 Lilliefors Critical Value	appear Normal at 5% Significance Level							
29		Detected Data at	рреаг Могг	lai at 5 % Significance Level						
30	Kanlan-Ma	aior (KM) Statistics using	Normal C	ritical Values and other Nonparametric UCLs						
31	Kapian-ivie	Mean	2.454	Standard Error of Mean	0.173					
32		SD	0.838	95% KM (BCA) UCL	2.746					
33		95% KM (t) UCL	2.75	95% KM (Percentile Bootstrap) UCL	2.75					
34		95% KM (z) UCL	2.739	95% KM Bootstrap t UCL	2.925					
35	90	0% KM Chebyshev UCL	2.973	95% KM Chebyshev UCL	3.209					
36		5% KM Chebyshev UCL	3.535	-						
37 38		,			4.177					
39		Gamma GOF T	ests on De	etected Observations Only	-					
40		A-D Test Statistic	0.304	Anderson-Darling GOF Test						
41		5% A-D Critical Value	0.725	Detected data appear Gamma Distributed at 5% Significan	ice Level					
42		K-S Test Statistic	0.189	Kolmogrov-Smirnoff GOF						
43		5% K-S Critical Value	0.267	Detected data appear Gamma Distributed at 5% Significan	nce Level					
44		Detected data appear (Gamma Di	stributed at 5% Significance Level						
45										
46		Gamma S	tatistics or	Detected Data Only						
47		k hat (MLE)	11.3	k star (bias corrected MLE)	7.979					
48		Theta hat (MLE)	0.281	Theta star (bias corrected MLE)	0.399					
49		nu hat (MLE)	226.1	nu star (bias corrected)	159.6					
50	MLI	E Mean (bias corrected)	3.18	MLE Sd (bias corrected)	1.126					
51										
52	,	Gamma	Kaplan-M	eier (KM) Statistics						
53		k hat (KM)	8.581	nu hat (KM)	446.2					
54	Approximate Chi S	quare Value (446.21, α)	398.2	Adjusted Chi Square Value (446.21, β)	395.2					
55	95% Gamma Approximate KM-	-UCL (use when n>=50)	2.749	95% Gamma Adjusted KM-UCL (use when n<50)	2.77					

4	A B C D E	F	G	Н	1	J	K	L			
56	Gamma ROS Statistics using Imputed Non-Detects										
57	GROS may not be used when data set has > 50% NDs with many tied observations at multiple DLs										
58	GROS may not be used when kstar of detected data is small such as < 0.1										
59	For such situations, GROS method tends to yield inflated values of UCLs and BTVs										
60	For such situations, GROS method tends to yield inflated values of UCLs and BTVs For gamma distributed detected data, BTVs and UCLs may be computed using gamma distribution on KM estimates										
61			be compl	ited using g	jaitiitia üisii	IDUIIOII OII KI		1.552			
62	Minimum	0.01					Mean	1.552			
63	Maximum	5.3					Median				
64	SD	1.519			1	(b.:	CV	0.979			
65	k hat (MLE)	0.512				star (bias corr					
66	Theta hat (MLE)	3.033			i neta s	star (bias corr		3.245			
67	nu hat (MLE)	26.6				nu star (bia:		24.87			
68	MLE Mean (bias corrected)	1.552				MLE Sd (bias		2.244			
69						Level of Sigr		0.0398			
70	Approximate Chi Square Value (24.87, α)	14.51				Square Valu	_ ' _ '	13.99			
71	95% Gamma Approximate UCL (use when n>=50)	2.659		95% Gar	nma Adjuste	ed UCL (use	when n<50)	2.758			
72											
73	Lognormal GOF		tected Ob	servations							
74	Shapiro Wilk Test Statistic	0.94				ilk GOF Tes					
75	5% Shapiro Wilk Critical Value	0.842	Dete	cted Data a		ormal at 5% S	Significance I	Level			
76	Lilliefors Test Statistic	0.176				GOF Test					
77	5% Lilliefors Critical Value	0.28				ormal at 5% S	Significance I	Level			
78	Detected Data appe	ear Lognorn	nal at 5%	Significano	e Level						
79											
80	Lognormal ROS	Statistics U	sing Impu	ted Non-De	etects						
81	Mean in Original Scale	1.932				Mean i	n Log Scale	0.473			
82	SD in Original Scale	1.225				SDi	n Log Scale	0.627			
83	95% t UCL (assumes normality of ROS data)	2.342			95% F	Percentile Bo	otstrap UCL	2.308			
84	95% BCA Bootstrap UCL	2.342				95% Boo	strap t UCL	2.438			
85	95% H-UCL (Log ROS)	2.536									
86	***	11,-									
87	UCLs using Lognormal Distribution and K	M Estimate	s when D	etected da	ta are Logn	ormally Dist	ributed				
88	KM Mean (logged)	0.854				95% H-UC	L (KM -Log)	2.693			
89	KM SD (logged)	0.274			95% C	Critical H Valu	ie (KM-Log)	1.8			
90	KM Standard Error of Mean (logged)	0.0567									
91	·	·									
92		DL/2 Sta	atistics								
93	DL/2 Normal				DL/2 Log-	Transformed					
94	Mean in Original Scale	1.838				Mean i	n Log Scale	0.428			
95	SD in Original Scale	1.248				SDi	n Log Scale	0.583			
96	95% t UCL (Assumes normality)	2.256				95%	H-Stat UCL	2.305			
97	DL/2 is not a recommended met	hod, provide	ed for cor	nparisons a	nd historica	el reasons					
98											
99	Nonparametr	ic Distributi	on Free U	ICL Statistic	cs						
100	Detected Data appear	Normal Dist	tributed at	5% Signific	cance Leve	l					
101											
102	S	Suggested L	JCL to Us	е							
103	95% KM (t) UCL	2.75			95% KM (P	ercentile Boo	tstrap) UCL	2.75			
103	()			-							
105	Note: Suggestions regarding the selection of a 95% L	JCL are pro	vided to h	elp the user	to select th	e most appro	priate 95% l	JCL.			
106	Recommendations are base										
IUU							and I oo (20)	26).			
	These recommendations are based upon the results	OF THE SHIFT		alco oullilli	IIIZEU III OIII	gn, maichie.	and Lee (20)				
107 108	These recommendations are based upon the results However, simulations results will not cover all Real Wol										

1	A B C D E		F	G H	I J	К	L			
0	UCL S	tatistics for	r Data Set	s with Non-Detec	ts					
2										
3	User Selected Options									
4	Date/Time of Computation 25/10/2016 10:46:16 AM									
5		From File WorkSheet_a.xls								
6	Full Precision OFF Confidence Coefficient 95%									
7	Number of Bootstrap Operations 2000						White die and a second			
8	Number of Bootstrap Operations 2000									
9	Cadmium									
10 11	Cadillani									
12		Ge	neral Stati	stics						
13	Total Number of Observa	tions 26	6		Number of Distinct Ob	servations	3			
14	Number of De	tects 2			Number of No	n-Detects	24			
15	Number of Distinct De	tects 2			Number of Distinct No	on-Detects	1			
16	Minimum D	etect 0.	.6		Minimum N	Ion-Detect	0.4			
17	Maximum D	etect 1.	.4		Maximum N	Ion-Detect	0.4			
18	Variance De	tects 0.	.32		Percent No	on-Detects	92.31%			
19	Mean De	tects 1			S	D Detects	0.566			
20	Median De	tects 1			C	V Detects	0.566			
21	Skewness De	tects N/A	Α		Kurtos	is Detects	N/A			
22	Mean of Logged De	tects -0.0	0872		SD of Logge	ed Detects	0.599			
23										
24	Warnin	ng: Data se	t has only	2 Detected Value	es.					
25	This is not enough to	compute m	eaningful	or reliable statist	cs and estimates.					
26										
27										
28				Detects Only						
29	No	t Enough D	Data to Pe	rform GOF Test						
30										
31	Kaplan-Meier (KM) Statistics			al Values and oth						
		Mean 0.	.446	al Values and oth	Standard Erro	11-010-0170	0.054			
32 33	N	Mean 0.	.446 .195	al Values and oth	Standard Erro 95% KM (I	BCA) UCL	N/A			
32 33 34	95% KM (t)	Mean 0. SD 0. UCL 0.	.446 .195 .538	al Values and oth	Standard Erro 95% KM (I 95% KM (Percentile Boots	BCA) UCL	N/A N/A			
32 33 34 35	95% KM (t) 95% KM (z)	Mean 0. SD 0. UCL 0.	.446 .195 .538	al Values and oth	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots	BCA) UCL strap) UCL trap t UCL	N/A N/A N/A			
32 33 34 35 36	95% KM (t) 95% KM (z) 90% KM Chebyshev	Mean 0. SD 0. UCL 0. UCL 0. UCL 0.	.446 .195 .538 .535 .608	al Values and oth	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681			
32 33 34 35 36 37	95% KM (t) 95% KM (z)	Mean 0. SD 0. UCL 0. UCL 0. UCL 0.	.446 .195 .538	al Values and oth	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A			
32 33 34 35 36 37	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0.	.446 .195 .538 .535 .608		Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681			
32 33 34 35 36 37 38	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. GOF Tests	.446 .195 .538 .535 .608 .783	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681			
32 33 34 35 36 37 38 39 40	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. GOF Tests	.446 .195 .538 .535 .608 .783		Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681			
32 33 34 35 36 37 38 39 40	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. SGOF Tests	.446 .195 .538 .535 .608 .783 on Detect	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681			
32 33 34 35 36 37 38 39 40 41	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. SGOF Tests It Enough E	.446 .195 .538 .535 .608 .783 on Detect Data to Pel	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby	BCA) UCL strap) UCL trap t UCL vshev UCL	N/A N/A N/A 0.681 0.983			
32 33 34 35 36 37 38 39 40 41 42 43	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. HIGH Tests It Enough E	.446 .195 .538 .535 .608 .783 on Detect Data to Perities on Dec.	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only	BCA) UCL strap) UCL trap t UCL vshev UCL vshev UCL	N/A N/A N/A 0.681 0.983			
32 33 34 35 36 37 38 39 40 41 42 43	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (I	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. SOF Tests It Enough E Inma Statist MLE) 5.	.446 .195 .538 .535 .608 .783 on Detect Data to Pel tics on Detect	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre	BCA) UCL strap) UCL trap t UCL vshev UCL vshev UCL cted MLE)	N/A N/A N/A 0.681 0.983			
32 33 34 35 36 37 38 39 40 41 42 43 44	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (t) Theta hat (t) nu hat (t)	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. HE Enough E MLE) 5. MLE) 0. MLE) 23	.446	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias	BCA) UCL strap) UCL trap t UCL vshev UCL vshev UCL cted MLE) cted MLE) corrected)	N/A N/A N/A 0.681 0.983 N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (I	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. HE Enough E MLE) 5. MLE) 0. MLE) 23	.446	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre	BCA) UCL strap) UCL trap t UCL vshev UCL vshev UCL cted MLE) cted MLE) corrected)	N/A N/A N/A 0.681 0.983			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (I Theta hat (I nu hat (I) MLE Mean (bias correct	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. HIGH Enough E HIGH ENOUGH E MLE) 5. MLE) 0. MLE) 23 cted) N//	.446 .195 .538 .535 .608 .783 on Detect Data to Pel tics on Detect .897 .17	ed Observations form GOF Test tected Data Only	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias	BCA) UCL strap) UCL trap t UCL vshev UCL vshev UCL cted MLE) cted MLE) corrected)	N/A N/A N/A 0.681 0.983 N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma (No Gan k hat (t) Theta hat (t) nu hat (t) MLE Mean (bias correct	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. SGOF Tests It Enough E MLE) 5. MLE) 0. MLE) 23 Cted) N//	.446 .195 .538 .535 .608 .783 on Detect Data to Perities on Detection	ed Observations	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias	BCA) UCL strap) UCL trap t UCL rshev UCL rshev UCL cted MLE) cted MLE) corrected)	N/A N/A N/A 0.681 0.983 N/A N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (I Theta hat (I nu hat (I) MLE Mean (bias correct	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. SGOF Tests It Enough E MLE) 5. MLE) 0. MLE) 23 Cted) N//	.446 .195 .538 .535 .608 .783 on Detect Data to Pel tics on Detect .897 .17	ed Observations form GOF Test tected Data Only	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias	strap) UCL trap t UCL vshev UCL vshev UCL cted MLE) ccted MLE) corrected) corrected)	N/A N/A N/A 0.681 0.983 N/A N/A N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (! Theta hat (! nu hat (!) MLE Mean (bias correct Ga k hat	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. UCL 0. MLE) 5. MLE) 0. MLE) 23 Cted) N// amma Kapl (KM) 5.	.446 .195 .538 .535 .608 .783 on Detect Data to Pel tics on Detect .897 .17 .3.59 A	ed Observations rform GOF Test tected Data Only (KM) Statistics	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias	BCA) UCL strap) UCL trap t UCL rshev UCL rshev UCL rshev UCL cted MLE) ccted MLE) corrected) corrected) u hat (KM) ficance (β)	N/A N/A N/A 0.681 0.983 N/A N/A N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (l) Theta hat (l) nu hat (l) MLE Mean (bias correct k hat Approximate Chi Square Value (273.3)	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. MCD 0. M	.446 .195 .538 .535 .608 .783 on Detect Data to Periods .897 .17 .3.59 A lan-Meier .256	ed Observations rform GOF Test tected Data Only (KM) Statistics	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias Adjusted Level of Signit djusted Chi Square Value (BCA) UCL strap) UCL trap t UCL rshev UCL rshev UCL rcted MLE) cted MLE) corrected) corrected) u hat (KM) ficance (β)	N/A N/A N/A 0.681 0.983 N/A N/A N/A N/A N/A 273.3 0.0398 233.8			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (! Theta hat (! nu hat (!) MLE Mean (bias correct Ga k hat	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. MCD 0. M	.446 .195 .538 .535 .608 .783 on Detect Data to Pel tics on Detect .897 .17 .3.59 A	ed Observations rform GOF Test tected Data Only (KM) Statistics	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias nt Adjusted Level of Signit	BCA) UCL strap) UCL trap t UCL rshev UCL rshev UCL rcted MLE) cted MLE) corrected) corrected) u hat (KM) ficance (β)	N/A N/A N/A 0.681 0.983 N/A N/A N/A N/A			
32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50	95% KM (t) 95% KM (z) 90% KM Chebyshev 97.5% KM Chebyshev Gamma C No Gan k hat (!) Theta hat (!) Inu hat (!) MLE Mean (bias correct Gai k hat Approximate Chi Square Value (273.3) 95% Gamma Approximate KM-UCL (use when n>	Mean 0. SD 0. UCL 0. UCL 0. UCL 0. UCL 0. UCL 0. MCD 0. UCL 0. MCD 0. M	.446 .195 .538 .535 .608 .783 on Detect Data to Periods .897 .17 .3.59 A lan-Meier .256	ed Observations rform GOF Test tected Data Only (KM) Statistics	Standard Erro 95% KM (I 95% KM (Percentile Boots 95% KM Boots 95% KM Cheby 99% KM Cheby 99% KM Cheby Only k star (bias corre Theta star (bias corre nu star (bias MLE Sd (bias MLE Sd (bias nu Adjusted Level of Signit djusted Chi Square Value (a Adjusted KM-UCL (use w	BCA) UCL strap) UCL trap t UCL rshev UCL rshev UCL rcted MLE) cted MLE) corrected) corrected) u hat (KM) ficance (β)	N/A N/A N/A 0.681 0.983 N/A N/A N/A N/A N/A 273.3 0.0398 233.8			

4	А	В	С	D	E	F	G	Н		J	К	L
56												
57	Lognormal ROS Statistics Using Imputed Non-Detects											
58	Mean in Original Scale 0.101 Mean in Log Scale									-4.856		
59				SD in (Original Scale	0.291				SD	in Log Scale	2.497
60		95% t UC	L (assumes	normality	of ROS data)	0.199			95% P	ercentile Bo	otstrap UCL	0.206
61			9:	5% BCA B	ootstrap UCL	0.273				95% Boo	tstrap t UCL	0.638
62				95% H-UC	CL (Log ROS)	1.965						
63												
64						DL/2 Sta	atistics					
65			DL/2 I	Vormal					DL/2 Log-1	Transformed	d	
66				Mean in (Original Scale	0.262				Mean	in Log Scale	-1.492
67				SD in 0	Original Scale	0.245				SD	in Log Scale	0.431
68				,	nes normality)	0.344	95% H-Stat UCL				0.291	
69			DL/2 is	not a reco	mmended me	thod, provid	ed for com	parisons a	nd historica	reasons	111	
70												
71					Nonparame							
72				Data do n	ot follow a Dis	scernible Dis	stribution a	t 5% Signif	icance Leve	el		
73												
74						Suggested (JCL to Use	;				
75				95	% KM (t) UCL	0.538			95%	KM (% Boo	otstrap) UCL	N/A
76				Warr	ning: One or m	ore Recomm	nended U	CL(s) not a	vailable!			
77												
78	Note	: Suggestion	ns regarding	g the selec	tion of a 95%	UCL are pro	vided to he	elp the user	to select the	e most appr	opriate 95% (JCL.
79			Re	commenda	ations are bas	ed upon data	size, data	distribution	, and skewn	ess.		
80	The	ese recomme	endations a	re based u	ipon the result	s of the simi	ulation stud	lies summa	rized in Sing	gh, Maichle,	and Lee (20)	06).
81	Howev	er, simulatio	ons results v	will not cov	ver all Real Wo	orld data sets	s; for additi	onal insight	the user ma	ay want to c	onsult a statis	stician.
82												

	A B C	D E	F	G H I J K	L					
1	,, ,		s for Data	Sets with Non-Detects						
2										
3	User Selected Options									
4	Date/Time of Computation	25/10/2016 10:47:54 AM								
5	From File	From File WorkSheet_b.xls								
6	Full Precision	OFF								
7	Confidence Coefficient	95%								
8	Number of Bootstrap Operations	2000								
9										
10	Chromium									
11										
12			General		40					
13	Total I	Number of Observations	26	Number of Distinct Observations	19					
14		Number of Detects	25	Number of Non-Detects	1					
15	Nu	mber of Distinct Detects	18	Number of Distinct Non-Detects	1					
16		Minimum Detect	8.7	Minimum Non-Detect	5					
17		Maximum Detect	58	Maximum Non-Detect Percent Non-Detects	5 3.846%					
18		Variance Detects	199.9	SD Detects	14.14					
19		Mean Detects	26.23		0.539					
20		Median Detects	25	CV Detects Kurtosis Detects	0.0116					
21		Skewness Detects	0.809		0.557					
22		Mean of Logged Detects	3.124	SD of Logged Detects	0.557					
23		Manna	1005 T	t an Datasta Only						
24	O		0.917	t on Detects Only Shapiro Wilk GOF Test						
25		napiro Wilk Test Statistic papiro Wilk Critical Value	0.917							
26	5% 50	Lilliefors Test Statistic	0.918							
27	E0	% Lilliefors Critical Value	0.133	Detected Data appear Normal at 5% Significance Le	vel					
28	3,			e Normal at 5% Significance Level						
29		Detected Data appear A	фрголина	e Holling at 0% Olgrinication Esvel						
30	Kanlan-M	eier (KM) Statistics using	Normal C	ritical Values and other Nonparametric UCLs						
31	Tapan	Mean	25.41	Standard Error of Mean	2.839					
32		SD	14.18	95% KM (BCA) UCL	30.08					
33		95% KM (t) UCL	30.26	95% KM (Percentile Bootstrap) UCL	30.05					
35		95% KM (z) UCL	30.08	95% KM Bootstrap t UCL	30.86					
36	9	0% KM Chebyshev UCL	33.93	95% KM Chebyshev UCL	37.79					
37		5% KM Chebyshev UCL	43.14	99% KM Chebyshev UCL	53.66					
38										
39		Gamma GOF T	ests on De	etected Observations Only						
40		A-D Test Statistic	0.307	Anderson-Darling GOF Test						
41		5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significar	nce Level					
42		K-S Test Statistic	0.112	Kolmogrov-Smirnoff GOF						
43		5% K-S Critical Value	0.176	Detected data appear Gamma Distributed at 5% Significar	ice Level					
44	Andread Control of Con	Detected data appear 0	Gamma Di	stributed at 5% Significance Level						
45										
46		Gamma S	tatistics or	n Detected Data Only						
47		k hat (MLE)	3.653	k star (bias corrected MLE)	3.241					
48		Theta hat (MLE)	7.18	Theta star (bias corrected MLE)	8.092					
49		nu hat (MLE)	182.7	nu star (bias corrected)	162.1					
50	ML	E Mean (bias corrected)	26.23	MLE Sd (bias corrected)	14.57					
51										
52				eier (KM) Statistics						
53		k hat (KM)	3.21	nu hat (KM)	166.9					
54		Square Value (166.92, α)	138	Adjusted Chi Square Value (166.92, β)	136.3					
55	95% Gamma Approximate KM	I-UCL (use when n>=50)	30.73	95% Gamma Adjusted KM-UCL (use when n<50)	31.12					

56	A B C	D	E	F	G	Н	1	J	K	L
57		Gamma	a ROS S	Statistics usi	na Impute	d Non-Dete	acte			
	GROS n	nay not be used when						at multiple D	1.0	
58	di (00 ii	GROS may not be							LS	
59	ľ	For such situations, G								
60										
61	roi gainina distrit	outed detected data, E			be comp	utea using g	amma distr	ibution on Kiv		
62			inimum	1.979					Mean	25.3
63		Ma	ximum	58					Median	24
64			SD	14.65					CV	0.579
65			t (MLE)	2.645				star (bias corre		2.366
66		Theta hat		9.562			Theta s	star (bias corre		10.69
67			t (MLE)	137.6				nu star (bias		123
68		MLE Mean (bias cor	rected)	25.3				MLE Sd (bias		16.45
69								Level of Sign	(1 /	0.0398
70		Chi Square Value (123		98.41				Square Value		96.96
71	95% Gamma Approxi	mate UCL (use when	n>=50)	31.62		95% Gan	nma Adjuste	ed UCL (use v	when n<50)	32.1
72										
73				Test on De	tected Ob	servations (
74		Shapiro Wilk Test S	1	0.957			Shapiro W	ilk GOF Test		
75	59	% Shapiro Wilk Critica	l Value	0.918	Dete	cted Data a _l	opear Logno	ormal at 5% S	Significance	Level
76		Lilliefors Test S	Statistic	0.114			Lilliefors	GOF Test		
77		5% Lilliefors Critica	l Value	0.177	Dete	cted Data a _l	opear Logno	ormal at 5% S	Significance	Level
78		Detected D	Data app	ear Lognorn	nal at 5%	Significance	e Level			
79										
80		Lognorm	nal ROS	Statistics U	sing Impu	ted Non-De	tects			
81		Mean in Origina	l Scale	25.44				Mean in	Log Scale	3.07
82		SD in Origina	l Scale	14.43				SD in	Log Scale	0.61
83	95% t UCL (assi	umes normality of ROS	S data)	30.27			95% P	ercentile Boo	tstrap UCL	29.94
84		95% BCA Bootstra	ap UCL	30.59				95% Boots	strap t UCL	31.05
85		95% H-UCL (Log	ROS)	33.39						
86										
87	UCLs using	Lognormal Distribution	on and K	M Estimate	s when D	etected dat	a are Logn	ormally Distri	ibuted	
88		KM Mean (l	ogged)	3.066				95% H-UCL	(KM -Log)	33.19
89		KM SD (I	ogged)	0.609			95% C	ritical H Value	e (KM-Log)	2.064
90	KM Star	ndard Error of Mean (l	ogged)	0.122						
91										
92				DL/2 Sta	tistics					
93	Г	L/2 Normal					DL/2 Log-	Transformed		
94		Mean in Origina	I Scale	25.32					Log Scale	3.039
95		SD in Origina	I Scale	14.61			-		Log Scale	0.696
96	95%	6 t UCL (Assumes nor	1	30.21					H-Stat UCL	35.9
97		2 is not a recommend			ed for com	parisons ar	nd historica			
98										
99		Nonc	parametr	ic Distribution	on Free U	CL Statistic	s			
100		Detected Data appear						e l evel		
101		Баш аррои.	lather acceptance		a. Dioaibi	100 010 0	ong minocario	20101		
101			C	Suggested U	Cl to He	4				
102		95% KM (30.26	J_ 10 U36		5% KM /Da	ercentile Boot	stran\ LICI	30.05
			(-) JOL	00.20			O TO TRIVE (FE	J. Seriale Dool	Guap) OCL	30.03
103										
103 104	Note: Suggestions reco		a 05% i	ICI are pro-	ridad to be	In the year	to select the	a most approx	oriate 05%	ICI
103 104 105	Note: Suggestions rega	ording the selection of						The state of the s	oriate 95% l	JCL.
103 104 105 106		ording the selection of Recommendations a	are base	d upon data	size, data	distribution,	and skewn	ess.	16.11.53.55	
102 103 104 105 106 107 108	Note: Suggestions regarded These recommendation However, simulations res	rding the selection of Recommendations ans are based upon th	are base e results	d upon data of the simu	size, data lation stud	distribution, lies summa r	and skewn ized in Sing	ess. gh, Maichle, a	and Lee (200	06).

	Α	В	С	D	E	F	G	Н		J	K		
1	,,						Sets with No					-	_
2													
3		User Select	ted Options	3									
4	Date	/Time of Cor	mputation	25/10/201	6 10:53:22 AM	1							
5			From File	WorkShee	et_c.xls								
6		Full	Precision	OFF									
7	C	Confidence C	Coefficient	95%									
8	Number of	Bootstrap O	perations	2000									
9													
10													
11	Copper												
12													
13						General S	Statistics					- 14	
14			Total I	Number of (Observations	25					Observation		18
15									Number	of Missing	Observation		0
16					Minimum	7.9					Mea		29.88
17					Maximum	200					Media		21
18					SD	36.74			to the transfer or the stage of the state of the	Std.	Error of Mea		7.348
19				Coefficien	nt of Variation	1.23					Skewnes	IS	4.455
20	PART .					Marrial O	OF T4						
21			CI	\A/!!!-	T 04-4:-4:-	Normal G	OF Test		Ohanina M	iik OOF T			
22					Test Statistic	0.439				ilk GOF T		ninininumes or our	elistra - successiona
23			5% 50		Critical Value Test Statistic	0.918		Data Not		S GOF Tes	cance Level		
24			50		Critical Value	0.331		Data Not			cance Level		
25			37	o Lilletois (% Significano		NOITHAL AL	3 % Signin	cance Level		
26					Data NOLI	voilliai at 5	% Significant	ce Level				-	
27					Δος	umina Norm	nal Distributio	n .		==	=		
28	-		95% N	ormal UCL	7,00	unning North	iai Distributio		ICI s (Adi	usted for S	Skewness)		
29		<u> </u>	3370 14		ıdent's-t UCL	42.45			, ,		L (Chen-199	5)	48.96
30				3070 010	addition to obe	12.10					lohnson-1978		43.54
32										(-,	
33						Gamma G	OF Test						
34				A-D	Test Statistic	1.74		Anders	on-Darling	g Gamma	GOF Test		-
35				5% A-D	Critical Value	0.757	Data				Significance	Level	
36				K-S	Test Statistic	0.189		Kolmogi	ov-Smirno	off Gamma	GOF Test		
37				5% K-S	Critical Value	0.177	Data	Not Gamn	na Distribu	ted at 5%	Significance	Level	
38				Da	ita Not Gamm	a Distribute	d at 5% Sign	ificance L	evel				
39													
40						Gamma S	Statistics						
41					k hat (MLE)	1.982			ks	star (bias c	orrected MLE	Ξ)	1.771
42				The	eta hat (MLE)	15.07			Theta s	star (bias c	orrected MLE	Ξ)	16.87
43					nu hat (MLE)	99.12				nu star (b	oias correcte	d)	88.56
44			ML	E Mean (bi	as corrected)	29.88				MLE Sd (b	ias corrected	d)	22.45
45								Ар			e Value (0.0		67.86
46			Adjust	ted Level of	Significance	0.0395			Ad	ljusted Chi	Square Valu	ie	66.62
47													
48							na Distributio						
49	95%	Approximat	te Gamma	UCL (use v	vhen n>=50))	38.99		95% Adjus	sted Gamn	na UCL (us	se when n<50	0)	39.71
50													
51						Lognormal	GOF Test						
52					Test Statistic	0.882	,,,			gnormal G			
53			5% Sh		Critical Value	0.918					ificance Leve	el	
54					Test Statistic	0.15				ormal GO			
55			59	6 Lilliefors (Critical Value	0.177	Da 	ta appear	Lognorma	l at 5% Sig	Inificance Le	vel	

24	A B C D E	F	G	H		J	K	L
56	Data appear Approxi	mate Logn	ormal at 5%	Significan	ce Level			
57								
58		Lognormal	Statistics					
59	Minimum of Logged Data	2.067					f logged Data	1
60	Maximum of Logged Data	5.298				SD o	f logged Data	0.63
61								
62	Assum	ning Logno	rmal Distrib	ution				
63	95% H-UCL	36.21			90% (Chebyshev	(MVUE) UCL	38.5
64	95% Chebyshev (MVUE) UCL	43.49			97.5% (Chebyshev	(MVUE) UCL	50.43
65	99% Chebyshev (MVUE) UCL	64.05						
66								
67	Nonparametr	ic Distribut	ion Free UC	CL Statistics	5			
68	Data appear to follow a Di	scernible [Distribution	at 5% Signi	ificance Le	vel		
69								
70	Nonpara	metric Dist	ribution Fre	e UCLs				
71	95% CLT UCL	41.96				95% J	ackknife UCL	42.45
72	95% Standard Bootstrap UCL	41.67				95% Bo	otstrap-t UCL	68.04
73	95% Hall's Bootstrap UCL	88.16			95% F	ercentile B	ootstrap UCL	43.76
74	95% BCA Bootstrap UCL	51.44						
75	90% Chebyshev(Mean, Sd) UCL	51.92			95% Ch	ebyshev(Me	ean, Sd) UCL	61.91
76	97.5% Chebyshev(Mean, Sd) UCL	75.77			99% Ch	ebyshev(M	ean, Sd) UCL	103
77								
78	S	Suggested I	UCL to Use					
79	95% Chebyshev (Mean, Sd) UCL	61.91						
80		and Automotive				t		
81	Note: Suggestions regarding the selection of a 95% L	JCL are pro	vided to he	lp the user	to select th	e most app	ropriate 95%	UCL.
82	These recommendations are based upon the result	ts of the sir	nulation stu	dies summa	arize <mark>d in</mark> Si	ngh, Singh,	, and laci (20	02)
83	and Singh and Singh (2003). However	r, simulatio	ns results w	ill not cover	all Real W	orld data se	ets.	
84	For additional insight	the user m	ay want to c	onsult a sta	tistician.			
85								

17	A B C	D E	F	G F	J	K	L
1				ets with Non-De			
2							
3	User Selected Options						
4	Date/Time of Computation	25/10/2016 10:55:03 AM					
5		WorkSheet_d.xls					
6		OFF					
7		95%					
8	Number of Bootstrap Operations	2000					
9							
10							
11	Lead						
12			General Sta	atistics			
13	Total No	umber of Observations	26	103003	Number of Distinct Of	servations	18
14 15	rodrik	amber of ebecivations			Number of Missing Ob		0
16		Minimum	8.2			Mean	41.85
17		Maximum	180			Median	32.5
18		SD	34.99		Std. Err	ror of Mean	6.863
19		Coefficient of Variation	0.836			Skewness	2.908
20							
21			Normal GO	F Test			
22	Sha	piro Wilk Test Statistic	0.652		Shapiro Wilk GOF Test		
23	5% Sha	piro Wilk Critical Value	0.92	Dat	a Not Normal at 5% Significan	ice Level	
24		Lilliefors Test Statistic	0.306		Lilliefors GOF Test		
25	5%	Lilliefors Critical Value	0.174		a Not Normal at 5% Significan	ice Level	
26		Data Not N	Normal at 5%	Significance Le	vel		
27		A	ta a Nama	I Distribution			
28	95% Nor		uming Norma		95% UCLs (Adjusted for Ske	umaca)	
29	93 % 1401	95% Student's-t UCL	53.58		95% Adjusted-CLT UCL (C	14.11.11.11.11.11	57.32
30		3070 Stadents 1 GGE	00.00		95% Modified-t UCL (John		54.23
32							
33			Gamma GC	F Test			
34		A-D Test Statistic	1.462	А	nderson-Darling Gamma GO	F Test	
35		5% A-D Critical Value	0.753	Data Not	Gamma Distributed at 5% Sign	nificance Le	vel
36		K-S Test Statistic	0.223	Ko	lmogrov-Smirnoff Gamma Go	OF Test	
37		5% K-S Critical Value	0.173	Data Not	Gamma Distributed at 5% Sig	nificance Le	vel
38		Data Not Gamma	a Distributed	at 5% Significa	nce Level		
39							
40			Gamma Sta	atistics			
41		k hat (MLE)	2.569		k star (bias corre		2.298
42		Theta hat (MLE)	16.29		Theta star (bias corre		18.21
43	MIC	nu hat (MLE) Mean (bias corrected)	133.6 41.85		nu star (bias MLE Sd (bias		119.5 27.61
44	IVILC	Mean (bias corrected)	41.00		Approximate Chi Square V		95.25
45	Adjusted	d Level of Significance	0.0398		Adjusted Chi Sq		93.82
46 47	, tajuotot				, lajastoa erii eq		30.32
48		Assu	ıming Gamma	a Distribution			
49	95% Approximate Gamma U		52.51		Adjusted Gamma UCL (use v	vhen n<50)	53.31
50		,,					
51			Lognormal G	OF Test			
52	Sha	piro Wilk Test Statistic	0.927		Shapiro Wilk Lognormal GOF	Test	
53	5% Shap	oiro Wilk Critical Value	0.92	Data a _l	pear Lognormal at 5% Signifi		
54		Lilliefors Test Statistic	0.173		Lilliefors Lognormal GOF T		
55	5%	Lilliefors Critical Value	0.174	Data a	pear Lognormal at 5% Signifi	cance Leve	

M	A B		С	D	E		F	G	Н		J	K	L
56					Data app	ear L	ognormal a	nt 5% Signi	ficance Lev	/el			
57													
58							Lognormal	Statistics					
59			Minin	num of	Logged D	ata	2.104					logged Data	3.527
60			Maxin	num of	Logged D	ata	5.193				SD of	logged Data	0.613
61													
62					А	ssun	ning Logno	rmal Distrib	oution				
63					95% H-U		52.9			90% C	Chebyshev	(MVUE) UCL	56.28
64		9	5% Cheb	yshev ((MVUE) U	JCL	63.34			97.5% C	Chebyshev	(MVUE) UCL	73.13
65		9	9% Cheb	yshev	(MVUE) U	JCL	92.36						
66													
67					Nonpara	ametr	ric Distribut	ion Free U	CL Statistic	s			
68			Data	appear	r to follow	ı a Di	scernible	Distribution	at 5% Sign	nificance Le	vel		
69													
70					Non	para	metric Dist	ribution Fre	ee UCLs				
71				9	5% CLT U	JCL	53.14				95% Ja	ackknife UCL	53.58
72		(95% Stan	dard Bo	ootstrap U	JCL	52.95				95% Boo	otstrap-t UCL	63.45
73			95% H	Hall's B	ootstrap U	JCL	105.6			95% P	ercentile B	ootstrap UCL	54.04
74			95%	BCA B	ootstrap U	JCL	58.25						
75		90%	% Chebys	shev(Me	ean, Sd) L	JCL	62.44			95% Che	ebyshev(Me	ean, Sd) UCL	71.77
76		97.5%	% Chebys	shev(Me	ean, Sd) L	JCL	84.71			99% Che	ebyshev(Me	ean, Sd) UCL	110.1
77													
78						5	Suggested I	UCL to Use)				
79	-				95% H-L	JCL	52.9						
80											LAAAMIN Y		
81	Note: Sugge	estions reg	arding the	e select	tion of a 9	95% L	JCL are pro	vided to he	elp the user	to select the	e most app	ropriate 95%	JCL.
82	These re	commenda	itions are	based	upon the	resul	Its of the sir	nulation stu	ıdies summ	narized in Si	ngh, Singh,	and laci (200	2)
83		and Sir	ngh and S	Singh (2	2003). Hov	weve	r, simulatio	ns results v	vill not cove	r all Real W	orld data se	ets.	
84				For ad	ditional in	sight	the user m	ay want to	consult a st	atistician.			
85													
86		F	ProUCL c	compute	es and ou	utputs	s H-statistic	based UC	Ls for histo	orical reason	ns only.		
87	H-statisti	c often res	ults in ur	nstable	(both hig	h and	d low) value	es of UCL9	95 as show	n in exampl	es in the T	echnical Guid	le.
88			It is the	erefore	recomme	ended	to avoid th	ne use of H	l-statistic b	ased 95% U	JCLs.		
89	Use of nonpa	rametric m	ethods a	re pref	erred to c	comp	ute UCL95	for skewe	d data sets	which do n	ot follow a	gamma distr	bution.
90		1040										_	

7	А	В	С	D	E	F	G H	I J K	L
1					UCL Statistic	cs for Data	Sets with Non-Detects		
2									
3			cted Options		0.40.57.50.414				
4	Date/	Time of C	omputation		6 10:57:56 AM				
5		_	From File	WorkShee	et_e.xls				
6			Il Precision	OFF					
7			Coefficient	95%					
8	Number of	Bootstrap	Operations	2000			<u> </u>		
9									
10	Mercury								
11						General S	Statistics		
12	_		Total	Number of (Observations	26	otatistics	Number of Distinct Observation	ns 5
13			1 Otal 1		er of Detects	5		Number of Non-Detec	
14			NI			5		Number of Distinct Non-Detection	325 JOSEPH
15			Nu		tinct Detects			William of the beautiful of the property of th	No-21 1/1
16					imum Detect	0.05		Minimum Non-Dete	
17					imum Detect	0.2		Maximum Non-Dete	
18					ance Detects	0.00485		Percent Non-Detec	
19					Mean Detects	0.11		SD Detec	500 CONTRACTORS
20					dian Detects	0.07		CV Detec	
21					ness Detects	0.666		Kurtosis Detec	
22				Mean of Log	gged Detects	-2.37		SD of Logged Detec	ts 0.634
23									
24							on Detects Only		
25					Test Statistic	0.821		Shapiro Wilk GOF Test	
26			5% Sh	·	Critical Value	0.762	Detected Data a	ppear Normal at 5% Significance	Level
27				Lilliefors	Test Statistic	0.317		Lilliefors GOF Test	
28			5%		Critical Value	0.396		ppear Normal at 5% Significance	Level
29				De	tected Data ap	pear Norm	al at 5% Significance L	evel	
30									
31			Kaplan-M	eier (KM) S			ritical Values and other		
32					Mean	0.0615		Standard Error of Mea	
33					SD	0.0361		95% KM (BCA) UC	
34					6 KM (t) UCL	0.0751	9	5% KM (Percentile Bootstrap) UC	
35				95%	KM (z) UCL	0.0746		95% KM Bootstrap t UC	
36			9	0% KM Che	ebyshev UCL	0.0853		95% KM Chebyshev UC	
37			97.	5% KM Che	ebyshev UCL	0.111		99% KM Chebyshev UC	CL 0.14
38									
39				G	amma GOF T	ests on De	tected Observations Or		
40	I .			A-D	Test Statistic	0.53	An	derson-Darling GOF Test	
41				5% A-D	Critical Value	0.682		Gamma Distributed at 5% Signif	cance Level
42				K-S	Test Statistic	0.313	K	olmogrov-Smirnoff GOF	
43				5% K-S	Critical Value	0.359	Detected data appear	Gamma Distributed at 5% Signif	cance Level
44				Detected	data appear (Gamma Dis	stributed at 5% Significa	ance Level	
45									
46					Gamma S	tatistics on	Detected Data Only		
47					k hat (MLE)	3.231		k star (bias corrected ML	E) 1.426
48				The	eta hat (MLE)	0.0341		Theta star (bias corrected ML	E) 0.0772
49					nu hat (MLE)	32.31		nu star (bias correcte	d) 14.26
50			ML	E Mean (bi	as corrected)	0.11		MLE Sd (bias correcte	d) 0.0921
51					-				
					Gamma	Kaplan-Me	eier (KM) Statistics		
52								l+ /I/I	vI) 150.9
52 53					k hat (KM)	2.901		nu hat (Kl	vi) 150.9
		Appro	oximate Chi S	Square Valu	k hat (KM) e (150.86, α)	2.901 123.5	Adjı	nu nat (גו usted Chi Square Value (150.86,	1

56 57				
_	Gamma ROS S	tatistics usin	g Imputed Non-Detects	
			IDs with many tied observations at multiple DLs	
58			letected data is small such as < 0.1	
59			yield inflated values of UCLs and BTVs	
60				
61			be computed using gamma distribution on KM estimates	0.0000
62	Minimum	0.01	Mean	0.0292
63	Maximum	0.2	Median	0.01
64	SD	0.0489	CV	1.673
65	k hat (MLE)	0.908	k star (bias corrected MLE)	0.829
66	Theta hat (MLE)	0.0322	Theta star (bias corrected MLE)	0.0352
67	nu hat (MLE)	47.24	nu star (bias corrected)	43.12
68	MLE Mean (bias corrected)	0.0292	MLE Sd (bias corrected)	0.0321
69			Adjusted Level of Significance (β)	0.0398
70	Approximate Chi Square Value (43.12, α)	29.06	Adjusted Chi Square Value (43.12, β)	28.3
71	95% Gamma Approximate UCL (use when n>=50)	0.0434	95% Gamma Adjusted UCL (use when n<50)	0.0445
72				
73	Lognormal GOF	Test on Dete	ected Observations Only	
74	Shapiro Wilk Test Statistic	0.855	Shapiro Wilk GOF Test	
75	5% Shapiro Wilk Critical Value	0.762	Detected Data appear Lognormal at 5% Significance Le	evel
76	Lilliefors Test Statistic	0.276	Lilliefors GOF Test	
77	5% Lilliefors Critical Value	0.396	Detected Data appear Lognormal at 5% Significance Le	evel
			al at 5% Significance Level	
78	Bottottou Buttu app	our Lognom	all at 5 % Cigninatino Estol	
79	Lognormal POS	Statistics He	sing Imputed Non-Detects	
80	Mean in Original Scale	0.028	Mean in Log Scale	-4.793
81				
82	SD in Original Scale	0.05	SD in Log Scale	1.669
83	95% t UCL (assumes normality of ROS data)	0.0448	95% Percentile Bootstrap UCL	0.046
84	95% BCA Bootstrap UCL	0.0511	95% Bootstrap t UCL	0.0675
85	95% H-UCL (Log ROS)	0.107		
86				
87			s when Detected data are Lognormally Distributed	
88	KM Mean (logged)	-2.875	95% H-UCL (KM -Log)	0.0683
00	KM SD (logged)	0.35	95% Critical H Value (KM-Log)	1.85
89	(logged)	1	0070 0111100111 1 1 1 1 1 1 1 1 1 1 1 1	
	KM Standard Error of Mean (logged)	0.0768		
90 91		0.0768		
90 91		0.0768 DL/2 Stat		
90 91 92				
90 91 92 93	KM Standard Error of Mean (logged)		tistics	-3.435
90 91 92 93 94	KM Standard Error of Mean (logged) DL/2 Normal	DL/2 Stat	tistics DL/2 Log-Transformed	-3.435 0.588
90 91 92 93 94 95	KM Standard Error of Mean (logged) DL/2 Normal Mean in Original Scale	DL/2 Stat	tistics DL/2 Log-Transformed Mean in Log Scale	
90 91 92 93 94 95 96	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality)	0.0413 0.0441 0.0561	tistics DL/2 Log-Transformed Mean in Log Scale SD in Log Scale	0.588
90 91 92 93 94 95 96 97	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality)	0.0413 0.0441 0.0561	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL	0.588
90 91 92 93 94 95 96 97	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met	0.0413 0.0441 0.0561 hod, provide	tistics DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL	0.588
90 91 92 93 94 95 96 97 98	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met	0.0413 0.0441 0.0561 hod, provide	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics	0.588
90 91 92 93 94 95 96 97 98 99	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met	0.0413 0.0441 0.0561 hod, provide	tistics DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL	0.588
90 91 92 93 94 95 96 97 98 99 100	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr	0.0413 0.0441 0.0561 hod, provide ric Distributio	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level	0.588
90 91 92 93 94 95 96 97 98 99 100 101	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear	DL/2 Stat 0.0413 0.0441 0.0561 hod, provide ric Distributio Normal Distr	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level	0.588
90 91 92 93 94 95 96 97 98 99 100 101 102	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr	0.0413 0.0441 0.0561 hod, provide ric Distributio	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level	0.588
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear	DL/2 State 0.0413 0.0441 0.0561 hod, provide ric Distributio Normal Distributio Suggested Uc 0.0751	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level CL to Use 95% KM (Percentile Bootstrap) UCL	0.588
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear	DL/2 Stat 0.0413 0.0441 0.0561 hod, provide ric Distributio Normal Distr Suggested Uc 0.0751	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL In the state of the stat	0.588
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear	0.0413 0.0441 0.0561 hod, provide ric Distributio Normal Distr Suggested Ut 0.0751 JCL are provide	tistics DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL Id for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level CL to Use 95% KM (Percentile Bootstrap) UCL rided to help the user to select the most appropriate 95% Uct size, data distribution, and skewness.	0.588 0.048 0.0738
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear S 95% KM (t) UCL Note: Suggestions regarding the selection of a 95% t Recommendations are base These recommendations are based upon the results	DL/2 State 0.0413 0.0441 0.0561 hod, provide ric Distribution Normal Distribution O.0751 UCL are provided upon data sees of the simule	DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL d for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level CL to Use 95% KM (Percentile Bootstrap) UCL ided to help the user to select the most appropriate 95% UC size, data distribution, and skewness. lation studies summarized in Singh, Maichle, and Lee (2006)	0.588 0.048 0.0738 CL.
90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106	DL/2 Normal Mean in Original Scale SD in Original Scale 95% t UCL (Assumes normality) DL/2 is not a recommended met Nonparametr Detected Data appear S 95% KM (t) UCL Note: Suggestions regarding the selection of a 95% t Recommendations are base These recommendations are based upon the results	DL/2 State 0.0413 0.0441 0.0561 hod, provide ric Distribution Normal Distribution O.0751 UCL are provided upon data sees of the simule	tistics DL/2 Log-Transformed Mean in Log Scale SD in Log Scale 95% H-Stat UCL Id for comparisons and historical reasons on Free UCL Statistics ributed at 5% Significance Level CL to Use 95% KM (Percentile Bootstrap) UCL rided to help the user to select the most appropriate 95% Uct size, data distribution, and skewness.	0.588 0.048 0.0738 CL.

1	A B C	D E	F	G H I J K	L
1		UCL Statistic	cs for Data	Sets with Non-Detects	
2					
3	User Selected Options				
4	Date/Time of Computation	25/10/2016 10:59:54 AM			
5	From File	WorkSheet_f.xls		•	
6	Full Precision	OFF			
7	Confidence Coefficient	95%			
8	Number of Bootstrap Operations	2000			
9					
10	Nickel				
11			0	Ohabirai an	
12	T-1-1	N		Statistics	22
13	I otal	Number of Observations	26	Number of Distinct Observations	22
14		Number of Detects	24	Number of Non-Detects	2
15	Nu	mber of Distinct Detects	21	Number of Distinct Non-Detects	1
16		Minimum Detect	7.2	Minimum Non-Detect	5
17		Maximum Detect	50	Maximum Non-Detect	5
18		Variance Detects	128.9	Percent Non-Detects	7.6929
19		Mean Detects	19.18	SD Detects	11.35
20		Median Detects	15.5	CV Detects	0.592
21		Skewness Detects	1.21	Kurtosis Detects	1.005
22		Mean of Logged Detects	2.801	SD of Logged Detects	0.559
23					
24				t on Detects Only	
25		napiro Wilk Test Statistic	0.879	Shapiro Wilk GOF Test	
26	5% Sh	apiro Wilk Critical Value	0.916	Detected Data Not Normal at 5% Significance Leve	el .
27		Lilliefors Test Statistic	0.16	Lilliefors GOF Test	
28	59	% Lilliefors Critical Value	0.181	Detected Data appear Normal at 5% Significance Le	vel
29		Detected Data appear A	pproximat	e Normal at 5% Significance Level	
30					
31	Kaplan-M			critical Values and other Nonparametric UCLs	0.000
32		Mean	18.09	Standard Error of Mean	2.269
33		SD	11.33	95% KM (BCA) UCL	21.91
34		95% KM (t) UCL	21.97	95% KM (Percentile Bootstrap) UCL	22
35		95% KM (z) UCL	21.83	95% KM Bootstrap t UCL	22.91
36		0% KM Chebyshev UCL	24.9	95% KM Chebyshev UCL	27.98
37	97.	5% KM Chebyshev UCL	32.26	99% KM Chebyshev UCL	40.67
38					
39				etected Observations Only	
40		A-D Test Statistic	0.398	Anderson-Darling GOF Test	
41		5% A-D Critical Value	0.75	Detected data appear Gamma Distributed at 5% Significan	ce Level
42		K-S Test Statistic	0.108	Kolmogrov-Smirnoff GOF	
43		5% K-S Critical Value	0.179	Detected data appear Gamma Distributed at 5% Significan	ce Level
44		Detected data appear (Jamma Di	stributed at 5% Significance Level	
45		0	totictics :	Potostad Poto Only	
46				n Detected Data Only	3.024
47		k hat (MLE)	3.425	k star (bias corrected MLE)	6.343
48		Theta hat (MLE)	5.602 164.4	Theta star (bias corrected MLE)	145.2
49	N. EL	nu hat (MLE)		nu star (bias corrected)	11.03
50	ML	E Mean (bias corrected)	19.18	MLE Sd (bias corrected)	11.03
51		0	Vanlas H	oiar (VM) Statistics	
52			· .	eier (KM) Statistics	120.0
53	A	k hat (KM)	2.551	nu hat (KM)	132.6
54		Square Value (132.64, α)	107	Adjusted Chi Square Value (132.64, β)	105.5
55	95% Gamma Approximate KM	I-UCL (use when n>=50)	22.42	95% Gamma Adjusted KM-UCL (use when n<50)	22.74

56				
57	Gamma ROS S	tatistics usin	g Imputed Non-Detects	
58			IDs with many tied observations at multiple DLs	
59			detected data is small such as < 0.1	
60			yield inflated values of UCLs and BTVs	
			be computed using gamma distribution on KM estimates	
61	Minimum	0.01	Mean	17.75
62	Maximum	50	Median	14.5
63	SD	12.01	CV	0.676
64				
65	k hat (MLE)	1.22	k star (bias corrected MLE)	1.105
66	Theta hat (MLE)	14.56	Theta star (bias corrected MLE)	16.07
67	nu hat (MLE)	63.42	nu star (bias corrected)	57.44
68	MLE Mean (bias corrected)	17.75	MLE Sd (bias corrected)	16.89
69			Adjusted Level of Significance (β)	0.039
70	Approximate Chi Square Value (57.44, α)	41.02	Adjusted Chi Square Value (57.44, β)	40.1
71	95% Gamma Approximate UCL (use when n>=50)	24.86	95% Gamma Adjusted UCL (use when n<50)	25.43
72				
73	Lognormal GOF	Test on Det	ected Observations Only	
74	Shapiro Wilk Test Statistic	0.962	Shapiro Wilk GOF Test	
75	5% Shapiro Wilk Critical Value	0.916	Detected Data appear Lognormal at 5% Significance Le	evel
76	Lilliefors Test Statistic	0.0977	Lilliefors GOF Test	
77	5% Lilliefors Critical Value	0.181	Detected Data appear Lognormal at 5% Significance Le	evel
78	Detected Data appo	ear Lognorm	nal at 5% Significance Level	
79				
80	Lognormal ROS	Statistics Us	sing Imputed Non-Detects	
81	Mean in Original Scale	18.04	Mean in Log Scale	2.698
82	SD in Original Scale	11.61	SD in Log Scale	0.649
83	95% t UCL (assumes normality of ROS data)	21.93	95% Percentile Bootstrap UCL	21.77
84	95% BCA Bootstrap UCL	22.28	95% Bootstrap t UCL	22.69
85	95% H-UCL (Log ROS)	24.08	50% Bookstap (CC2	22.00
	30 % TT COL (E0g TCC)	24.00		
86	IICI's using Lognormal Distribution and K	M Estimates	s when Detected data are Lognormally Distributed	
87	KM Mean (logged)	2.709	95% H-UCL (KM -Log)	23.39
88	KM SD (logged)	0.615	95% Critical H Value (KM-Log)	2.069
89	KM Standard Error of Mean (logged)		95% Childai H Value (KWI-Log)	2.008
90	KW Standard Error of Mean (logged)	0.123		
91		DI /0 01		
92		DL/2 Stat		
93	DL/2 Normal	and the same of th	DL/2 Log-Transformed	
94	Mean in Original Scale	17.9	Mean in Log Scale	2.656
95	SD in Original Scale	11.8	SD in Log Scale	0.742
96	95% t UCL (Assumes normality)	21.85	95% H-Stat UCL	25.98
97	DL/2 is not a recommended met	hod, provide	d for comparisons and historical reasons	
98				
99	Nonparametr	ic Distributio	n Free UCL Statistics	
100	Detected Data appear Approx	imate Norma	al Distributed at 5% Significance Level	
101				
102	S	Suggested U	CL to Use	
103	95% KM (t) UCL	21.97	95% KM (Percentile Bootstrap) UCL	22
104				
105	Note: Suggestions regarding the selection of a 95% L	JCL are prov	ided to help the user to select the most appropriate 95% U	CL.
10.7			size, data distribution, and skewness.	
	Recommendations are base	a apon aata		
106				3).
	These recommendations are based upon the results	of the simul	ation studies summarized in Singh, Maichle, and Lee (2006 for additional insight the user may want to consult a statist	

	А	В	С	D	E	F	G	Н		J		K	Ļ
1					UCL Statisti	cs for Data	Sets with N	Ion-Detects					
2													
3			cted Options										
4	Da	ate/Time of Co	mputation	25/10/201	6 11:00:54 AN	1							
5			From File	WorkShee	et_g.xls								
6		Full	l Precision	OFF									
7		Confidence (95%									
8	Number	of Bootstrap C	Operations	2000									
9													
10													
11	Zinc												
12													
13						General :	Statistics						
14			Total	Number of (Observations	26						ervations	20
15									Numbe	r of Miss	ing Obse	ervations	0
16					Minimum	7.5						Mean	56.06
17					Maximum	150						Median	39.5
18					SD	37.69				S		of Mean	7.392
19				Coefficien	t of Variation	0.672					S	kewness	1.291
20													
21						Normal C	GOF Test						
22					Test Statistic	0.823			Shapiro V			- Individual	
23			5% Sh		Critical Value	0.92		Data Not				e Level	
24					Test Statistic	0.256				s GOF 1			
25			59	% Lilliefors (Critical Value	0.174		Data Not	Normal a	t 5% Sig	nificance	e Level	
26					Data Not	Normal at 5	% Significa	ince Level					
27													
28					Ass	uming Norr	nal Distribu		101 - (4	:	- Oleman	\	
29			95% N	ormal UCL					JCLs (Ad				70.00
30				95% Stu	ident's-t UCL	68.68						en-1995)	70.22
31								9	5% Modif	iea-t UC	_ (Jonns	on-1978)	69
32						0	205 Tast						
33					T - 1 O - 1 - 1 -		GOF Test	Andore	on-Darlir	a Comp	00 COE	Toot	
34					Test Statistic	1.05	Do	ta Not Gamr					vol
35					Critical Value	0.753	Da		ov-Smirr				VEI
36					Test Statistic	0.184	Do	ta Not Gamr					vol
37					Critical Value ata Not Gamn					uteu at c	76 Sigili	ilcalice Le	VCI
38				Da	ita Not Gaiiii	ia Distribut	eu at 5% Si	gillicance L	evei				_
39				_		Commo	Statistics						===
40					k hot (MLE)	2.648	CONSUES		b	star /his	s correc	ted MLE)	2.368
41				ナ L .	k hat (MLE) eta hat (MLE)							ted MLE)	23.67
42						137.7			HEIG			corrected)	123.1
43			K 41		nu hat (MLE) as corrected)	56.06						corrected)	36.43
44			IVIL	_c wean (bi	as corrected)	30.00		٨٠	nrovimat		•	lue (0.05)	98.51
45			٠٠.الـ ٨	tod Lovel =	f Significance	0.0398		Al				are Value	97.05
46			Aajus	ieu Levei Oi	Significance	0.0396				ajusteu	o oqu	are value	37.00
47					۸۵۵	umina Com	ıma Distribu	ution					
48	,	NEO/ Ammender	ata Camm-	HCL /uss			יייים הופת וחנ	95% Adju	sted Cam	ma HOL	(IISE W	nen n<50\	71.12
49	į (95% Approxim	ale Gamma	OCL (use v	viien 11/=50))	70.07		55 % Auju	sicu Gail	iiia UUL	(uac WI	ion 11700)	7 1.12
50						Loanerma	I GOF Test						
51			_	honiro Ma	Toot Statistic		i dor Test		iro Wilk L	Odborm	al GOE .	Test	
52					Test Statistic			Data appear					
53	magnicanders represented a policial debit	WALLATT V	5% S		Critical Value				efors Log				1
54	4				Test Statistic			Data appear					ı
55			5	70 LIIIIefors	Critical Value	0.174		Data appear	Lognoin	iai at 370	Signific	ance Leve	·I

31	Α	В	С	D	E	F	G	Н		J	К	L
56					Data appear	Lognormal a	t 5% Signif	icance Lev	el	1		
57												
58						Lognormal	Statistics					
59			М	inimum of	Logged Data	2.015				Mean of I	ogged Data	3.826
60			Ma	aximum of	Logged Data	5.011		SD of logged Data				0.659
61												
62					Assu	ming Logno	mal Distrib	ution				
63					95% H-UCL	75.27			90% C	hebyshev (N	/IVUE) UCL	79.81
64			95% C	hebyshev	(MVUE) UCL	90.4			97.5% C	hebyshev (N	/IVUE) UCL	105.1
65			99% C	hebyshev	(MVUE) UCL	134						
66											,	
67					Nonparame							
68			D	ata appea	r to follow a [Discernible D	distribution	at 5% Signi	ficance Lev	rel .		
69												
70					Nonpar	ametric Dist	ribution Fre	e UCLs				
71				9	5% CLT UCL	68.22				95% Jac	kknife UCL	68.68
72			95% S	standard Be	ootstrap UCL	67.86		95% Bootstrap-t UCL				70.94
73					ootstrap UCL	69.15			95% Pe	ercentile Boo	otstrap UCL	68.77
74			95	5% BCA B	ootstrap UCL	69.75						
75			90% Che	byshev(Me	ean, Sd) UCL	78.23			95% Che	byshev(Mea	n, Sd) UCL	88.28
76			97.5% Che	byshev(Me	ean, Sd) UCL	102.2			99% Che	byshev(Mea	n, Sd) UCL	129.6
77												
78						Suggested l	JCL to Use					
79					95% H-UCL	75.27						
80							Assembly and					
81					tion of a 95%	1000000				********		
82	The				upon the resu							2)
83		а	nd Singh an	d Singh (2	2003). Howeve	er, simulation	is results wi	II not cover	all Real Wo	orld data sets	3.	
84				For ad	ditional insigh	t the user ma	ay want to c	onsult a sta	tistician.			
85												
86					es and output					-		
87	H-9	statistic ofte			(both high ar				•		chnical Guid	le.
88					recommende							
89	Use of	nonparame	tric method	s are prefe	erred to comp	oute UCL95	for skewed	data sets v	which do no	ot follow a g	amma distri	bution.
90												

12	A B C	D E	F	G H I J K	L
1		UCL Statistic	s for Data Se	ets with Non-Detects	
2					
3	User Selected Options	25/10/2016 11:04:27 AM			
4		25/10/2016 11:04:27 AM WorkSheet_h.xls			
5		OFF			
6		95%			
7		2000			
8	Trainsor or Boototrap operations	2000			
10	Benz(a)anthracene				
11					
12			General Sta	tistics	
13	Total N	lumber of Observations	24	Number of Distinct Observations	3
14		Number of Detects	3	Number of Non-Detects	21
15	Nun	nber of Distinct Detects	2	Number of Distinct Non-Detects	1
16		Minimum Detect	0.7	Minimum Non-Detect	0.5
17	STATE OF STA	Maximum Detect	1.2	Maximum Non-Detect	0.5
18		Variance Detects	0.0833	Percent Non-Detects	87.5%
19		Mean Detects	0.867	SD Detects	0.289
20		Median Detects	0.7	CV Detects	0.333
21		Skewness Detects	1.732	Kurtosis Detects	N/A
22	M	lean of Logged Detects	-0.177	SD of Logged Detects	0.311
23					
24				y 3 Detected Values.	
25	This	is not enough to compu	te meaningfu	or reliable statistics and estimates.	
26					
27		N	0057	Debut Oct	
28				Detects Only	
29		apiro Wilk Critical Volume	0.75	Shapiro Wilk GOF Test	al.
30	5% Sna	apiro Wilk Critical Value		Detected Data Not Normal at 5% Significance Lev Lilliefors GOF Test	eı
31	F9/	Lilliefors Test Statistic Lilliefors Critical Value	0.385 0.512	Detected Data appear Normal at 5% Significance L	avol.
32				lormal at 5% Significance Level	
33		Detected Data appear A	pproximate	tornal at 5% digililicance Level	
34	Kanlan-Me	ier (KM) Statistics using	Normal Criti	cal Values and other Nonparametric UCLs	
35	Tapian-wei	Mean	0.546	Standard Error of Mean	
36		SD	0.147	95% KM (BCA) UCL	0.0368
37		95% KM (t) UCL			0.0368 N/A
38		90 /0 IVIVI III UCI	0.609	95% KM (Percentile Bootstrap) UCL	N/A
.50			0.609	95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL	
39 40	90	95% KM (z) UCL			N/A
40		95% KM (z) UCL	0.606	95% KM Bootstrap t UCL	N/A N/A N/A
40 41		95% KM (z) UCL % KM Chebyshev UCL	0.606 0.656	95% KM Bootstrap t UCL 95% KM Chebyshev UCL	N/A N/A N/A 0.706
40 41 42		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL	0.606 0.656 0.776	95% KM Bootstrap t UCL 95% KM Chebyshev UCL	N/A N/A N/A 0.706
40 41 42 43		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T	0.606 0.656 0.776	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL	N/A N/A N/A 0.706
40 41 42 43 44		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T	0.606 0.656 0.776	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only	N/A N/A N/A 0.706
40 41 42 43		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF To	0.606 0.656 0.776 ests on Deter	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only	N/A N/A N/A 0.706
40 41 42 43 44 45		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF To	0.606 0.656 0.776 ests on Deter	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test	N/A N/A N/A 0.706
40 41 42 43 44 45 46		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF To Not Enou	0.606 0.656 0.776 ests on Detection Data to Potatistics on D	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only	N/A N/A N/A 0.706 0.912
40 41 42 43 44 45 46 47		95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE)	0.606 0.656 0.776 ests on Determinent to Potential to Pot	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE)	N/A N/A N/A 0.706 0.912
40 41 42 43 44 45 46 47	97.5	95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF To Not Enough Gamma State (MLE) Theta hat (MLE)	0.606 0.656 0.776 ests on Determinent of Potential Street on Determinent of Potential Street on Determinent on	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE)	N/A N/A 0.706 0.912 N/A N/A
40 41 42 43 44 45 46 47 48 49	97.5	95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T Not Enou Gamma St k hat (MLE) Theta hat (MLE) nu hat (MLE)	0.606 0.656 0.776 ests on Determinent to Property of the statistics on D 14.91 0.0581 89.46	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected)	N/A N/A N/A 0.706 0.912 N/A N/A
40 41 42 43 44 45 46 47 48 49 50	97.5	95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T Not Enou Gamma St k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	0.606 0.656 0.776 ests on Determinent to Properties on Determinent to Pro	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected)	N/A N/A N/A 0.706 0.912 N/A N/A
40 41 42 43 44 45 46 47 48 49 50	97.5	95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T Not Enou Gamma St k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	0.606 0.656 0.776 ests on Determinent to Properties on Determinent to Pro	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected)	N/A N/A N/A 0.706 0.912 N/A N/A
40 41 42 43 44 45 46 47 48 49 50 51	97.5	95% KM (z) UCL % KM Chebyshev UCL % KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected) Gamma	0.606 0.656 0.776 ests on Determined the properties of Determined the Dete	95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL cted Observations Only erform GOF Test etected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected)	N/A N/A N/A 0.706 0.912 N/A N/A N/A

7	Α	В	С	D	E	F	G	Н		J	K	L
56	95% Ga	mma Appro	oximate KM	-UCL (use v	when n>=50)	0.599	9	5% Gamma	Adjusted KM	/I-UCL (use	when n<50)	0.603
57												
58				Lo	gnormal GOF	Test on De	tected Ob	servations	Only			
59			Sh	apiro Wilk 1	Test Statistic	0.75			Shapiro Wi	lk GOF Tes	t	
60			5% Sh	apiro Wilk C	Critical Value	0.767	De	tected Data	Not Lognorn	nal at 5% Si	gnificance L	evel
61				Lilliefors	est Statistic	0.385			Lilliefors	GOF Test		
62			5%	6 Lilliefors C	Critical Value	0.512	Dete	cted Data a	ppear Logno	rmal at 5% \$	Significance	Level
63			C	Detected Da	ta appear Ap	proximate L	.ognormal	at 5% Sign	nificance Lev	rel		
64												
65				Log	normal ROS	Statistics U	sing Impu	ted Non-De	etects			
66				Mean in O	riginal Scale	0.257				Mean i	n Log Scale	-1.806
67				SD in O	riginal Scale	0.274				SDi	n Log Scale	0.97
68		95% t UC	L (assumes	normality o	of ROS data)	0.352			95% P	ercentile Bo	otstrap UCL	0.346
69			9	5% BCA Bo	otstrap UCL	0.371				95% Boo	tstrap t UCL	0.4
70				95% H-UC	L (Log ROS)	0.436						
71												
72		UCLs	using Logr	normal Dist	ribution and h	KM Estimate	s when D	etected da	ta are Logno	rmally Dist	ributed	
73				KM M	ean (logged)	-0.629				95% H-UC	L (KM -Log)	0.583
74				KM	SD (logged)	0.193			95% C	ritical H Valu	ie (KM-Log)	1.763
75		k	(M Standard	d Error of M	ean (logged)	0.0482						
76					.,,							
77						DL/2 Sta	atistics					
78			DL/2	Normal					DL/2 Log-T	ransformed		
79				Mean in O	riginal Scale	0.327				Mean i	n Log Scale	-1.235
80				SD in O	riginal Scale	0.225				SDi	n Log Scale	0.419
81				•	es normality)	0.406					H-Stat UCL	0.375
82			DL/2 is	not a recon	nmended met	hod, provide	ed for con	nparisons a	nd historical	reasons		
83												
84					Nonparamet	ric Distributi	on Free U	CL Statistic	cs			
85			Detec	cted Data a	ppear Approx	dimate Norm	nal Distrib	uted at 5%	Significance	Level		
86												
87					,	Suggested L	JCL to Us	Э				
88					KM (t) UCL	0.609			95% KM (Pe	rcentile Boo	tstrap) UCL	N/A
89				Warni	ng: One or m	ore Recomn	nended U	CL(s) not a	vailable!			
90												
91	Note:	Suggestion	ns regarding	g the select	on of a 95%	JCL are pro	vided to h	elp the user	to select the	most appro	opriate 95%	UCL.
92			Re	commenda	tions are base	ed upon data	size, data	distribution	n, and skewn	ess.		
93					on the result							
94	Howeve	er, simulatio	ons results v	will not cove	er all Real Wo	rld data sets	; for addit	ional insigh	t the user ma	y want to co	ons <mark>u</mark> lt a stati	stician,
95												

17	А	В	С	D	Е	F	G	Н		J	K	L
1					UCL Statisti							
2												
3		User Sele	cted Options									
4	Date	/Time of Co	omputation	25/10/201	6 11:08:54 AN	Λ						
5			From File	WorkShee	t_i.xls							
6		Fui	II Precision	OFF								
7			Coefficient	95%								
8	Number of	Bootstrap (Operations	2000								
9												
10	Benzo(a)py	/rene										
11		V			====	General S	totiotics.					
12			Total N	dumber of (Observations	24	nausucs		Number	of Distinct O	hearvations	3
13			Total I		er of Detects	3			Number	Number of N		21
14			Nui		tinct Detects	2			Number	of Distinct N		1
15 16			110		mum Detect	0.8			rtambo	VERSON	Non-Detect	
17					imum Detect	1.2					Non-Detect	0.5
18					nce Detects	0.0533	= ;				lon-Detects	87.5%
19					lean Detects	0.933					SD Detects	0.231
20				Me	dian Detects	0.8		22-7			CV Detects	0.247
21				Skewr	ness Detects	1.732				Kurto	sis Detects	N/A
22			٨	Mean of Log	ged Detects	-0.088				SD of Logo	jed Detects	0.234
23										and Mark West		
24					Warning: Da	ta set has o	nly 3 Dete	cted Values				
25			This	is not eno	ugh to compi	ute meaning	ful or relia	ble statistics	and estim	ates.		
26												
27												
28						I GOF Test	on Detects					
29				·	Fest Statistic	0.75				lk GOF Test		
30			5% Sha		Critical Value	0.767	De	etected Data		al at 5% Sign	ificance Lev	/el
31					Test Statistic	0.385				GOF Test		
32					Critical Value	0.512				nal at 5% Sig	Initicance L	evel
33				Detected i	Data appear A	Approximate	Nomai ai	5% Signine	ance Leve			district as detrices as the last manual
34			Kanlan-Me	ier (KM) S	tatistics using	Normal Cr	itical Value	es and other	r Nonnaran	netric UCLs		
35			rapidii iiic	ioi (ittii) o	Mean	0.554	idodi value	oo ana oano	rtonparan	Standard Er	ror of Mean	0.0395
36 37					SD	0.158					(BCA) UCL	N/A
38				95%	KM (t) UCL	0.622		9	5% KM (Pe	ercentile Boo	` '	N/A
39					KM (z) UCL	0.619			·	5% KM Boot		N/A
40			90		byshev UCL	0.673			9:	5% KM Cheb	yshev UCL	0.726
41			97.5	5% KM Che	byshev UCL	0.801			9:	9% KM Cheb	yshev UCL	0.947
42												
43				G	amma GOF T	ests on Det	ected Obs	ervations O	nly			
44					Not Eno	ugh Data to	Perform G	OF Test				
45												
46						tatistics on	Detected [Data Only				
47					k hat (MLE)	26.49				tar (bias corre		N/A
48					ta hat (MLE)	0.0352			Theta st	tar (bias corre		N/A
49					nu hat (MLE)	158.9				nu star (bias		N/A
50			MLE	_ Mean (bia	s corrected)	N/A				MLE Sd (bias	corrected)	N/A
50												
51					^-		OF (KNA) St	SALISTICS				
51 52						Kaplan-Mei	iei (ikivi) Si	ausucs			ni het (//LO	500
51 52 53					Gamma k hat (KM)	12.29	iei (Rivi) Si	ausucs	A dimeter!		nu hat (KM)	590
51 52		Approx	ximate Chi Se	guara Val	k hat (KM)		iei (Rivi) Si		•	r Level of Sign quare Value	ificance (β)	590 0.0392 531

1	Α	В	С	D	E	F	G	Н	L	J	К	L
56	95% Ga	amma Appro	oximate KM	-UCL (use v	vhen n>=50)	0.612	95	% Gamma	Adjusted KI	M-UCL (use	when n<50)	0.616
57												
58				Lo	gnormal GOF	Test on De	tected Ob	servations	Only			
59			Sh	apiro Wilk	Test Statistic	0.75			Shapiro Wi	ilk GOF Tes	t	
60			5% Sh	apiro Wilk (Critical Value	0.767	Det	ected Data	Not Lognorr	mal at 5% Si	gnificance Le	vel
61				Lilliefors	Test Statistic	0.385			Lilliefors	GOF Test		
62			5%	6 Lilliefors C	Critical Value	0.512	Dete	cted Data a	ppear Logno	ormal at 5%	Significance l	_evel
63				Detected Da	ita appear Ap	proximate L	ognormal.	at 5% Sign	ificance Lev	vel		
64												
65				Log	gnormal ROS	Statistics U	sing Impu	ted Non-De	etects			
66				Mean in O	riginal Scale	0.347				Mean i	in Log Scale	-1.314
67				SD in O	riginal Scale	0.272				SD i	in Log Scale	0.73
68		95% t UC	L (assumes	normality of	of ROS data)	0.442			95% P	ercentile Bo	otstrap UCL	0.448
69			9	5% BCA Bo	otstrap UCL	0.465				95% Boo	tstrap t UCL	0.472
70				95% H-UC	L (Log ROS)	0.491						
71												
72		UCLs	using Logr	normal Dist	ribution and I	KM Estimate	s when D	etected da	ta are Logno	ormally Dist	ributed	
73				KM M	ean (logged)	-0.618				95% H-UC	L (KM -Log)	0.596
74				KM	SD (logged)	0.211			95% C	ritical H Valu	ue (KM-Log)	1.773
75		ŀ	KM Standard	d Error of M	ean (logged)	0.0528						
76												
77						DL/2 Sta	atistics					
78			DL/2	Normal					DL/2 Log-	Transformed	i	
79				Mean in C	riginal Scale	0.335				Mean i	in Log Scale	-1.224
80				SD in C	riginal Scale	0.241				SD i	in Log Scale	0.444
81			95% t U	CL (Assum	es normality)	0.42				95%	H-Stat UCL	0.388
82			DL/2 is	not a recor	nmended me	thod, provid	ed for com	parisons a	ind historica	l reasons		
83												
84					Nonparamet	ric Distribut	ion Free U	CL Statistic	cs			
85			Dete	cted Data a	ppear Approx	ximate Norn	nal Distribu	uted at 5%	Significance	Level		
86												
87						Suggested l	JCL to Use	ə				
88				95%	6 KM (t) UCL	0.622	181		95% KM (Pe	ercentile Boo	otstrap) UCL	N/A
89				Warn	ing: One or m	ore Recomi	mended U	CL(s) not a	vailable!			
90												
91	Note	: Sug gestio	ns regardin	g the select	ion of a 95%	UCL are pro	vided to he	elp the user	r to select the	e most appro	opriate 95% (JCL.
92			Re	commenda	tions are base	ed upon data	size, data	distribution	n, and skew n	iess.		
93	The	se recomm	endations a	ire based u	pon the result	s of the sim	ulation stud	dies summa	arized in Sing	gh, Maichle,	and Lee (200	06).
94	Howev	er, simulation	ons results	will not cove	er all Real Wo	orld data set	s; for additi	ional insigh	t the user ma	ay want to c	onsult a static	stician.
95	or the state of											

	A B C	D E		G H		J K		1/6
1	A 5	UCL Statistics	for Data Sets	with Non-Dete	ects			
ŧ	User Selected Op	ions						
i	Date/Time of Computat	on 25/10/2016 11:17:51 AM						
	From F	ile WorkSheet_j.xls						
	Full Precis	on OFF						
	Confidence Coeffici	ent 95%						
	Number of Bootstrap Operation	ns 2000						
)	Benzo(b&j)fluoranthene							
1								
2	Analysis (Analysis Analysis)		General Stati	stics	N	r of Distinct Observation	10	4
3	T	otal Number of Observations	24		Numbe	Number of Non-Detect		21
1	1/000 James	Number of Detects	3		NIle	er of Distinct Non-Detec		1
5		Number of Distinct Detects	3		Numbe	Minimum Non-Detec		0.5
ŝ		Minimum Detect	0.6			Maximum Non-Dete		0.5
7		Maximum Detect	1.1			Percent Non-Detec		87.5%
8		Variance Detects	0.0633		my visibility gift representation	SD Detec		0.252
9		Mean Detects	0.867			CV Detec		0.29
0		Median Detects	0.9			Kurtosis Deter		N/A
1		Skewness Detects	-0.586			SD of Logged Deter		0.309
2	A . 300 4 Maria 1 Maria	Mean of Logged Detects	-0.174			Op or Loggod		
23								
				. 2 Detected \/	aluee			
24				3 Detected Va		imates		
24 25		Warning: Dat This is not enough to compu				imates.	along the second	
-						imates.	aldring upon mel on	
25		This is not enough to compu	te meaningful	or reliable sta		imates.	admig	
25 26 27		This is not enough to compu	te meaningful		tistics and est	imates. Wilk GOF Test	along, one less on	
25 26 27 28		This is not enough to compu Norma Shapiro Wilk Test Statistic	I GOF Test or	or reliable sta	tistics and est Shapiro	Wilk GOF Test	e Lev	rel
25 26 27 28		This is not enough to compu Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value	I GOF Test or 0.987 0.767	or reliable sta	tistics and est Shapiro		e Lev	rel
25 26 27 28 29 30		Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic	I GOF Test or 0.987 0.767 0.219	or reliable sta	Shapiro Data appear N	Wilk GOF Test ormal at 5% Significand ors GOF Test		
25 26 27 28 29 30 31		Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value	I GOF Test or 0.987 0.767 0.219 0.512	Detected I	Shapiro Data appear N Lilliefo Data appear N	Wilk GOF Test ormal at 5% Significand		
25 26 27 28 29 30 31 32		Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic	I GOF Test or 0.987 0.767 0.219 0.512	Detected I	Shapiro Data appear N Lilliefo Data appear N	Wilk GOF Test ormal at 5% Significand ors GOF Test		
25 26 27 28 29 30 31 32 33		Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Nullilefo	Wilk GOF Test ormal at 5% Significand ors GOF Test ormal at 5% Significand		
25 26 27 28 29 30 31 32 33 34	2 3 4 5 Kap	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Nullilefo	Wilk GOF Test ormal at 5% Significand ors GOF Test ormal at 5% Significand	e Lev	/el
25 26 27 28 29 30 31 32 33 34 35		Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal g Normal Criti	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Nullilefo	Wilk GOF Test ormal at 5% Significanc ors GOF Test ormal at 5% Significanc	e Lev	/el
25 26 27 28 30 31 32 33 34 35 36 37	Kap	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic Shapiro Critical Value Lilliefors Critical Value Detected Data again-Meier (KM) Statistics using Mean SD	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal g Normal Criti 0.546 0.141	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Number Data appear Number Data appear Number Data appear Number Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Mo	ee Leve	/el 0.0353
25 26 27 28 29 30 31 32 33 34 35 37 38	Kap	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal g Normal Criti	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Number Data appear Number Data appear Number Data appear Number Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Managements of Ma	ean JCL JCL	vel 0.0353 N/A
25 26 27 28 29 30 31 32 33 34 35 37 38 38	Kap	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data and an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal G Normal Criti 0.546 0.141 0.606	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Number Data appear Number Data appear Number Data appear Number Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U	ean JCL JCL	0.0353 N/A N/A N/A N/A
25 26 27 28 29 30 31 32 33 34 35 36 37 38 40	Kap	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal G Normal Criti 0.546 0.141 0.606 0.604	Detected In Inc. 18 Significant Sw. Significant Inc. 18 Significant Inc. 18 Detected In Inc. 18 Significant Inc. 18 Detected Inc. 18 Detec	Shapiro Shapiro Data appear Number Data appear Number Data appear Number Data appear Number Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Management of Manag	ean JCL JCL JCL	0.0353 N/A N/A N/A N/A
25 26 27 28 29 30 31 32 33 34 35 36 37 40 40	Kap 6 7 8 9 10 11	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data and an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal G Normal Criti 0.546 0.141 0.606 0.604 0.6052	Detected In Inc. 2015 In	Shapiro Shapiro Data appear Number Data appear Number Data appear Number Data appear Number Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U	ean JCL JCL JCL	0.0353 N/A N/A N/A
255 266 227 228 330 331 332 333 333 333 344 444 444	Kap 5 7 8 9 10 11 12	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767	Detected I Detected I Detected I Signification	Shapiro Shapiro Data appear Nance Level	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U	ean JCL JCL JCL	0.0353 N/A N/A N/A N/A
25 26 27 22 33 33 33 33 33 33 33 34 44 44 44 44	Kap 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 10 11 12 13	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL Gamma GOF	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767	Detected I Detected I Detected I Signification	Shapiro Shapiro Data appear Nulliliefo	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U	ean JCL JCL JCL	0.0353 N/A N/A N/A N/A
25 26 26 22 22 33 33 33 33 33 33 33 44 44 44 44 44 44	Kap 6	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL Gamma GOF	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767	Detected I Detected I Detected I At 5% Signification of the properties of the pro	Shapiro Shapiro Data appear Nulliliefo	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U	ean JCL JCL JCL	0.0353 N/A N/A N/A N/A
25 26 26 27 28 30 31 31 31 33 33 34 44 44 44 44 44 44	Kap 6 7 8 9 10 11 12 13 4 5 14 5 15 16 17 18 19 10 10 10 10 10 10 10 10 10	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic Shapiro Critical Value Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL Gamma GOF Not Eno	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti	Detected I Detected I Detected I At 5% Signification of the properties of the pro	Shapiro Shapiro Data appear Nucle Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Mr. 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U	ean JCL JCL JCL JCL	0.0353 N/A N/A N/A 0.7 0.897
25 26 27 22 28 33 33 33 33 33 33 34 44 44 44 44 44 44	Kap 5 6 7 8 9 10 11 22 33 44 55 66	Norma Shapiro Wilk Test Statistic Shapiro Wilk Critical Value Lilliefors Test Statistic Shapiro Critical Value Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL Gamma GOF Not Eno	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal G Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Dete	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nance Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U 99% KM Chebyshev U	ean JCL JCL JCL JCL JCL	0.0353 N/A N/A N/A 0.7 0.897
25 26 26 22 29 29 33 33 33 33 33 40 44 44 44 44 44 44 44	Kap 5 7 8 9 10 11 12 13 4 5 6 7 7 7 8 9 10 11 10 10 10 10 10 10 10	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Determine Data to F	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nance Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) Le (Percentile Bootstrap) Le 95% KM Bootstrap t Le 95% KM Chebyshev Le 99% KM Chebyshev Le 000	ee Levelee Lev	0.0353 N/A N/A N/A 0.7 0.897
25 27 28 33 33 33 33 33 33 33 44 44 44 44 44 44	Kap 6 7 8 9 10 11 12 13 4 5 6 7 8	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ag an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Dete pugh Data to F	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nance Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Mr. 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U 99% KM Chebyshev U 99% KM Chebyshev U 100 Significance 101 Significance 102 Significance 103 Significance 103 Significance 104 Significance 105 Significa	ean JCL	0.0353 N/A N/A N/A 0.7 0.897 N/A N/A
56 27 28 33 33 33 33 33 33 44 44 44 44 44 44 44	Kap 6	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Detection Dete	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nance Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) Le (Percentile Bootstrap) Le 95% KM Bootstrap t Le 95% KM Chebyshev Le 99% KM Chebyshev Le 000	ean JCL	0.0353 N/A N/A N/A 0.7 0.897
25 29 29 30 31 33 33 33 33 34 4 4 4 4 4 4 4 4 4 4 4	Kap Kap Kap Kap Kap Kap Kap Kap	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Detection Dete	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nance Level dother Nonparion 95% KM	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Mr. 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U 99% KM Chebyshev U 99% KM Chebyshev U 100 Significance 101 Significance 102 Significance 103 Significance 103 Significance 104 Significance 105 Significa	ean JCL	0.0353 N/A N/A N/A 0.7 0.897 N/A N/A
256 277 228 330 331 333 333 333 44 44 44 44 44 44 45 5	Kap S Kap S Kap S S S S S S S S S S S S S	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) MLE Mean (bias corrected)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.652 0.767 Tests on Dete pugh Data to F Statistics on E 16.55 0.0524 99.27 N/A	Detected I Detected I Detected I Significant Cal Values and Cerform GOF To	Shapiro Shapiro Data appear Nuclilliefo Data appear Nucle Level d other Nonparions Only est Only	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U 99% KM Chebyshev U 99% KM Chebyshev U Mata star (bias corrected Meastar (bias	ean JCL	0.0353 N/A N/A N/A 0.7 0.897 N/A N/A N/A
25 226 227 33 33 33 33 33 33 33 33 44 44 44 44 44	Kap Kap Kap Kap Kap Kap Kap Kap	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) MLE Mean (bias corrected)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Determine Dete	Detected I Detected I Detected I At 5% Signification Cal Values and Cal Value	Shapiro Shapiro Data appear Nance Level dother Nonparions Only est Only Their	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) Le (Percentile Bootstrap) Le 95% KM Bootstrap t Le 95% KM Chebyshev Le 95% KM Chebyshev Le 95% KM Chebyshev Le Mata star (bias corrected Meta star (bias corrected Meta Sd (bias corrected Meta S	ean JCL JCL JCL JCL JCL ted)	0.0353 N/A N/A N/A 0.7 0.897 N/A N/A N/A
25 226 227 228 229 33 33 33 33 33 33 34 44 44 44 44 44 44	Kap S Kap S Kap S S S S S S S S S S S S S	Norma Shapiro Wilk Test Statistic % Shapiro Wilk Critical Value Lilliefors Test Statistic 5% Lilliefors Critical Value Detected Data ap an-Meier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 90% KM Chebyshev UCL 97.5% KM Chebyshev UCL Gamma GOF Not Eno Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) MLE Mean (bias corrected)	I GOF Test or 0.987 0.767 0.219 0.512 ppear Normal Criti 0.546 0.141 0.606 0.604 0.652 0.767 Tests on Determine Dete	Detected I Detected I Detected I At 5% Signification Cal Values and Cal Value	Shapiro Shapiro Data appear Nuclilliefo Data appear Nuclilliefo Data appear Nucle Level di other Nonpari 95% KM ions Only est Only Their	Wilk GOF Test ormal at 5% Significance ors GOF Test ormal at 5% Significance rametric UCLs Standard Error of Me 95% KM (BCA) U (Percentile Bootstrap) U 95% KM Bootstrap t U 95% KM Chebyshev U 99% KM Chebyshev U 99% KM Chebyshev U Mata star (bias corrected Meastar (bias	ean JCL JCL JCL JCL JCL ted) (KM) e (β)	0.0353 N/A N/A N/A 0.7 0.897 N/A N/A N/A

	Α	В	С	D	E	F	G	Н		J	K		
56	95% G	amma Appro	oximate KM-	-UCL (use w	hen n>=50)	0.597	95		Adjusted KN		se when n<50		
57										· ·			
58				Log	normal GOI	Test on De	ected Ob	servations (Only				
59	,		Sh	apiro Wilk T	est Statistic	0.963			Shapiro Wil	k GOF T	est		
60			5% Sha	apiro Wilk C	ritical Value	0.767	Detec	ted Data ap	pear Logno	mal at 59	% Significance	e Level	
61				Lilliefors T	est Statistic	0.254				Lilliefors GOF Test			
62			5%	Lilliefors C	ritical Value	0.512	Detec	ted Data ap	pear Lognoi	mal at 59	% Significance	Level	
63				Detect	ted Data app	ear Lognorm	J						
64													
65				Logi	normal ROS	Statistics Us	ing Imput	ed Non-Det	ects				
66				Mean in Ori	ginal Scale	0.252				Mear	n in Log Scale	-1.848	
67				SD in Ori	ginal Scale	0.272) in Log Scale		
68		95% t UCI	_ (assumes	normality of	ROS data)	0.347			0.347				
69			95	% BCA Boo	tstrap UCL	0.368							
70			Ç	95% H-UCL	(Log ROS)	0.438					otstrap t UCL	0.401	
71					-								
72		UCLs	using Logno	ormal Distril	bution and k	M Estimates	when De	tected data	are Lognor	mally Dis	stributed		
73				KM Mea	an (logged)	-0.628					CL (KM -Log)	0.584	
74				KMS	D (logged)	0.194					lue (KM-Log)	1.763	
75		KI	M Standard	Error of Mea	an (logged)	0.0484					(1.111 E0g)	1.700	
76													
77						DL/2 Stati	stics						
78			DL/2 N	ormal		V. Advisor			DL/2 Log-Tr	ansforme	ıd.		
79				Mean in Oriç	ginal Scale	0.327					in Log Scale	-1.235	
80				SD in Orig	ginal Scale	0.221					in Log Scale	0.42	
81			95% t UC	L (Assumes	normality)	0.404					6 H-Stat UCL	0.376	
82			DL/2 is no	ot a recomn	nended met	nod, provided	for comp	arisons and	historical r	easons	o Tr Ottat OOL	0.070	
83													
84				N	onparametri	c Distribution	Free UC	L Statistics					
85						Normal Distril			nce Level				
86													
87					S	uggested UC	L to Use						
88				95% K	(M (t) UCL	0.606		95	% KM (Perc	entile Bo	otstrap) UCL	N/A	
89				Warning	: One or mo	re Recomme	nded UCL			oritio boi	ownap) ool	INA	
90						-							
91	Note: 9	Suggestions	regarding t	he selection	of a 95% U	CL are provid	ed to help	the user to	select the n	nost annr	opriate 95% L	ICI	
92			Reco	mmendation	ns are based	upon data si	ze, data di	istribution a	nd skewnes	s.	- Pridito 30 /8 (JOL.	
93	These	recommen	dations are	based upon	the results	of the simula	ion studie	s summariz	ed in Singh	Maichle	and Lee (200	16)	
94	However	simulation	s results wil	not cover a	all Real Worl	d data sets: f	or addition	al insight th	e user may	want to o	onsult a statis	tiolon	
95						10.		orgine tir	o door may	want to C	orisuit a statis	ucian.	

1	A B C	IICI Statisti	ce for Data Ca	ts with Non-Detects	
_		UCL Statisti	cs for Data Se	IS WITH NON-Detects	
2	User Selected Options	i			
3	Date/Time of Computation	25/10/2016 11:22:33 AN	1		
4	From File	WorkSheet_k.xls			
5 6	Full Precision	OFF			
7	Confidence Coefficient	95%			
8	Number of Bootstrap Operations	2000			
9					
10	Benzo(ghi)perylene				
11					_
12			General Stat	istics	
3	Total N	Number of Observations	24	Number of Distinct Observations	4
4		Number of Detects	3	Number of Non-Detects	21
5	Nui	mber of Distinct Detects	3	Number of Distinct Non-Detects	1
6		Minimum Detect	0.7	Minimum Non-Detect	0.5
7		Maximum Detect	1.3	Maximum Non-Detect	0.5
8		Variance Detects	0.103	Percent Non-Detects	87.5%
9		Mean Detects	0.933	SD Detects	0.321
20		Median Detects	0.8	CV Detects	0.344
21		Skewness Detects	1.545	Kurtosis Detects	N/A
22	N	Mean of Logged Detects	-0.106	SD of Logged Detects	0.326
23					
24		Warning: Da	ta set has only	3 Detected Values.	
25	This	s is not enough to compu	ite meaningful	or reliable statistics and estimates.	
26		38/4			
27					
28		Norma	I GOF Test on	Dotoote Only	
		11011110	1 401 1636011	Detects Only	
29	Sh	apiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test	
-					vel
30		apiro Wilk Test Statistic	0.871	Shapiro Wilk GOF Test	vel
30 31	5% Sha	apiro Wilk Test Statistic	0.871 0.767	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le	
30 31 32	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic 6 Lilliefors Critical Value	0.871 0.767 0.328 0.512	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test	
30 31 32 33	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic 6 Lilliefors Critical Value	0.871 0.767 0.328 0.512	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le	
30 31 32 33 34	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a	0.871 0.767 0.328 0.512 opear Normal a	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le	
30 31 32 33 34	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a	0.871 0.767 0.328 0.512 opear Normal a	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level	vel
30 31 32 33 34 35 36	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using	0.871 0.767 0.328 0.512 opear Normal a	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs	vel
30 31 32 33 34 35 36	5% Sha	papiro Wilk Test Statistic papiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a Dete	0.871 0.767 0.328 0.512 opear Normal a 9 Normal Critic	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean	vel 0.042
30 31 32 33 34 35 36 37	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD	0.871 0.767 0.328 0.512 opear Normal at the control of the con	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL	0.042 N/A
30 31 32 33 34 35 36 37 38	5% Sha	papiro Wilk Test Statistic papiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a Dete	0.871 0.767 0.328 0.512 opear Normal at a second of the control of the contro	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL	0.042 N/A N/A
30 31 32 33 34 35 36 37 38 39	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	0.871 0.767 0.328 0.512 opear Normal at the control of the con	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL	0.042 N/A N/A N/A 0.74
30 31 32 33 34 35 36 37 38 39 40	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data ap eler (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL	0.871 0.767 0.328 0.512 opear Normal and Critical Colors of the Color of the Co	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL	0.042 N/A N/A N/A 0.74
30 31 32 33 34 35 36 37 38 39 40 41	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL GW KM Chebyshev UCL Gamma GOF T	0.871 0.767 0.328 0.512 opear Normal at a second of the control of the contro	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL	0.042 N/A N/A N/A
30 31 32 33 34 35 36 37 38 39 40 41 42	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL GW KM Chebyshev UCL Gamma GOF T	0.871 0.767 0.328 0.512 opear Normal at a second of the control of the contro	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level all Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL	0.042 N/A N/A N/A 0.74
30 31 32 33 34 35 36 37 38 39 40 41 42	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data ap eler (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL GM KM Chebyshev UCL Gamma GOF T Not Enote	0.871 0.767 0.328 0.512 ppear Normal a Normal Critic 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Pe	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL	0.042 N/A N/A N/A 0.74
30 31 32 33 34 35 36 37 38 39 40 41 41 42 43	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a Detect	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Person Detecting	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL	0.042 N/A N/A N/A 0.74
30 31 32 33 34 35 36 37 38 39 40 11 12 13 14	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL Gamma GOF T Not Enough	0.871 0.767 0.328 0.512 ppear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 rests on Detecting Data to Period D	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level all Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only	0.042 N/A N/A 0.74 0.979
30 31 32 33 34 35 36 37 38 39 40 41 41 42 43 44 45 46	5% Sha 5% Kaplan-Me	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a Detect	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Person Detecting	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level all Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test stected Data Only	0.042 N/A N/A N/A 0.74 0.979
30 31 32 33 34 35 36 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL Gamma GOF T Not Enough	0.871 0.767 0.328 0.512 ppear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 rests on Detecting Data to Period D	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level all Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected)	0.042 N/A N/A N/A 0.74 0.979
30 31 32 33 34 35 36 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a Mean SD 95% KM (t) UCL 95% KM (z) UCL DW KM Chebyshev UCL DW KM Chebyshev UCL Gamma GOF T Not Enough	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.624 0.682 0.821 0statistics on Detecting Data to Period Data	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE)	0.042 N/A N/A N/A 0.74 0.979
30 31 32 33 34 35 36 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL 0% KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Period	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected)	0.042 N/A N/A N/A 0.74 0.979 N/A N/A
30 31 32 33 34 35 36 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL CM KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected) Gamma	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Period	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level all Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected)	0.042 N/A N/A N/A 0.979 N/A N/A N/A
30 31 32 33 34 35 36 37 38 39 40 41 41 41 41 41 41 41 41 41 41 41 41 41	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL 0% KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	0.871 0.767 0.328 0.512 0pear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 Tests on Detecting Data to Period	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected) (KM) Statistics	0.042° N/A N/A N/A 0.74 0.979 N/A N/A N/A N/A
29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 47 48 49 50 50 50 50 50 50 50 50 50 50 50 50 50	5% Sha	apiro Wilk Test Statistic apiro Wilk Critical Value Lilliefors Test Statistic Lilliefors Critical Value Detected Data a eier (KM) Statistics using Mean SD 95% KM (t) UCL 95% KM (z) UCL 0% KM Chebyshev UCL CM KM Chebyshev UCL Gamma GOF T Not Enou Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected) Gamma	0.871 0.767 0.328 0.512 ppear Normal at 0.554 0.171 0.627 0.624 0.682 0.821 rests on Detecting Data to Period D	Shapiro Wilk GOF Test Detected Data appear Normal at 5% Significance Le Lilliefors GOF Test Detected Data appear Normal at 5% Significance Le at 5% Significance Level al Values and other Nonparametric UCLs Standard Error of Mean 95% KM (BCA) UCL 95% KM (Percentile Bootstrap) UCL 95% KM Bootstrap t UCL 95% KM Chebyshev UCL 95% KM Chebyshev UCL 99% KM Chebyshev UCL ted Observations Only form GOF Test tected Data Only k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected) (KM) Statistics	0.042' N/A N/A N/A 0.74 0.979 N/A N/A N/A N/A N/A

4	А	В	С	D	E	F	G	Н		J	К	L		
56	95% Gai	mma Appro	ximate KM-	UCL (use v	vhen n>=50)	0.617	95	% Gamma	Adjusted KI	M-UCL (use	when n<50)	0.621		
57														
58				Lo	gnormal GOF	Test on De	tected Obs	servations	Only					
59			Sh	apiro Wilk T	est Statistic	0.903			Shapiro Wi	ilk GOF Te	st			
60			5% Sha	apiro Wilk C	critical Value	0.767	Detec	cted Data a	opear Logno	rmal at 5%	Significance	Level		
61				Lilliefors 7	est Statistic	0.307			Lilliefors	GOF Test				
62			5%	Lilliefors C	ritical Value	0.512	Detec	cted Data a	opear Logno	ormal at 5%	Significance Level			
63				Detec	ted Data app	ear Lognor	nal at 5% S	Significance	e Level					
64							United Instanted Mary Debugge							
65				Log	normal ROS	Statistics U	sing Imput	ed Non-De	tects					
66				Mean in O	riginal Scale	0.253				Mean	in Log Scale	-1.925		
67				SD in O	riginal Scale	0.301				SD	1.082			
68		95% t UC	L (assumes	normality of	f ROS data)	0.358			95% P	ercentile Bo	ootstrap UCL	0.359		
69			9	5% BCA Bo	otstrap UCL	0.388				95% Boo	0.435			
70				95% H-UCI	(Log ROS)	0.477			95% Bootstrap t UCL					
71														
72		UCLs	using Logn	ormal Distr	ibution and I	KM Estimate	s when De	etected dat	a are Logno	ormally Dis	tributed			
73				KM Me	ean (logged)	-0.62				95% H-U	CL (KM -Log)	0.597		
74				KM	SD (logged)	0.216			95% C	ritical H Va	ue (KM-Log)	1.775		
75		K	M Standard	Error of Me	ean (logged)	0.054								
76					'									
77						DL/2 Sta	atistics							
78			DL/2 I	Vormal					DL/2 Log-1	Transforme	d			
79				Mean in O	riginal Scale	0.335				Mean	in Log Scale	-1.226		
80				SD in O	riginal Scale	0.25				SD	in Log Scale	0.443		
81			95% t U	CL (Assume	es normality)	0.423				95%	H-Stat UCL	0.387		
82			DL/2 is	not a recon	nmended me	thod, provid	ed for com	parisons a	nd historica	reasons				
83														
84					Nonparamet	ric Distributi	on Free U	CL Statistic	s					
85				Detected	Data appear	Normal Dist	tributed at	5% Signific	ance Level					
86														
87						Suggested U	JCL to Use	•						
88				95%	KM (t) UCL	0.627			95% KM (Pe	ercentile Bo	otstrap) UCL	N/A		
89				Warni	ng: One or m	ore Recomm	nended UC	CL(s) not av	/ailable!					
90						fearl Livellium		make year	The state of the s					
91	Note:	Suggestion	ns regarding	the selecti	on of a 95%	UCL are pro	vided to he	p the user	to select the	e most app	opriate 95%	JCL.		
92			Re	commendat	tions are base	ed upon data	size, data	distribution	, and s kewn	ess.				
93	Thes	e recomme	endations a	re based up	on the result	s of the simu	lation stud	ies <mark>summa</mark>	rized in Sing	gh, Maichle	, and Lee (20	06).		
94	Howeve	r, simulatio	ns results v	vill not cove	er all Real Wo	orld data sets	; for addition	onal insight	the user ma	ay want to	consult a stati	stician.		
95														

12	А	В	С	D	E UCL Statisti	F cs for Data S	G Coto with N	H Ion Datasta		J	К	L
1					OCL Statisti	CS IOI Data S	ets with i	ion-Detects				
3		User Selec	cted Options									
4	Date	/Time of Co			11:30:29 AN	1						
5			From File	WorkSheet	_l.xls							
6		Ful	l Precision	OFF								
7	С	onfidence (Coefficient	95%								
8	Number of	Bootstrap (Operations	2000								
9												
10	Benzo(k)flu	oranthene										
11												
12						General St	atistics					
13			Total N	Number of O		24				of Distinct O		3
14			NI.	Numbe mber of Dist	r of Detects	3				Number of N of Distinct N		21
15			Nu		mum Detect	0.8			Number		Non-Detect	0.5
16					num Detect	1.1					Non-Detect	0.5
17					nce Detects	0.03					Inon-Detects	87.5%
18					ean Detects	0.03					SD Detects	0.173
19					lian Detects	0.8		make the control of the state o			CV Detects	0.173
20 21					ess Detects	1.732					sis Detects	N/A
22				Mean of Log		-0.117					ged Detects	0.184
23												
24					Warning: Da	ta set has on	ly 3 Detec	ted Values.				
25			This	s is not enou	igh to compu	ite meaningf	ul or reliat	ole statistics	and estim	ates.		
26									The state of the s			
27												
28						I GOF Test o	n Detects					
29				apiro Wilk T		0.75				lk GOF Test		
30			5% Sha	apiro Wilk C		0.767	De	etected Data			ificance Lev	el
31					est Statistic	0.385				GOF Test		
32			5%	6 Lilliefors C		0.512					gnificance Le	∍vel
33				Detected D	ata appear A	Approximate	Normai at	5% Signific	ance Leve			
34			Kanlan-Me	eier (KM) St	atistics usinc	Normal Crit	ical Value	e and other	Nonnaran	netric LICLs		
35			Napian-ivie	Her (INIV) Ou	Mean	0.55	icai vaiue	s and other		Standard Er	ror of Mean	0.0354
36 37					SD	0.141					(BCA) UCL	N/A
38	_			95%	KM (t) UCL	0.611		9	5% KM (Pe	rcentile Boo		N/A
39					KM (z) UCL	0.608				5% KM Boot		N/A
40			90)% KM Cheb	yshev UCL	0.656				5% KM Cheb		0.704
41				5% KM Cheb		0.771				9% KM Cheb		0.902
42												
43				Ga	mma GOF T	ests on Dete	cted Obse	ervations Or	nly			
44					Not Enou	ugh Data to F	erform G	OF Test				
45										and bound	A record of the section of the secti	
46						tatistics on D	etected D	ata Only				
47					k hat (MLE)	43.15				ar (bias corr		N/A
48					a hat (MLE)	0.0209				ar (bias corre		N/A
49					u hat (MLE)	258.9				nu star (bias		N/A
50			MLE	E Mean (bias	s corrected)	N/A			ì	MLE Sd (bias	corrected)	N/A
51					Commo	Kaplan-Meie	or /KM\ Ot	atistica				
52					k hat (KM)	15.13	i (UNI) og	อแจแบร			nu hat (KM)	726
53					it nat (itivi)	10.15			Adjusted I	ا evel of Signـ		0.0392
54 55		Approx	imate Chi S	guare Value	(726.00, a)	664.5		Adiı		quare Value		660.4
55		, .pp.ox		720.0 10100	(0.00, a)	000		/ tujt	.s.ca om o	qual value	(, 20.00, p)	JJU7

7/	Α	В	С	D	E	F	G	Н		J	K	L			
56	95% Ga	amma Appro	oximate KM	I-UCL (use v	when n>=50)	0.601	95	5% Gamma	Adjusted KI	M-UCL (use	when n<50)	0.605			
57						·									
58				Lo	gnormal GOI	Test on De	etected Ob	servations	Only						
59			Sh	napiro Wilk	Test Statistic	0.75			Shapiro Wi	ilk GOF Tes	st				
60			5% Sh	apiro Wilk (Critical Value	0.767	Det	tected Data	Not Lognorr	mal at 5% S	ignificance Le	evel			
61				Lilliefors	Test Statistic	0.385			Lilliefors	GOF Test					
62			59	% Lilliefors (Critical Value	0.512	Dete	cted Data a	ppear Logno	ormal at 5%	Significance I	Level			
63			[Detected Da	ata appear Ap	oproximate L	ognormal								
64															
65				Lo	gnormal ROS	Statistics U	Ising Impu	ted Non-De	etects						
66				Mean in C	riginal Scale	0.398				Mean	in Log Scale	-1.08			
67				SD in C	Original Scale	0.24				SD in Log Scale					
68		95% t UC	L (assume	s normality	of ROS data)	0.482			95% P	ercentile Bo	ootstrap UCL	0.477			
69			9	35% BCA Bo	ootstrap UCL	0.49				95% Boo	otstrap t UCL	0.51			
70				95% H-UC	L (Log ROS)	0.511									
71															
72		UCLs	using Log	normal Dist	tribution and	KM Estimate	es when D	etected da	ta are Logno	ormally Dist	tributed				
73				KM M	lean (logged)	-0.621				95% H-UC	CL (KM -Log)	0.589			
74				KM	SD (logged)	0.198			95% C	ritical H Val	ue (KM-Log)	1.765			
75		ŀ	KM Standar	d Error of M	lean (logged)	0.0494					and the contract of the contra				
76															
77						DL/2 Sta	atistics								
78			DL/2	Normal					DL/2 Log-	Transforme	d				
79				Mean in C	Original Scale	0.331				Mean	in Log Scale	-1.228			
80				SD in C	Original Scale	0.225				SD	in Log Scale	0.432			
81			95% t L	JCL (Assum	es normality)	0.41				95%	H-Stat UCL	0.383			
82			DL/2 is	not a recor	mmended me	thod, provid	led for com	nparisons a	and historica	reasons					
83															
84					Nonparame	tric Distribut	ion Free U	CL Statistic	cs						
85			Dete	cted Data a	appear Appro	ximate Norn	nal Distribu	uted at 5%	Significance	e Level					
86															
87						Suggested l	UCL to Use	Э							
88				95%	% KM (t) UCL	0.611			95% KM (Pe	ercentile Bo	otstrap) UCL	N/A			
89				Warn	ing: One or n	nore Recomi	mended U	CL(s) not a	vailable!						
90					1										
91	Note	: Suggestio			tion of a 95%						opriate 95%	JCL.			
92							upon data size, data distribution, and skewness.								
93	The	se recomm	endations a	are based u	pon the resul	ts of the sim	ulation stud	dies summa	arized in Sin	gh, Maichle,	, and Lee (20	06).			
94	Howev	er, simulati	ons results	will not cov	er all Real W	orld data set	s; for addit	ional insigh	t the user m	ay want to c	onsult a stati	stician.			
95															

9	A B C	D E	F	G H I J K	L
1		UCL Statistic	s for Data Se	ets with Non-Detects	
2					
3	User Selected Options				
4	Date/Time of Computation	25/10/2016 11:33:34 AM			
5	From File	WorkSheet_m.xls			
6	Full Precision	OFF			
7	Confidence Coefficient	95%			
8	Number of Bootstrap Operations	2000			
9	Ohmanna				
10	Chrysene				
11			General Sta	atistics	
12	Total	Number of Observations	24	Number of Distinct Observations	4
13	Total	Number of Detects	3	Number of Non-Detects	21
14	Nu	mber of Distinct Detects	3	Number of Distinct Non-Detects	1
15		Minimum Detect	0.7	Minimum Non-Detect	0.5
16		Maximum Detect	1.4	Maximum Non-Detect	0.5
17		Variance Detects	0.13	Percent Non-Detects	87.5%
18 19		Mean Detects	1	SD Detects	0.361
20		Median Detects	0.9	CV Detects	0.361
21		Skewness Detects	1.152	Kurtosis Detects	N/A
22		Mean of Logged Detects	-0.0419	SD of Logged Detects	0.351
23					
24		Warning: Dat	ta set has onl	y 3 Detected Values.	
25	Thi			I or reliable statistics and estimates.	
26					
27					
28		Norma	I GOF Test o	n Detects Only	
29	St	napiro Wilk Test Statistic	0.942	Shapiro Wilk GOF Test	
30	5% Sh	apiro Wilk Critical Value	0.767	Detected Data appear Normal at 5% Significance Lev	vel
31		Lilliefors Test Statistic	0.276	Lilliefors GOF Test	
32	59	% Lilliefors Critical Value	0.512	Detected Data appear Normal at 5% Significance Lev	vel
33		Detected Data ap	pear Normal	at 5% Significance Level	
34					
35	Kaplan-M	eier (KM) Statistics using	Normal Criti	cal Values and other Nonparametric UCLs	
36		Mean	0.563	Standard Error of Mean	0.0488
37		SD	0.195	95% KM (BCA) UCL	N/A
38		95% KM (t) UCL	0.646	95% KM (Percentile Bootstrap) UCL	N/A
39		95% KM (z) UCL	0.643	95% KM Bootstrap t UCL	N/A
40		0% KM Chebyshev UCL	0.709	95% KM Chebyshev UCL	0.775
41	97.	5% KM Chebyshev UCL	0.868	99% KM Chebyshev UCL	1.049
42					
43				cted Observations Only	
-			igh Data to P	erform GOF Test	
44		Not Enou	ign Bata to t		
44 45					
		Gamma S	tatistics on D	etected Data Only	
45		Gamma S k hat (MLE)	tatistics on D	k star (bias corrected MLE)	N/A
45 46		Gamma S k hat (MLE) Theta hat (MLE)	tatistics on D 12.11 0.0826	k star (bias corrected MLE) Theta star (bias corrected MLE)	N/A
45 46 47		Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE)	tatistics on D 12.11 0.0826 72.66	k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected)	N/A N/A
45 46 47 48 49 50	ML	Gamma S k hat (MLE) Theta hat (MLE)	tatistics on D 12.11 0.0826	k star (bias corrected MLE) Theta star (bias corrected MLE)	N/A
45 46 47 48 49 50 51	ML	Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	tatistics on D 12.11 0.0826 72.66 N/A	k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected)	N/A N/A
45 46 47 48 49 50 51 52	ML	Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected) Gamma	tatistics on D 12.11 0.0826 72.66 N/A Kaplan-Meie	k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected) r (KM) Statistics	N/A N/A N/A
45 46 47 48 49 50 51 52 53	ML	Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected)	tatistics on D 12.11 0.0826 72.66 N/A	k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected) r (KM) Statistics nu hat (KM)	N/A N/A N/A
45 46 47 48 49 50 51 52		Gamma S k hat (MLE) Theta hat (MLE) nu hat (MLE) E Mean (bias corrected) Gamma	tatistics on D 12.11 0.0826 72.66 N/A Kaplan-Meie	k star (bias corrected MLE) Theta star (bias corrected MLE) nu star (bias corrected) MLE Sd (bias corrected) r (KM) Statistics	N/A N/A N/A

	А	В	С	D	E	F	G	Н		J	K	L
56	95% Ga	amma Appro	oximate KM-	-UCL (use v	when n>=50)	0.635	95	5% Gamma	Adjusted K	M-UCL (use	when n<50)	0.64
57												
58				Lo	gnormal GOF	Test on De	tected Ob	servations	Only			
59			Sh	apiro Wilk	Test Statistic	0.975			Shapiro W	ilk GOF Tes	t	
60			5% Sh	apiro Wilk (Critical Value	0.767	Detec	cted Data a			Significance L	_evel
61				Lilliefors	Test Statistic	0.238			Lilliefors GOF Test ta appear Lognormal at 5% Significance Level			
62			5%		Critical Value	0.512				ormal at 5% S	3ignificance L	_evel
63				Detec	cted Data app	ear Lognorr	nal at 5%	Significanc	e Level			
64												
65					gnormal ROS	Statistics U	sing Imput	ted Non-De	etects			
66					riginal Scale	0.251					n Log Scale	-2.039
67				SD in O	riginal Scale	0.328				SDi	n Log Scale	1.188
68		95% t UC	L (assumes	normality of	of ROS data)	0.366			95% F	Percentile Bo		0.367
69			9	5% BCA Bo	ootstrap UCL	0.399				95% Boot	tstrap t UCL	0.48
70				95% H-UC	L (Log ROS)	0.528						
71												
72		UCLs	using Logr		ribution and I		s when D	etected dat	ta are Logn			
73				KM M	ean (logged)	-0.612					L (KM -Log)	0.61
74				KM	SD (logged)	0.238			95% C	Critical H Valu	ie (KM-Log)	1.788
75		k	(M Standard	d Error of M	ean (logged)	0.0595						
76												
77						DL/2 Sta	atistics					
78			DL/2	Normal					DL/2 Log-	Transformed		
79				Mean in C	Original Scale	0.344					n Log Scale	-1.218
80					Original Scale	0.275				SD i	n Log Scale	0.466
81				`	es normality)	0.44					H-Stat UCL	0.398
82			DL/2 is	not a recor	mmended me	thod, provide	ed for com	parisons a	nd historica	reasons		
83												
84					Nonparamet	ric Distributi	on Free U	CL Statistic	cs			
85				Detected	Data appear	Normal Dist	tributed at	5% Signific	cance Level			
86												
87						Suggested L	JCL to Use					
88					% KM (t) UCL	0.646				ercentile Boo	tstrap) UCL	N/A
89				Warni	ing: One or m	ore Recomm	nended U	CL(s) not a	vailable!			
90												
91	Note	: Suggestion		•	tion of a 95%	1000					priate 95% U	JCL.
92					tions are base							
93					pon the result					Α.		
94	Howev	er, simulation	ons results v	will not cove	er all Real Wo	orld data sets	; for additi	onal insight	t the user m	ay want to co	onsult a statis	stician.
95												

13	A B C	D E	F	G H I J K	L
1		UCL Statistic	s for Data	Sets with Non-Detects	,
2					
3	User Selected Options				
4	Date/Time of Computation	25/10/2016 11:35:54 AM			
5	From File	WorkSheet_n.xls			
6	Full Precision	OFF			
7	Confidence Coefficient	95%			
8	Number of Bootstrap Operations	2000			
9	Fluoranthene				
10	Tuorantilelle				
11			General	Statistics	
12	Total N	Number of Observations	24	Number of Distinct Observations	4
13	Total	Number of Detects	4	Number of Non-Detects	20
14	Nu	mber of Distinct Detects	3	Number of Distinct Non-Detects	1
15	1701	Minimum Detect	1.5	Minimum Non-Detect	0.5
16		Maximum Detect	3.3	Maximum Non-Detect	0.5
17		Variance Detects	0.783	Percent Non-Detects	83.33%
18		Mean Detects	2.225	SD Detects	0.885
19 20		Median Detects	2.05	CV Detects	0.398
21		Skewness Detects	0.513	Kurtosis Detects	-3.114
22		Mean of Logged Detects	0.74	SD of Logged Detects	0.398
23		noun or Logged 2 states			
24		Norma	I GOF Tes	t on Detects Only	
25	Sh	apiro Wilk Test Statistic	0.861	Shapiro Wilk GOF Test	
26		apiro Wilk Critical Value	0.748	Detected Data appear Normal at 5% Significance Le	vel
27		Lilliefors Test Statistic	0.294	Lilliefors GOF Test	
28	5%	6 Lilliefors Critical Value	0.443	Detected Data appear Normal at 5% Significance Le	vel
29		Detected Data ap	pear Norn	nal at 5% Significance Level	
30					
31	Kaplan-Me	eier (KM) Statistics using	Normal C	critical Values and other Nonparametric UCLs	
32		Mean	0.788	Standard Error of Mean	0.169
33		SD	0.715	95% KM (BCA) UCL	N/A
34		95% KM (t) UCL	1.076	95% KM (Percentile Bootstrap) UCL	N/A
35		95% KM (z) UCL	1.065	95% KM Bootstrap t UCL	N/A
36	90	0% KM Chebyshev UCL	1.293	95% KM Chebyshev UCL	1.522
37	97.5	5% KM Chebyshev UCL	1.84	99% KM Chebyshev UCL	2.464
38					
39		Gamma GOF T	ests on De	etected Observations Only	
40		A-D Test Statistic	0.468	Anderson-Darling GOF Test	
41		5% A-D Critical Value	0.658	Detected data appear Gamma Distributed at 5% Significan	ice Level
42		K-S Test Statistic	0.332	Kolmogrov-Smirnoff GOF	
43		5% K-S Critical Value	0.395	Detected data appear Gamma Distributed at 5% Significan	ice Level
44		Detected data appear 0	Gamma Di	stributed at 5% Significance Level	
45					
46				Detected Data Only	
47		k hat (MLE)	8.543	k star (bias corrected MLE)	2.302
48		Theta hat (MLE)	0.26	Theta star (bias corrected MLE)	0.966
49		nu hat (MLE)	68.35	nu star (bias corrected)	18.42
50	ML	E Mean (bias corrected)	2.225	MLE Sd (bias corrected)	1.466
51					
52				eier (KM) Statistics	
53		k hat (KM)	1.213	nu hat (KM)	58.24
54		Square Value (58.24, α)	41.7	Adjusted Chi Square Value (58.24, β)	40.71
55	95% Gamma Approximate KM-	-UCL (use when n>=50)	1.1	95% Gamma Adjusted KM-UCL (use when n<50)	1.127

12	Α	В	С		D	E		F	G	Н			J		K	L
56						٠٠٠٠٠ ٣	000	tatiaties us	in a Immust	ad Nan Da	tasta					
57			CDOS may	u not h					• .	ed Non-De many tied		on of r	nultinlo	DLo		
58			aros may							data is sma			nulupie	DLS		
59			Fo							flated values			TVc			
60		For gamm							•	outed using				KM oc	timatae	
61		r or garrin	na distribu	ieu ue	recteu (Minir		0.01	y be comp	died dsing	yanına uk	Sulbut	ion on i	KIVI GS	Mean	0.42
62 63						Maxir		3.3							Median	
64						Maxii	SD	0.895	-						CV	
65				_		k hat (N		0.283				k star	(hias co	orrecte	ed MLE)	
66					The	eta hat (N		1.487					`		ed MLE)	1.527
67						nu hat (N		13.57					`		rrected)	13.21
68				MLE N		as correc		0.42			_				rrected)	
69					(/				Adiuste				ance (β)	0.0392
70		Appr	roximate C	Chi Sai	uare Val	ue (13.2	1. α)	6.031			Adjusted C					5.692
71	95	% Gamma						0.92			mma Adju			`		N/A
72			4-1		(/						(
73					Lo	ognorma	GOF	Test on D	etected O	bservations	Only					
74				Shap		Test Sta		0.844			Shapiro	Wilk	GOF Te	est		
75						Critical V		0.748	Det	ected Data					ificance	Level
76						Test Sta		0.299	7				F Test			
77						Critical V		0.443	Det	ected Data					ificance	Level
78										Significan		,		- 3		
79							- '									
80					Lo	gnormal	ROS	Statistics (Jsing Imp	uted Non-D	etects					
81				М		Original S		0.671	<u> </u>				Mear	n in Lo	g Scale	-0.99
82						Original S		0.817				-				
83		95% t U	CL (assun	nes no		_		0.957			SD in Log Scale 95% Percentile Bootstrap UCL					
84						ootstrap		1.019							p t UCL	1.156
85						L (Log F		1.335								
86																
87		UCL	s using Lo	ognori	mal Dist	tribution	and I	KM Estimat	es when	Detected da	ata are Lo	gnorm	ally Di	stribut	ted	
88					KM M	lean (log	ged)	-0.454				9	5% H-U	CL (K	M -Log)	0.934
89					KM	SD (log	ged)	0.552			95%	Critic	al H Va	alue (k	(M-Log)	2.028
90			KM Stand	dard E	rror of M	lean (log	ged)	0.13	_							
91																
92								DL/2 St	atistics							
93			DL	/2 No	rmal						DL/2 Lo	g-Tra	nsform	ed		
94				M	ean in C	Original S	Scale	0.579					Mear	n in Lo	g Scale	-1.032
95					SD in C	Original S	cale	0.817					SE) in Lo	g Scale	0.822
96			95%	t UCL	(Assum	es norm	ality)	0.865					95	% H-S	tat UCL	0.743
97			DL/2	is not	t a reco	mmende	d me	thod, provid	ded for co	mparisons	and histori	ical re	asons			
98																
99						Nonpai	ramet	ric Distribu	tion Free	UCL Statist	ics					
100				C	etected	Data ap	pear	Normal Dis	stributed a	ıt 5% Signif	icance Lev	/el				
101																
102								Suggested	UCL to U	se						
103					959	% KM (t)	UCL	1.076			95% KM	Perce	entile Bo	ootstra	p) UCL	N/A
104					Warn	ing: One	or m	ore Recom	mended (JCL(s) not a	available!					
105										PD de atamada	and a contract of the contract					
106	Note	e: Suggesti	ons regard	ding th	e selec	tion of a	95%	UCL are pro	ovided to	nelp the use	r to select	the m	ost app	oropria	ite 95%	UCL.
107				Recor	nmenda	ations are	e base	ed upon dat	a size, da	ta distributio	n, and ske	wness	S			
108	Th	ese recomr	mendation	s are	based u	pon the	result	s of the sim	ulation st	udies summ	arized in S	Singh,	Maichle	e, and	Lee (20	006).
	Howe	ver, simula	tions resul	lts will	not cov	er all Re	al Wo	orld data set	s; for add	itional insigl	nt the user	may v	want to	consu	ılt a stat	istician.
109												_				

	Δ Β Ο	D				1 12		
1	A B C	D E UCL Stat	F tistics for Data	G a Sets with Non-I	H I Detects	J K		
2								
3	User Selected Options							
4	Date/Time of Computation	25/10/2016 11:40:10	AM					
5	From File	WorkSheet_o.xls						
6	Full Precision	OFF						
7	Confidence Coefficient	95%						
8	Number of Bootstrap Operations	2000						
9	Dharaidh							
10	Phenanthrene							
11			General	Statistics				
12	Total N	Number of Observation		Statistics	Numbe	er of Distinct Observati	ons	5
13	Total	Number of Detec			Numbe	Number of Non-Dete		20
14 15	Nur	mber of Distinct Detec			Numb	er of Distinct Non-Dete		1
16	114	Minimum Dete			1101115	Minimum Non-De		0.5
17		Maximum Dete				Maximum Non-De		0.5
18		Variance Detec	ts 0.0625			Percent Non-Dete	ects	83.33%
19		Mean Detec	ts 1.075			SD Dete	ects	0.25
20		Median Detec	ts 1.05			CV Dete	ects	0.233
21		Skewness Detec	ets 0.56			Kurtosis Dete	ects	0.928
22	N	lean of Logged Detec	ts 0.0522			SD of Logged Dete	ects	0.232
23					v sericlebus Prince* Inc.) Procedule.			
24		Nor	mal GOF Tes	st on Detects Onl	ly			
25		apiro Wilk Test Statis			-	Vilk GOF Test		
26	5% Sha	apiro Wilk Critical Valu		Detected		ormal at 5% Significan	ce Le	vel
27		Lilliefors Test Statist				s GOF Test		
28	5%	Lilliefors Critical Value				ormal at 5% Significant	e Le	vel
29		Detected Data	a appear Norr	mal at 5% Signific	cance Level			
30	Kanlan-Me	ier (KM) Statistics us	sing Normal (Pritical Values an	nd other Nonnar	motrio IICI s		
31	Napian-we	Mea		onucai values ai	id Offier Noripara	Standard Error of M	oan	0.0546
32			D 0.232			95% KM (BCA) L		N/A
34		95% KM (t) UC			95% KM (F	Percentile Bootstrap) (N/A
35		95% KM (z) UC			,	95% KM Bootstrap t U		N/A
36	90	% KM Chebyshev UC				95% KM Chebyshev U		0.834
37	97.5	% KM Chebyshev UC	CL 0.937	İ		99% KM Chebyshev L	JCL	1.139
38								
39		Gamma GO	F Tests on De	etected Observat	tions Only			
40		A-D Test Statist			Anderson-D	arling GOF Test		
41		5% A-D Critical Valu	ue 0.657	Detected data	appear Gamma I	Distributed at 5% Sign	ifican	ice Level
42		K-S Test Statist				-Smirnoff GOF		
43		5% K-S Critical Valu				Distributed at 5% Sign	ifican	ce Level
44		Detected data appear	ar Gamma Di	stributed at 5% S	Significance Leve	el		
45		0	- Otalialiaa	- D-11-1 D-1-	0-1			
46	Missian concentration and make a property of the control of the co			n Detected Data		otor (bigg corrected M	L [] "	C 400
47		k hat (MLE Theta hat (MLE				star (bias corrected M star (bias corrected M		6.408 0.168
48		nu hat (MLE			rneta	nu star (bias corrected M		51.27
49 50	MI F	Mean (bias corrected				MLE Sd (bias correct		0.425
51	MILL	(Side obirodict	-, 1.070			Sa (Sido don edi	24)	J.720
52		Gam	ma Kaplan-M	eier (KM) Statisti	ics			
53		k hat (KN	2			nu hat (ł	(M)	317.1
54	Approximate Chi So	quare Value (317.14, o	a) 276.9		Adjusted Chi	Square Value (317.14	1	274.2
	95% Gamma Approximate KM-			95% G				

4	A B C D E	F	G	Н		J	K	L
56	Gamma ROS S	tatietice ueir	na Imputed	Non-Dete	ects			
57	GROS may not be used when data set					at multiple DLs		
58	GROS may not be used with			-				
59	For such situations, GROS met							
60	For gamma distributed detected data, BTVs and						stimates	
61	Minimum	0.01	Do compar	24 40g g			Mean	0.29
62	Maximum	1.4					Median	0.0363
63	SD	0.409					CV	1.41
64	k hat (MLE)	0.431			k	star (bias correct	ted MLE)	0.405
65	Theta hat (MLE)	0.673				star (bias correct		0.716
66	nu hat (MLE)	20.69				nu star (bias c		19.44
	MLE Mean (bias corrected)	0.29				MLE Sd (bias co		0.456
68	, <u></u>				Adjusted	d Level of Signific		0.0392
69	Approximate Chi Square Value (19.44, α)	10.44		A		ni Square Value (9.975
70	95% Gamma Approximate UCL (use when n>=50)	0.54			•	ted UCL (use wh		N/A
71	35% Gamma Approximate GGE (dae when its 200)	0.01		0070 Gan	iii a rajao			
72	Lognormal GOF	Test on De	tected Ohs	ervations	Only			
73	Shapiro Wilk Test Statistic	0.995	locica Obs	Civations		Vilk GOF Test		
74	5% Shapiro Wilk Critical Value	0.748	Detec	ted Data a		normal at 5% Sig	nificance	l evel
75	Lilliefors Test Statistic	0.176	Doloo	.cu Data u		s GOF Test	11110011001	2070.
76	5% Lilliefors Critical Value	0.443	Detec	ted Data a		normal at 5% Sig	nificance	l evel
77	Detected Data app					iomarato 70 oig	miodrico	20101
78	Detected Data app	cui Logiloii	nui ut o /o C	igililouilo	CLOVO			
79	Lognormal ROS	Statistics II	sina Impute	ed Non-De	tects			
80	Mean in Original Scale	0.464	onig imput	34 TYON 150	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Mean in L	og Scale	-0.988
81	SD in Original Scale	0.329					og Scale	0.679
82	95% t UCL (assumes normality of ROS data)	0.579			95%	Percentile Boots	-	0.578
83	95% BCA Bootstrap UCL	0.6			0070	95% Bootstr		0.62
84	95% H-UCL (Log ROS)	0.636				0070 20000	GP 1 0 0 0	-
85	30% TF OOL (139 TOO)	0.000						
86	UCLs using Lognormal Distribution and h	(M Estimate	s when De	etected dat	ta are Log	normally Distrib	uted	
87	KM Mean (logged)	-0.569				95% H-UCL (0.659
88	KM SD (logged)	0.29			95%	Critical H Value		1.82
89	KM Standard Error of Mean (logged)	0.0683					. 0/	
90	Num Clandard Error of Modali (loggest)	0.0000						
91 92		DL/2 Sta	atistics					
-	DL/2 Normal				DL/2 Log	-Transformed		
93 94	Mean in Original Scale	0.388				Mean in L	og Scale	-1.147
	SD in Original Scale	0.327					_og Scale	0.554
95	95% t UCL (Assumes normality)	0.502					-Stat UCL	
96	DL/2 is not a recommended me		ed for com	parisons a	nd historic	cal reasons		
97 98								
	Nonparamet	ric Distributi	on Free UC	CL Statistic	cs			
99	Detected Data appear					el		
100		-3-40			- Contraction			
101		Suggested U	ICL to Use					
102	95% KM (t) UCL	0.689	000		95% KM (Percentile Bootst	rap) UCL	N/A
103	Warning: One or m		nended UC		,	-1		
			enteres (Tester Variation		1			
105	Note: Suggestions regarding the selection of a 95%	UCL are pro	vided to he	lp the user	to select t	the most appropr	iate 95%	UCL.
106	Recommendations are base					VOV		
107	These recommendations are based upon the result	•					id Lee (20	06).
108	However, simulations results will not cover all Real Wo							
109	Tionover, simulations results will not cover all freat we	, ia adia solo	o, ior additio	, moigh	- 0.0 GOOT		2.1 4 51011	
110								

T.	Α	В	С	D	Е	F	G	Н		J	К	L
1					UCL Statist	ics for Data	Sets with N	ion-Detects				
2												
3	<u> </u>		cted Options									
4	Date	e/Time of Co			6 11:42:38 AN	VI						
5		E. II	From File I Precision	WorkShee OFF	et_p.xis							
6		Confidence (95%								
7		Bootstrap (2000								
8	Trumber of	Dooisaap	Sperations	2000								
10	Pyrene											
11												
12						General S	Statistics					
13			Total	Number of 0	Observations	24			Number	r of Distinct	Observations	5
14				Numb	er of Detects	4				Number of	Non-Detects	20
15	1		Nu	mber of Dis	tinct Detects	4			Numbe	er of Distinct	Non-Detects	1
16				Min	imum Detect	1.3				Minimun	n Non-Detect	0.5
17				Max	imum Detect	2.7				Maximun	n Non-Detect	0.5
18				Varia	ance Detects	0.433				Percent	Non-Detects	83.33%
19				M	lean Detects	2					SD Detects	0.658
20				Me	dian Detects	2					CV Detects	0.329
21				Skewi	ness Detects	7.784E-16					tosis Detects	
22				Mean of Log	gged Detects	0.65				SD of Lo	gged Detects	0.342
23												
24						al GOF Test	on Detects					
25					Test Statistic	0.924				/ilk GOF Te		
26			5% Sh	·	Critical Value	0.748	Det	ected Data			Significance L	.evel
27					Test Statistic	0.228	D	D - t -		s GOF Test	N	1
28			57		Critical Value	0.443				rmai at 5% s	Significance L	.evei
29	<u> </u>			De	tected Data a	рреаг могт	ai at 5% Si	grinicance	Level			
30			Kanlan M	oior (KM) S	tatistics usin	a Normal Ci	ritical Value	ae and othe	r Nonnara	metric LICI	•	
31			rapian-w	elei (INVI) O	Mean	0.75	nucai vaiut	ss and oute	ritoripara		Error of Mean	0.143
32					SD	0.606					M (BCA) UCL	
33				95%	6 KM (t) UCL	0.995		9	95% KM (P		otstrap) UCL	
35					KM (z) UCL	0.985			`		otstrap t UCL	
36			9		byshev UCL	1.178					ebyshev UCL	
37			97.	5% KM Che	byshev UCL	1.641			ę	99% KM Che	ebyshev UCL	2.17
38												
39				G	amma GOF	Tests on De	tected Obs	ervations C	nly			
40				A-D	Test Statistic	0.33		Ar	nderson-Da	arling GOF	Test	
41				5% A-D (Critical Value	0.657	Detected	data appea	r Gamma [Distributed a	t 5% Significa	ance Level
42				K-S	Test Statistic	0.271		ŀ	Kolmogrov	-Smirnoff G	OF	
43				5% K-S (Critical Value	0.395	Detected	data appea	r Gamma [Distributed a	t 5% Significa	ance Level
44				Detected	data appear	Gamma Dis	tributed at	5% Signific	ance Leve	el		
45			110									
46						Statistics on	Detected [Data Only				
47					k hat (MLE)	11.83				·	rrected MLE)	
48					eta hat (MLE)	0.169			Theta		rrected MLE)	
49					nu hat (MLE)	94.61					as corrected)	
50			ML	.E Mean (bia	as corrected)	2				MLE Sd (bi	as corrected)	1.132
51					<u>^</u>	Macie **	1 (1/14) (2)	tatiati				
52						Kaplan-Me	er (KM) S	atistics			nu hat /1/84\	70.04
53		۸	nvimata Oli	Causes V.	k hat (KM)	1.534		^	divisted Of	i Caucas V-	nu hat (KM)	
54	OE9/ O				ue (73.64, α) when n>=50)	54.87 1.006	OF				lue (73.64, β) e when n<50)	
55	95% G	апша Аррг	oximate KM	-oct (use)	wileli II/=5U)	0.00	95	70 Gaiillia	Aujusteu M	(use	windii ii<50)	1.028

56	АВ	С	D	E	F	G	Н		J	К	L
57			G	amma ROS S	Statistics us	ing Impute	ed Non-Det	ects			
58		GROS may not							s at multiple [OLs	
59				not be used w							
60				ns, GROS me		100000000000000000000000000000000000000					
61	For gamn	na distributed o								M estimates	
62				Minimum	0.01		0.0			Mean	0.421
63				Maximum	2.7					Median	0.01
64				SD	0.786			-		CV	1.866
65				k hat (MLE)	0.307			k	star (bias cor	rected MLE)	0.296
66			The	ta hat (MLE)	1.374			Theta	star (bias cor	rected MLE)	1.423
67				nu hat (MLE)	14.72				nu star (bia	s corrected)	14.21
68		MLE	Mean (bia	as corrected)	0.421				MLE Sd (bia	s corrected)	0.774
69								Adjusted	d Level of Sig	nificance (β)	0.0392
70	Appı	roximate Chi S	quare Val	ue (14.21, α)	6.715		A	Adjusted Ch	ni Square Val	ue (14.21, β)	6.354
71	95% Gamma	Approximate U	JCL (use v	when n>=50)	0.892		95% Gar	nma Adjust	ted UCL (use	when n<50)	N/A
72											
73			Lo	gnormal GOI	F Test on De	etected Ol	servations	Only			
74		Sha	piro Wilk	Test Statistic	0.926			Shapiro V	Vilk GOF Tes	st	
75				Critical Value	0.748	Dete	ected Data a		normal at 5%		Level
76				Test Statistic	0.245				s GOF Test		
77		5%	Lilliefors C	Critical Value	0.443	Dete	ected Data a	ppear Logr	normal at 5%	Significance	Level
78			Detec	cted Data ap	pear Lognon						
79					<u> </u>						
80	A. 1904 (1900)		Loc	gnormal ROS	Statistics U	Jsing Impi	uted Non-De	etects			
81				riginal Scale	0.674				Mean	in Log Scale	-0.836
82				riginal Scale	0.696					in Log Scale	0.971
83	95% t U	CL (assumes r		_	0.917			95%	Percentile Bo		0.913
84	Y - Nadilly conductor to all information			ootstrap UCL	0.976					tstrap t UCL	1.047
85				L (Log ROS)	1.152						
86											
87	UCL	s using Logno	ormal Dist	ribution and	KM Estimate	es when [Detected da	ta are Logi	normally Dis	tributed	
88				ean (logged)	-0.469					CL (KM -Log)	0.885
89	MANUFACTURE OF THE ST			SD (logged)				95%	Critical H Val	ue (KM-Log)	1.993
90		KM Standard								, ,	
91											-
92					DL/2 St	atistics					
93		DL/2 N	ormal					DL/2 Log	-Transforme	d	
94	-		Mean in C	riginal Scale	0.542					in Log Scale	-1.047
95	THE THE FIRST ATTRICATE TO STAY MAKE A SIGN AND A SIGN ASSESSMENT OF THE STAY			riginal Scale						in Log Scale	0.785
96		95% t UC		es normality)						H-Stat UCL	0.693
97				nmended me		led for cor	mparisons a	nd historic	cal reasons		
98				The state of the s	7.000				Control Philips		
99		***************************************		Nonparame	tric Distribut	ion Free l	JCL Statistic	cs			
100			Detected	Data appear					el		
100					-5.4.507	and control of					
101					Suggested I	UCL to Us	e				
101			959	6 KM (t) UCL				95% KM (F	Percentile Boo	otstrap) UCL	N/A
102				ing: One or m		mended U					
102 103				_	4	THE PERSON NAMED IN			1		
102 103 104			= =					THE STATE OF THE S			
102 103 104 105	Note: Suggesti	ons regarding	W	ion of a 95%	UCL are pro	vided to h	elp the user	to select t	he most appr	opriate 95%	UCL.
102 103 104 105 106	Note: Suggesti		the select						7.9.	opriate 95%	UCL.
102 103 104 105 106 107	2.50	Rec	the select ommenda	tions are bas	ed upon data	a size, data	a distributior	n, and skew	ness.		
102 103 104 105 106	2.50	Rec mendations are	the select ommenda e based u	tions are bas	ed upon data	a size, data ulation stu	a distributior idies su mm a	n, and skew arized in Si	vness. ngh, Maichle,	and Lee (20	06).

19	Detects Detects	4
3 User Selected Options 4 Date/Time of Computation 25/10/2016 11:49;14 AM 5 From File WorkSheet_q.xls 6 Full Precision OFF 7 Confidence Coefficient 95% 8 Number of Bootstrap Operations 2000 9 10 TRHC10-C16 11	Detects Detects	4
Date/Time of Computation From File From File Full Precision Full P	Detects Detects	4
From File WorkSheet_q.xls Full Precision OFF Confidence Coefficient 95% Number of Bootstrap Operations 2000 TRHC10-C16 Total Number of Observations 24 Number of Distinct Observations 14 Number of Detects 3 Number of Number of Number of Distinct Detects 3 Number of Distinct Non-life Minimum Detect 60 Minimum Non-life Maximum Detect 110 Maximum Non-life Maximum Detect 628 Percent Non-life Mean Detects 84 SD Median Detects 82 CV Median Detects 9.357 Kurtosis 10.357 Kurtosis	Detects Detects	4
Full Precision OFF Confidence Coefficient 95% Number of Bootstrap Operations 2000 TRHC10-C16 TRHC10-C16 TRHC10-C16 Seneral Statistics General Statistics Total Number of Detects 3 Number of Non-lost Number of Distinct Detects 3 Number of Distinct Non-lost Number of Distinct Detects 3 Number of Distinct Non-lost Minimum Detect 60 Minimum Non-lost Minimum Detect 110 Maximum Non-lost Number of Distinct Non-lost Number of N	Detects Detects	4
7 Confidence Coefficient 8 Number of Bootstrap Operations 2000 9 10 TRHC10-C16 11 12 General Statistics 13 Total Number of Observations 24 Number of Distinct Obser 14 Number of Detects 3 Number of Non-15 Number of Distinct Detects 3 Number of Distinct Non-16 Minimum Detect 60 Minimum Non-17 Maximum Detect 110 Maximum Non-18 Variance Detects 628 Percent Non-19 Mean Detects 84 SD Median Detects 82 CV Median Detects 9.357 Kurtosis 19.357 Kurtosi	Detects Detects	4
Number of Bootstrap Operations 2000 TRHC10-C16 TRHC10-C16 Total Number of Observations 24 Number of Distinct Observations Number of Detects 3 Number of Non-Institute Number of Distinct Detects 3 Number of Distinct Non-Institute Number of Distinct Detects 3 Number of Distinct Non-Institute Number of Distinct Detects 4 Number of Distinct Non-Institute Number of Distinct Detects 5 Number of Distinct Non-Institute Number of Distinct Detects 6 Number of Distinct Non-Institute Number of Distinct Number of Distinct Number of Distinct Number of Distinct Number of Distinct Number of Distinct N	Detects Detects	4
9 10 TRHC10-C16 11 12 General Statistics 13 Total Number of Observations 24 Number of Distinct Obser 14 Number of Detects 3 Number of Distinct Non-l 15 Number of Distinct Detects 3 Number of Distinct Non-l 16 Minimum Detect 60 Minimum Non-l 17 Maximum Detect 110 Maximum Non-l 18 Variance Detects 628 Percent Non-l 19 Mean Detects 84 SD Distinct Non-l 20 Median Detects 82 CVV 21 Skewness Detects 0.357 Kurtosis 1 22 Mean of Logged Detects 4.401 SD of Logged 1 23 Warning: Data set has only 3 Detected Values. 25 This is not enough to compute meaningful or reliable statistics and estimates.	Detects Detects	4
TRHC10-C16 TRHC10-C16 General Statistics General Statistics Total Number of Observations 24 Number of Distinct Observations 24 Number of Distinct Observations 24 Number of Distinct Observations 3 Number of Non-15 Number of Distinct Detects 3 Number of Distinct Non-16 Minimum Detect 60 Minimum Non Maximum Detect 110 Maximum Non 17 Maximum Detect 110 Maximum Non 18 Variance Detects 628 Percent Non-19 Mean Detects 84 SD Mean Detects 84 SD Mean Observation Skewness Detects 0.357 Kurtosis 122 Mean of Logged Detects 4.401 SD of Logged 123 Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects Detects	4
General Statistics Total Number of Observations 24 Number of Distinct Obser Number of Detects 3 Number of Distinct Non- Number of Distinct Detects 3 Number of Distinct Non- Number of Distinct Detects 3 Number of Distinct Non- Minimum Detect 60 Minimum Non- Maximum Detect 110 Maximum Non- Number of Distinct Non- Maximum Non- Number of Distinct Non- Maximum Non- Number of Distinct Non- Number of Distinct Non- Number of Distinct Non- Number of Distinct Non- Number of Distinct Non- Number of Non- Number of Non- Number of Non- Number of Distinct Obser Number of Non- Number of Distinct Obser Number of Non- Number of Number of Number of Number of Non- Number of N	Detects Detects	4
Total Number of Observations 24 Number of Distinct Obser Number of Detects 3 Number of Non-I Number of Distinct Detects 3 Number of Distinct Non-I Number of Distinct Detects 3 Number of Distinct Non-I Maximum Detect 60 Minimum Non-I Maximum Detect 110 Maximum Non-I Number of Distinct Non-I Maximum Detect 110 Maximum Non-I Maximum Non-I Mean Detects 628 Percent Non-I Mean Detects 84 SD I Median Detects 82 CV I Median Detects 82 CV I Median Detects 0.357 Kurtosis I Mean of Logged Detects 4.401 SD of Logged I Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects Detects	4
Total Number of Observations 24 Number of Distinct Observations Number of Detects 3 Number of Non-Institute Processing Pr	Detects Detects	4
Number of Detects 3 Number of Non- Number of Distinct Detects 3 Number of Distinct Non- Number of Distinct Detects 3 Number of Distinct Non- Number of Distinct Detects 60 Number of Distinct Non- Number of Distinct Non- Number of Distinct Non- Number of Distinct Non- Number of Number of Number of Number of Number of Non- Number of	Detects	
Minimum Detect 60 Minimum Non Maximum Detect 110 Maximum Non Maximum Non Non Maximum Detect 110 Maximum Non Maximu		21
Maximum Detect 110 Maximum Non 18 Variance Detects 628 Percent Non-19 Mean Detects 84 SD 19 Median Detects 84 SD 19 Median Detects 82 CV 19 Median Detects 82 CV 19 Mean of Logged Detects 10.357 Kurtosis 19 Mean of Logged Detects 10.357 Kurtosis 19 Mean of Logged Detects 10.357 SD of Logged 19 Mean of Logged 19 Mean of Logged Detects 10.357 SD of Logged 19 Mean of Logged Detects 10.357 SD of Logged 19 Mean of Logged	-Detect	1
18 Variance Detects 628 Percent Non-19 Mean Detects 84 SD 19 20 Median Detects 82 CV 10 21 Skewness Detects 0.357 Kurtosis 10 22 Mean of Logged Detects 4.401 SD of Logged 10 23 24 Warning: Data set has only 3 Detected Values. 25 This is not enough to compute meaningful or reliable statistics and estimates.		50
Mean Detects 84 SD Median Detects 82 CV Median Detects 82 CV Skewness Detects 0.357 Kurtosis Mean of Logged Detects 4.401 SD of Logged Mean of Logged Detects 4.401 SD of Logged Mean of Logged Detects 4.401 SD of Logged Mean of Logged Detects 4.401 This is not enough to compute meaningful or reliable statistics and estimates.	-Detect	50
Median Detects 82 CV I Skewness Detects 0.357 Kurtosis I Mean of Logged Detects 4.401 SD of Logged I Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects	87.5%
Skewness Detects 0.357 Kurtosis I Mean of Logged Detects 4.401 SD of Logged I Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects	25.06
Mean of Logged Detects 4.401 SD of Logged I Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects	0.298
Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects	N/A
Warning: Data set has only 3 Detected Values. This is not enough to compute meaningful or reliable statistics and estimates.	Detects	0.303
This is not enough to compute meaningful or reliable statistics and estimates. 26		
26		
27		
Normal GOF Test on Detects Only		
Shapiro Wilk Test Statistic 0.995 Shapiro Wilk GOF Test		
5% Shapiro Wilk Critical Value 0.767 Detected Data appear Normal at 5% Signific	ance Lev	vei
Lilliefors Test Statistic 0.198 Lilliefors GOF Test 5% Lilliefors Critical Value 0.512 Detected Data appear Normal at 5% Signification of the company of th	anaa La	ual
	ance Lev	vei
34 Kaplan-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs		
35 Kapian-Meier (KM) Statistics using Normal Critical Values and other Nonparametric UCLs 36 Mean 54.25 Standard Error of	f Mean	3.343
37 SD 13.37 95% KM (BC		N/A
38 95% KM (t) UCL 59.98 95% KM (Percentile Bootstra		N/A
39 95% KM (z) UCL 59.75 95% KM Bootstra		N/A
40 90% KM Chebyshev UCL 64.28 95% KM Chebysh		68.82
41 97.5% KM Chebyshev UCL 75.12 99% KM Chebyshev		87.51
42		
43 Gamma GOF Tests on Detected Observations Only		
Not Enough Data to Perform GOF Test		
45		
46 Gamma Statistics on Detected Data Only		
k hat (MLE) 16.67 k star (bias correcte	d MLE)	N/A
Theta hat (MLE) 5.04 Theta star (bias correcte	d MLE)	N/A
nu hat (MLE) 99.99 nu star (bias con		N/A
MLE Mean (bias corrected) N/A MLE Sd (bias corrected)	rected)	N/A
51		
Gamma Kaplan-Meier (KM) Statistics		
Adjusted Level of Signification	00 00	790.2
Approximate Chi Square Value (790.21, α) 726 Adjusted Chi Square Value (790.21, α)	nce (β)	790.2 0.0392 721.7

W.	Α	В	С	D	E	F	G	Н	1	J	K	L			
56	95% Ga	mma Appro	oximate KM-	-UCL (use v	vhen n>=50)	59.05	95	% Gamma	Adjusted K	M-UCL (use	when n<50)	59.4			
57						,									
58				Lo	gnormal GOF	Test on De	etected Obs	servations (Only						
59			Sh	apiro Wilk 1	Test Statistic	1			Shapiro W	ilk GOF Tes	st				
60			5% Sh	apiro Wilk C	Critical Value	0.767	Detec	cted Data ap	pear Logno	ormal at 5%	Significance I	Level			
61				Lilliefors 7	Test Statistic	0.177			Lilliefors	GOF Test					
62			5%	Lilliefors C	Critical Value	0.512	Detec	cted Data ap	pear Logno	ormal at 5%	Significance I	Level			
63				Detec	cted Data app	ear Lognori	mal at 5%	Sign ificance	Level						
64															
65				Log	normal ROS	Statistics U	Ising Imput	ted Non-Det	tects						
66				Mean in O	riginal Scale	23.97				Mean	in Log Scale	2.69			
67				SD in O	riginal Scale	26.52				SD	in Log Scale	1.018			
68		95% t UC	L (assumes	normality o	of ROS data)	33.25			95% F	ercentile Bo	ootstrap UCL	32.79			
69			9	5% BCA Bo	otstrap UCL	36.1				95% Boo	otstrap t UCL	39.12			
70				95% H-UC	L (Log ROS)	42.61									
71															
72		UCLs	using Logr	ormal Dist	ribution and I	KM Estimate	es when D	etected data	a are Logn	ormally Dis	tributed				
73				KM M	ean (logged)	3.973				95% H-U0	CL (KM -Log)	57.82			
74				KM	SD (logged)	0.184			95% C	95% Critical H Value (KM-Log)					
75		ŀ	KM Standard	Error of M	ean (logged)	0.0459									
76															
77						DL/2 Sta	atistics								
78			DL/2	Normal		***************************************			DL/2 Log-	Transforme	d				
79				Mean in O	riginal Scale	32.38				Mean	in Log Scale	3.367			
80				SD in O	riginal Scale	21.26				SD	in Log Scale	0.409			
81			95% t U	CL (Assume	es normality)	39.81				95%	6 H-Stat UCL	37.07			
82			DL/2 is	not a recon	n <mark>mended</mark> me	thod, provid	ed for com	iparisons ai	nd historica	reasons					
83															
84					Nonparamet	tric Distribut	ion Free U	CL Statistic	s						
85				Detected	Data appear	Normal Dis	tributed at	5% Signific	ance Level						
86															
87						Suggested l	JCL to Use	•							
88				95%	6 KM (t) UCL	59.98		9	95% KM (P	ercentile Bo	otstrap) UCL	N/A			
89				Warni	ing: One or m	nore Recomi	mended U	CL(s) not av	ailable!						
90															
91	Note:	Suggestio	ns regardin	g the select	ion of a 95%	UCL are pro	vided to he	elp the user	to select th	e most app	ropriate 95%	UCL.			
92			Re	commenda	tions are base	ed upon data	a size, data	distribution	, and skewr	ness.					
93	The	se recomm	endations a	re based up	oon the result	s of the sim	ulation stud	lies summa	rized in Sin	gh, Maichle	, and Lee (20	06).			
94	Howeve	er, simulation	ons results	will not cove	er all Real Wo	orld data set	s; for additi	onal insight	the user m	ay want to	consult a stati	stician.			
95															

7	A B C D	E	F	G H I J K	L
1		JCL Statistic	cs for Data	Sets with Non-Detects	
2					
3	User Selected Options				
4		11:51:18 AM			
5	From File WorkSheet	_r.xls			
6	Full Precision OFF				
7	Confidence Coefficient 95%				
8	Number of Bootstrap Operations 2000				
9	Tatal DAIIa				
10	Total PAHs				
11			General	Statistics	
12	Total Number of Ob	servations	24	Number of Distinct Observations	6
13		of Detects	5	Number of Non-Detects	19
14	Number of Disti		5	Number of Distinct Non-Detects	1
15		num Detect	0.6	Minimum Non-Detect	0.5
16		num Detect	12.6	Maximum Non-Detect	0.5
17		ce Detects	28.03	Percent Non-Detects	79.17%
18		ean Detects	7.82	SD Detects	5.295
19		ian Detects	10.8	CV Detects	0.677
20		ess Detects	-0.74	Kurtosis Detects	-2.073
21	Mean of Logg		1.632	SD of Logged Detects	1.292
22	Mican of Logg	ou Dolocio	1.002	OB OI LOGGEO DOLLAR	
23		Norma	LGOF Tes	t on Detects Only	
24	Shapiro Wilk Te		0.854	Shapiro Wilk GOF Test	
25 26	5% Shapiro Wilk Cr		0.762	Detected Data appear Normal at 5% Significance Le	vel
26		est Statistic	0.313	Lilliefors GOF Test	
28	5% Lilliefors Cr		0.396	Detected Data appear Normal at 5% Significance Le	vel
29				nal at 5% Significance Level	
		•	<u>'</u>		
30	Kaplan-Meier (KM) Sta	atistics using	Normal C	critical Values and other Nonparametric UCLs	
32		Mean	2.025	Standard Error of Mean	0.839
33		SD	3.676	95% KM (BCA) UCL	3.296
34	95%	KM (t) UCL	3.463	95% KM (Percentile Bootstrap) UCL	3.333
35	95% F	KM (z) UCL	3.405	95% KM Bootstrap t UCL	3.134
36	90% KM Cheb	yshev UCL	4.541	95% KM Chebyshev UCL	5.681
37	97.5% KM Cheb	yshev UCL	7.263	99% KM Chebyshev UCL	10.37
38					
39	Ga	mma GOF T	ests on De	etected Observations Only	
40	A-D Te	est Statistic	0.583	Anderson-Darling GOF Test	
41	5% A-D Cr	itical Value	0.688	Detected data appear Gamma Distributed at 5% Significar	ice Level
42	K-S Te	est Statistic	0.351	Kolmogrov-Smirnoff GOF	
43	5% K-S Cr	itical Value	0.363	Detected data appear Gamma Distributed at 5% Significan	ice Level
44	Detected d	ata appear C	Gamma Di	stributed at 5% Significance Level	
45					
46		Gamma S	tatistics or	Detected Data Only	
47		k hat (MLE)	1.32	k star (bias corrected MLE)	0.661
48	Theta	a hat (MLE)	5.923	Theta star (bias corrected MLE)	11.82
49	nu	ı hat (MLE)	13.2	nu star (bias corrected)	6.615
50	MLE Mean (bias	corrected)	7.82	MLE Sd (bias corrected)	9.615
51					
52		Gamma	Kaplan-M	eier (KM) Statistics	
53		k hat (KM)	0.304	nu hat (KM)	14.57
54	Approximate Chi Square Value	e (14.57, α)	6.963	Adjusted Chi Square Value (14.57, β)	6.595
55	95% Gamma Approximate KM-UCL (use w	nen n>=50)	4.237	95% Gamma Adjusted KM-UCL (use when n<50)	4.474

56	A B C D E	F	G	Н	1		J	K		L
57	Gamma ROS S	tatistics usi	na Imputed N	Jon-Detec	te					
	GROS may not be used when data set		•			e at mul	Itinla F	l e		
58	GROS may not be used wi						upie D	LO		
59							·			
60	For such situations, GROS me							4	-4	
61	For gamma distributed detected data, BTVs and		be computed	using gar	nma disi	tribution	on Ki			
62	Minimum	0.01							/lean	1.657
63	Maximum	12.6						Me	edian	0.01
64	SD	3.913							CV	2.361
65	k hat (MLE)	0.201				star (bia			-	0.204
66	Theta hat (MLE)	8.225			Theta	star (bia	as corr	ected N	MLE)	8.121
67	nu hat (MLE)	9.671					`	s correc		9.796
68	MLE Mean (bias corrected)	1.657				MLE S	3d (bia	s correc	cted)	3.669
69					Adjusted	d Level	of Sigr	nificanc	e (β)	0.0392
70	Approximate Chi Square Value (9.80, α)	3.815		Ad	djusted C	Chi Squa	are Va	ue (9.8	0, β)	3.555
71	95% Gamma Approximate UCL (use when n>=50)	4.256	9	5% Gamn	na Adjus	ted UCL	_ (use	when n	<50)	4.566
72										
73	Lognormal GOF	Test on De	tected Obser	vations Or	nly					
74	Shapiro Wilk Test Statistic	0.783		S	hapiro V	Vilk GO	F Tes	t		
75	5% Shapiro Wilk Critical Value	0.762	Detected	d Data app	ear Logi	normal a	at 5% S	Significa	ance L	evel
76	Lilliefors Test Statistic	0.318			Lilliefor	s GOF	Test			
77	5% Lilliefors Critical Value	0.396	Detected	d Data app	pear Lognormal at 5% Significance Le					evel
78	Detected Data app	ear Lognorn								
79				550-500-500						
80	Lognormal ROS	Statistics U	sing Imputed	Non-Dete	cts					
	Mean in Original Scale	1.744	omig mipatou		0.0		Mean i	n Log S	Scale	-2.26
81	SD in Original Scale	3.879						n Log S		2.781
82	95% t UCL (assumes normality of ROS data)	3.101			0E9/	Percent				3.125
83	95% BCA Bootstrap UCL	3.534			9070			tstrap t		3.687
84						957	76 DUU	.strap t	UCL	3.007
85	95% H-UCL (Log ROS)	116.9								
86	101									
87	UCLs using Lognormal Distribution and h		s when Dete	cted data	are Log					0.054
88	KM Mean (logged)	-0.209						L (KM -		2.651
89	KM SD (logged)	1.082			95%	Critical	H Valu	ıe (KM-	Log)	2.652
90	KM Standard Error of Mean (logged)	0.247								
91										
92		DL/2 Sta	tistics							
93	DL/2 Normal				L/2 Log	-Transf	ormed	1		
94	Mean in Original Scale	1.827				١	Mean i	n Log S	Scale	-0.757
95	SD in Original Scale	3.839					SDi	n Log S	Scale	1.363
96	95% t UCL (Assumes normality)	3.17					95%	H-Stat	UCL	2.837
97	DL/2 is not a recommended met	hod, provide	ed for compar	risons and	l historic	al reas	ons			
98										
99	Nonparameti	ric Distributi	on Free UCL	Statistics						
100	Detected Data appear	Normal Dist	ributed at 5%	Significa	nce Leve	əl				
101										
102		Suggested U	CL to Use							
103	95% KM (t) UCL	3.463		95	5% KM (F	Percenti	lle Boo	tstrap)	UCL	3.333
103	5575 (4) 652								-	
	Note: Suggestions regarding the selection of a 95% l	JCL are prov	ided to help t	the user to	select t	he most	t annre	opriate	95% I	JCL.
105	Recommendations are base	Mostor					Сарріс	-pridio	J 0 /0 C	
106	These recommendations are based upon the results					0.7-0-0-0	aichlo	and Lo	ر امرا م	16)
107										
108	However, simulations results will not cover all Real Wo	na aata sets	, for additiona	a msignt th	ie user r	nay war	II TO CO	onsult a	statis	истап.
109										

14	A B C	D E	F	G	Н		J	К	L
1		UCL Sta	tistics for Da	ta Sets with	Non-Detects				
2									
3	User Selected Optio								
4	Date/Time of Computation From File		AM						
5	Full Precision								
6	Confidence Coefficient								
7	Number of Bootstrap Operations								
8	Trainber of Booldaap Operations	2000							
10	TRH C16-C34								
11									
12			Genera	l Statistics					
13	Tota	I Number of Observation	ns 23	T		Number	of Distinct O	bservations	5 7
14		Number of Detec	cts 6				Number of N	Ion-Detects	s 17
15	N	lumber of Distinct Detec	ets 6			Numbe	r of Distinct N	Ion-Detects	3 1
16		Minimum Dete	ect 110				Minimum	Non-Detect	t 100
17		Maximum Dete	ect 540				Maximum	Non-Detec	t 100
18		Variance Dete	cts 26430				Percent N	Non-Detects	73.91%
19		Mean Detec						SD Detects	
20		Median Dete						CV Detects	NO. 500. 500. 500. 500. 500. 500. 500. 50
21		Skewness Detec						sis Detects	
22		Mean of Logged Detec	ots 5.296		. Anniheranski valorika sukse	Williams of high Change of the Con-	SD of Logg	ged Detects	0.597
23									
24			rmal GOF Te	est on Detect		01 . 14	"" OOF T		
25		Shapiro Wilk Test Statis		D-		•	ilk GOF Test		
26	5% 3	Shapiro Wilk Critical Val Lilliefors Test Statis		De	tected Data a		mai at 5% Si GOF Test	Jnificance L	_evei
27		Eilliefors Critical Val		De	tected Data a			anificance l	ovel
28		Detected Dat				•	mai at 570 Oi	Jillicance i	-GVCI
29 30		Dolottou Date	а арроал то		ngiiiiloo E				
31	Kaplan-I	Meier (KM) Statistics u	sing Normal	Critical Valu	es and other	Nonpara	metric UCLs		
32		Me					Standard Er	ror of Mear	n 21.98
33		(SD 96.23				95% KM	(BCA) UCL	171.3
34		95% KM (t) U	CL 173		9	5% KM (P	ercentile Boo	tstrap) UCI	173.5
35		95% KM (z) U	CL 171.4			Ś	95% KM Boot	strap t UCL	229
36		90% KM Chebyshev U	CL 201.2			9	5% KM Cheb	yshev UCL	_ 231
37	9	7.5% KM Chebyshev U	CL 272.5			9	9% KM Cheb	yshev UCL	353.9
38									
39				Detected Obs	servations O				
40		A-D Test Statis					arling GOF To		
41		5% A-D Critical Val		Detected	I data appear				ance Level
42		K-S Test Statis		Datastas			Smirnoff GO		
43		5% K-S Critical Val			data appear			5% Significa	ance Level
44		Detected data appe	ar Gamma L	distributed at	5% Significa	ance Leve			
45		Gamm	a Statistics	n Detected	Data Only				
46 47		k hat (ML		on Detected	Data Only	ks	star (bias corr	ected MLF) 1.721
_		Theta hat (ML		-			star (bias corr		
48 49		nu hat (ML					nu star (bias		
50	N	LE Mean (bias correcte					MLE Sd (bias		
51		,							
52		Gam	ma Kaplan-I	Meier (KM) S	Statistics				
53		k hat (K	M) 1.975					nu hat (KM)) 90.83
54	Approximate Ch	ni Square Value (90.83,	α) 69.85		Ad	justed Chi	Square Valu	e (90.83, β)) 68.52
55	95% Gamma Approximate K	M-UCL (use when n>=5	0) 175.8	9:	5% Gamma A	Adjusted K	M-UCL (use	when n<50) 179.2

Z	Α	В	С	D		E	F	G	Н		1		J		K	L
56					Comm	o DOS	Ctatiation	nina Imput	nd Non D	\otooto						
57			DD00				Statistics us							DI.		
58			GROS may r										nuitipie	DLS		
59							vhen kstar c						T\ /-			
60							ethod tends							/M ==		
61		For gamm	na distribute	a detected				ay be comp	uted using	g gamn	na dis	tributi	on on r	(W es		61.01
62						linimum	0.01								Mean	
63					IVI	aximum									Median	
64						SD	130.9						,, ,		CV	
65						at (MLE)	0.128								ed MLE)	
66				ı		at (MLE)					rneta				ed MLE)	436.9
67						at (MLE)									rrected)	
68			ML	_E Mean ((bias co	rrected)	61.31						`		rrected)	
69											-			_	ance (β)	
70			oroximate Cl				1.877								(6.46, β)	
71	95	% Gamma	Approximate	e UCL (us	se when	n>=50)	210.9		95% G	amma	Adjus	sted U	CL (use	e whe	n n<50)	232.3
72																
73							F Test on D	etected O	bservatior							
74				hapiro Wi				Account in the Control					GOF Te			
75			5% St	napiro Wil				Dete	ected Data		_				ificance	Level
76						Statistic							F Test			
77			5	% Lilliefor				1	ected Data			norma	al at 5%	Sign	ificance	Level
78				De	etected	Data ap	pear Logno	rmal at 5%	Significa	ince Le	evel					
79																
80					Lognor	mal ROS	S Statistics	Using Imp	uted Non-	Detect	s					
81				Mean ir	n Origin	al Scale	79.43						Mean	in Lo	og Scale	3.448
82				SD ir	n Origin	al Scale	123.4						SD	in Lo	g Scale	1.447
83		95% t U	CL (assume	s normali	ty of RC	OS data)	123.6				95%	Perc	entile B	ootstı	rap UCL	121.7
84			Ç	95% BCA	Bootst	rap UCL	137.7					ć	95% Bo	otstra	p t UCL	174.6
85				95% H-l	UCL (Lo	og ROS)	238									
86																
87		UCL	s using Log	normal D	Distribut	ion and	KM Estima	ites when I	Detected (data ar	re Log	gnorm	ally Dis	stribu	ted	
88				KM	1 Mean	(logged)	4.785	Last annual property				95	5% H-U	CL (K	(M -Log)	154
89				ŀ	KM SD	(logged)	0.412				95%	Critic	al H Va	lue (Ł	KM-Log)	1.901
90			KM Standar	rd Error of	f Mean	(logged)	0.094									w and deficient code
91			- (
92							DL/2 S	Statistics								
93			DL/2	Normal						DL	/2 Log	g-Trai	nsforme	ed		
94				Mean ir	n Origir	al Scale	98.26						Mear	in Lo	og Scale	4.273
95		- 11		SD ir	n Origin	al Scale	113.6						SE	in Lo	og Scale	0.684
96			95% t l	JCL (Assu	umes n	ormality)	138.9						959	% H-S	Stat UCL	124
97			DL/2 is	not a red	comme	nded me	ethod, provi	ided for co	mparisons	s and h	nistorio	cal re	asons			
98																
99					No	nparame	tric Distribu	ution Free I	JCL Statis	stics						
100				Detect		•	r Normal Di				e Lev	rel	_			
101																
102							Suggested	UCL to Us	se		_					
102				ç	95% KN	1 (t) UCL				95%	6 KM (Perce	entile Bo	ootstra	ap) UCL	173.5
103																ale vinin
104	Note	e: Suaaesti	ons regardir	ng the sel	ection o	of a 95%	UCL are n	rovided to I	nelp the us	ser to s	select 1	the m	ost app	ropria	ate 95%	UCL.
		33000					sed upon da									
							•								(0)	006).
106	The	ese recomi	mendations	are based	ี นทดท :	ine resiii	its or the sin			HIGHE	יה וון ט	mun.	Maichie	e, and	i Lee (2)	
		ese recomi	mendations : tions results													

2	A B C	D E	F	G	Н	1	J K	L
1		UCL Statist	ics for Data	Sets with N	Non-Detects			
2								
3	User Selected Options							
4	Date/Time of Computation	25/10/2016 11:58:00 AI	M					
5	From File	WorkSheet_t.xls						
6	Full Precision	OFF						
7	Confidence Coefficient	95%						
8	Number of Bootstrap Operations	2000						
9	TDU 004 040							
10	TRH C34-C40							
11			General	Statistics				
12	Total N	Number of Observations	24	Statistics		Numbor	of Distinct Observations	3
13	Totalis	Number of Detects	2				Number of Non-Detects	22
14	Nur	mber of Distinct Detects	2				of Distinct Non-Detects	1
15	Nui	Minimum Detect	220			Number	Minimum Non-Detect	100
16		Maximum Detect					Maximum Non-Detect	100
17		Variance Detects					Percent Non-Detects	91.67%
18		Mean Detects	710				SD Detects	693
19		Median Detects	710			_	CV Detects	0.976
20 21		Skewness Detects	N/A				Kurtosis Detects	N/A
22	<u> </u>	Mean of Logged Detects	6.242				SD of Logged Detects	1.2
23	CANADA DE TANA							
24		Warning: Da	ata set has o	only 2 Dete	cted Values			
25	This	is not enough to comp			2.50.20		ates.	
26								
27								
28		Norma	al GOF Test	t on Detects	s Only			
29		Not Eno	ugh Data to	Perform G	OF Test			
30								
31	Kaplan-Me	eier (KM) Statistics usin	g Normal C	ritical Value	es and other	r Nonparan	netric UCLs	
32		Mean	150.8				Standard Error of Mean	63.53
33		SD	220.1				95% KM (BCA) UCL	N/A
34		95% KM (t) UCL	259.7		9	5% KM (Pe	ercentile Bootstrap) UCL	N/A
35		95% KM (z) UCL	255.3			9	5% KM Bootstrap t UCL	N/A
36	90	% KM Chebyshev UCL	341.4			9!	5% KM Chebyshev UCL	427.8
37	97.5	5% KM Chebyshev UCL	547.6			99	9% KM Chebyshev UCL	782.9
38								
39		Gamma GOF				nly		
40		Not Eno	ugh Data to	Perform G	OF Test			
41								
42			Statistics on	Detected [Data Only			
43		k hat (MLE)	1.694				tar (bias corrected MLE)	N/A
44		Theta hat (MLE)	419.2			Theta st	tar (bias corrected MLE)	N/A
45		nu hat (MLE)	6.774				nu star (bias corrected)	N/A
46	MLE	E Mean (bias corrected)	N/A	-			MLE Sd (bias corrected)	N/A
47		_	Marie: **	ion /1/82\ C:				
48			Kaplan-Me	eier (KM) Si	atistics		1 . 02 5	00.55
49		k hat (KM)	0.47			A di	nu hat (KM)	22.55
50	Annual - All (Pauoro Value (22 FF .)	10 75		۸		Level of Significance (β)	0.0392
51		Square Value (22.55, α)	12.75	0.5			Square Value (22.55, β)	12.23
52	95% Gamma Approximate KM-	OCL (use when n>=50)	266.7	95	√o Gamma A	-ajusted KN	M-UCL (use when n<50)	278
53		Lognormal GOI	Toot on D	ntacted Oh	convotions C)nhv		
54			ugh Data to			/iliy		
55		INOLENO	ugii Dala 10	r enomin G	OI 1681			

	Α	В	С	D	E	F	G	Н		J	К	L	
56													
57	Lognormal ROS Statistics Using Imputed Non-Detects												
58	Mean in Original Scale					60.8	0.8 Mean in Log Scale					-2.968	
59	SD in Original Scale					246.7	SD in Log Scale					4.908	
60	95% t UCL (assumes normality of ROS data)					1		95% Percentile Bootstrap UCL					
61	95% BCA Bootstrap UCL					220.9	95% Bootstrap t UCL					3262	
62		95% H-UCL (Log ROS)											
63													
64	DL/2 Statistics												
65	DL/2 Normal					DL/2 Log-Transformed							
66		Mean in Original Scale				105			Mean in Log Scale			4.106	
67		SD in Original Scale				235.8		SD in Log Scale				0.704	
68		95% t UCL (Assumes normality)						95% H-Stat UCL				107.1	
69		DL/2 is not a recommended method, provided for comparisons and historical reasons											
70													
71		Nonparametric Distribution Free UCL Statistics											
72		Data do not follow a Discernible Distribution at 5% Significance Level											
73													
74	Suggested UCL to Use												
75	95% KM (BCA) UCL					N/A							
76		Warning: One or more Recommended UCL(s) not available!											
77									The Advanced of the State of th				
78	Note	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% U											
79		Recommendations are based upon data size, data distribution, and skewness.											
80	The	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
81	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistic												
82													

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