PHASE II ENVIRONMENTAL SITE ASSESSMENT REPORT

Macquarie University – Biological Science Building
205a Culloden Road
Macquarie Park NSW 2109

Macquarie University – October 2016

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PHASE II ENVIRONMENTAL
SITE ASSESSMENT REPORT

Macquarie University – Biological Science Building
205a Culloden Road
Macquarie Park NSW 2109

PREPARED FOR

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EXECUTIVE SUMMARY

Geo-Logix Pty Ltd (Geo-Logix) was commissioned by Donald Cant Watts Corke (DCWC) on behalf of Macquarie University to conduct a Phase II Environmental Site Assessment (ESA) of the portion of the university grounds earmarked for construction of administration and research buildings for the Biological Sciences department, in the vicinity of 205a Culloden Road, Macquarie Park NSW.

The objective of the Phase II ESA was to conduct an investigation to assess the presence or otherwise of contamination to the land associated with the above identified historical activities. Further, the assessment was to consider the suitability of the site for proposed use as the Macquarie University – Biological Science Building.

The site is located within the north western corner of the Macquarie University grounds, on the southern side of Culloden Road, within the Sydney suburb of Macquarie Park NSW. The site is the footprint of two proposed buildings, an L-shaped administration building and rectangular research building encompassing an area of approximately 7,500 m^2. At the time of Geo-Logix investigation, the site was predominated by grass lawn with sparsely treed areas in the northern and southern portions of site. Some fill including construction debris (bricks, concrete, etc.) was apparent in the treed areas.

Geo-Logix completed a Phase I ESA for the subject site in September 2016. The Phase I ESA comprised a review of historical information pertaining to the proposed development area and a site inspection and identified the following potential sources of contamination:

- Orchards/Market Gardening from the late 1890s to the mid-1950s;
- Poultry farming which may have occurred on site between 1930 and 1946;
- Potential hazardous building materials in shallow soil from demolition of former structures; and
- Fill of unknown origin containing demolition debris identified during Geo-Logix's site inspection.

Given the site history it was concluded there was a potential for contamination of shallow soils across the site. Contaminants of potential concern (COPC) included Petroleum Hydrocarbons (TRH, BTEXN), Polyaromatic Hydrocarbons (PAH), Organochlorine Pesticides (OCPs), Polychlorinated Biphenyls (PCBs), heavy metals (As, Cd, Cr, Cu, Hg, Pb, Ni and Zn), and asbestos.

To confirm the site is suitable for the proposed development, the assessment decision states:

- "Contamination has not been identified in soil at concentrations above the adopted assessment criteria. Therefore, the site is considered suitable for the proposed use as a biological sciences building."

To accept the assessment decision, the results of the systematic soil sampling assessment must meet the following decision rules:

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

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

The results of targeted/judgmental soil sampling assessments must comply with the following decision rules:

- No single sample exceeds the soil COPC assessment criteria.

To assess for contamination Geo-Logix completed systematic sampling of shallow soils across the site from 19 locations (TP1–TP19) on a 20 m sampling grid. A 20 m grid is sufficient to identify circular contamination hotspots equal to or greater than 23.6 m diameter at 95% statistical degree of certainty. The sampling density meets minimum sampling standards for the site area (7,500 m^2) as per NSW EPA (1995).

Based on the site history and field observations the onsite fill appears to comprise tilled earth resulting from past market gardening activities. The following sampling and analysis program was completed to target contamination of fill arising from market gardening, poultry farming, hazardous building materials from previously demolished buildings and, conservatively, fill of unknown origin:

- Analysis of a 10 L bulk shallow soil sample from each grid location for bonded asbestos by visual assessment in accordance with the gravimetric method described in the WA DOH Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA DOH, 2009);
- Analysis of three 500 mL shallow soil samples from selected locations for laboratory identification of asbestos fines and/or fibres by Polarised Light Microscopy (PLM) and Dispersion Staining (DS) in accordance with WA DOH (2009);
- Collection of a fill sample from the top 0.2 m of soil in each grid location;
- Analysis of each shallow soil sample collected in fill for TRH, BTEXN, PAH, OCPs, PCBs, and heavy metals,

The following sampling and analysis program was completed to target contamination of natural soil arising from historical market gardening and poultry farming, and from hazardous building materials from previously demolished buildings:

- Analysis of a 10 L bulk shallow soil sample from each grid location for bonded asbestos by visual assessment in accordance with the gravimetric method described in WA DOH (2009);
- Collection of a soil sample from the top 0.2 m of natural soil in each grid sampling location;
- Where no fill was present this sample was submitted for laboratory analysis of OCPs and heavy metals; and
- Two natural soil samples, collected from the top 0.2 m of natural soil underlying fill, were selected from broadly spaced locations and submitted for analysis of OCPs and heavy metals.

Following receipt of analytical results, Geo-Logix completed additional sampling and analysis to delineate the extent of PAH contamination identified in fill at test pit TP11:

- Analysis of the soil sample collected from the natural soil underlying fill in test pit TP11 for PAH;
- Excavation of four test pits (TP11/N, TP11/E, TP11/S and TP11/W) using a shovel. Test pits were located 1 m horizontal distance from test pit TP11 in each of the four cardinal directions;

- Collection of fill and natural soil samples from each test pit; and
- Analysis of the four fill samples collected for PAH.

PAH were detected at elevated concentrations in fill at sample location TP11. The results of delineation sampling completed in the near vicinity indicate the PAH detection was a one-off isolated occurrence. The PAH in fill is not considered significant and does not warrant remediation.

No other COPC were detected at concentrations greater than assessment criteria. Geo-Logix considers the site suitable for the proposed Macquarie University – Biological Science Building.

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1. INTRODUCTION

Geo-Logix Pty Ltd (Geo-Logix) was commissioned by Donald Cant Watts Corke (DCWC) on behalf of Macquarie University to conduct a Phase II Environmental Site Assessment (ESA) of the portion of the university grounds earmarked for construction of administration and research buildings for the Biological Sciences department. The investigation area is located in the vicinity of 205 Culloden Road, Macquarie Park NSW (Figure 1).

The objective of the Phase II ESA was to conduct an investigation to assess the presence or otherwise of contamination to the land associated with the above identified historical activities. Further, the assessment was to consider the suitability of the site for proposed use as the Macquarie University – Biological Science Building.

2. SITE INFORMATION

2.1 Site Identification

The investigation area comprises the following properties:

Street Address	Lot and Deposited Plan (DP)	Approximate Area (m^2)
205a Culloden Road, Macquarie Park NSW 2109	Part Lot 191 DP 1157041	7,500

2.2 Site Zoning and Land Use

The site is zoned Mixed Use (B5) under the Ryde Local Environmental Plan 2014.

2.3 Site Description

The following site descriptions are based on a site inspection conducted by Geo-Logix on 30 August 2016. A photographic log is presented in Attachment A.

The site is located within the north western corner of the Macquarie University grounds, on the southern side of Culloden Road, within the Sydney suburb of Macquarie Park NSW (Figure 2). The site is the footprint of two proposed buildings, an L-shaped administration building and rectangular research building encompassing an area of approximately 7,500 m^2. At the time of Geo-Logix investigation, the site was predominated by grass lawn with sparsely treed areas in the northern and southern portions of site. Some fill including construction debris (bricks, concrete, etc.) was apparent in the treed areas.

An existing brick and metal clad building designated ‘Brain, Behaviour and Evolution’ exists to the immediate north of the site.

2.4 Surrounding Land Use

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

- **North** – The Brain Behaviour and Evolution Building and greenhouses with Culloden Road and residential properties beyond;
- **South** – The Macquarie University Observatory building, car park and fields;
- **East** – Bush land with Talavera Road and the M2 Motorway beyond; and
- **West** – Culloden Road with residential properties and a playing field beyond.

2.5 Topography

The site slopes moderately towards the east from 69 mAHD to 64 mAHD. Regional topography slopes moderately to the east, south-east.

2.6 Surface Water Receptor

The nearest surface water is Mars Creek approximately 260 m south east of site. The creek flows into Lane Cover River, 750 m east of site.

2.7 Geology

Review of the NSW 1:100,000 Sydney Map (Geological Survey of NSW, 1983) indicates the site is on the border of

- Triassic age Ashfield Shale of the Wianamatta Group, comprising black to dark-grey shale and laminate; and
- Medium to course-grained quartz sandstone, very minor shale and laminate lenses.

2.8 Hydrogeology

It is expected that groundwater would follow the natural regional topography and generally flow east–southeast.

Reference to the NSW All Groundwater Map (NSW Department of Primary Industries, 2016) indicates there are no registered groundwater bores within a 500 m radius of the site. The groundwater bore map is presented in Attachment B.

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 C). The plans indicate:

- AARNet Assets originating from Culloden Road run northwest–southeast, north of the site.
- Ausgrid, Telstra and Optus utilities run parallel beneath Culloden and Talavera Roads; and
- Jemena and Sydney Water utilities run parallel beneath Culloden Road.

3. PREVIOUS ENVIRONMENTAL INVESTIGATIONS

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

Geo-Logix completed a Phase 1 ESA for the subject site (Ref: 1601086Rpt01FinalV01_09Sep16) in September 2016. The Phase 1 ESA comprised a review of historical information pertaining to the proposed development area and a site inspection and identified the following potential sources of contamination:

- Orchards/Market Gardening from the late 1890s to the mid-1950s;
- Poultry farming which may have occurred on site between 1930 and 1946;
- Potential hazardous building materials in shallow soil from demolition of former structures; and
- Fill of unknown origin containing demolition debris identified during Geo-Logix's site inspection.

An intrusive Phase 2 ESA investigation was recommended to assess the land for contamination from potentially contaminating activities.

4. POTENTIAL SITE CONTAMINATION

Based on the site history the following potential contamination issues and Contaminants of Potential Concern (COPC) were identified for the subject site.

Orchards/Market Gardening

The site was occupied by orchards from the late 1890s to the mid-1950s. Market gardens with accompanying residences dominated the site from the mid-1950s until the late 1960s. Contamination of the land can occur through the application of pesticides and herbicides. Given the period during which orcharding and market gardening activities were undertaken at the site (1890s to 1960s), Organochlorine Pesticides (OCPs) and heavy metals (As, Cd, Cr, Cu, Hg, Ni, Pb and Zn) are identified as the priority contaminants of potential concern due to their environmental persistence.

Poultry Farming

A poultry farmer owned portions of the site between 1930 and 1946. The aerial photographs from 1930 and 1943 do not suggest poultry farming occurred on the site. COPC associated with poultry farming comprise OCPs and heavy metals associated with pesticide application.

Hazardous Building Materials

Given the age of former structures observed in historical aerial photographs on the southwest portion of the site, the potential for the presence of hazardous building materials in shallow soils exists. The hazardous building materials of concern are lead-based paint and asbestos. The materials have the potential to be buried onsite from the demolition of previous structures.

Fill of unknown origin

During Geo-Logix's Phase I site inspection fill was observed in onsite treed areas. Fill related COPC include:

- Total Recoverable Hydrocarbons (TRH);
- Benzene, toluene, ethylbenzene, xylenes and naphthalene (BTEXN);
- Polyaromatic Hydrocarbons (PAH);
- OCPs;
- Polychlorinated Biphenyls (PCBs);
- Heavy metals; and
- Asbestos.

5. DATA QUALITY OBJECTIVES

The objective of the investigation was to assess the site for contamination that may have originated from historical site activities to determine the suitability of the site for the proposed use of the site as the Macquarie University – Biological Science Building.

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) and DEC (2006).

Step 1: State the problem.

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

Step 2: Identify the decision.

Contamination has not been identified in soil at concentrations above the adopted assessment criteria. Therefore, the site is considered suitable for the proposed use as a biological sciences building.

Step 3: Identify inputs into the decision.

- Identification of issues of potential environmental concern and COPC (Section 4);
- Completion of a soil sampling and analysis program targeting contamination which may have arisen from past site activities (Sections 7.1–7.3);
- Appropriate quality assurance/control to enable an evaluation of the reliability of the analytical data (Section 7.4); and
- Screening sample analytical results against appropriate assessment criteria for the intended land use (Section 6).

Step 4: Define the boundaries of the site.

The project boundary is defined as the area within the site boundary (205a Culloden Road, Macquarie Park NSW) to a vertical depth of 200 mm below the base of fill.

Step 5: Develop a decision rule.

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

- The 95% Upper Confidence Limit of COPC concentration data does not exceed the soil assessment criteria;
- No single sample exceeds 250% of the soil COPC assessment criteria;
- The standard deviation of COPC analytical results is less than 50% of the soil assessment criteria; and
- Asbestos was not visually observed on the site surface or in the subsurface at soil sampling locations.

The results of targeted/judgmental soil sampling assessments must comply with the following decision rules:

- No single sample exceeds the soil COPC assessment criteria.

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

Soil analytical data will be assessed against the following assessment criteria as presented in the Assessment of Site Contamination National Environment Protection Measure (NEPM). The NEPM states that investigation and screening levels are not clean-up or response levels, nor are they desirable quality criteria. Investigation and screening levels are intended for assessing existing contamination and trigger consideration of an appropriate site-specific risk based approach or appropriate risk management options when they are exceeded.

Based on the site's proposed use as a biological science building on the Macquarie University grounds and accessible to foot traffic, Geo-Logix has selected NEPM Tier 1 assessment criteria appropriate to education facilities with public open space.

NEPM Health Based Investigation Level (HILs) – Open Space/Recreational C

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 C soil assessment were adopted based on the proposed site use.

NEPM Health Screening Levels (HSLs) – Open Space/Recreational C

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). Silt HSLs C soil assessment criteria were adopted based on the observed site geology and proposed site use.

NEPM Management Limits – Residential, parkland and public open space

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 were adopted based on the proposed site use.

NEPM Asbestos Health Screening Levels – Open Space/Recreational C

NEPM provides health screening levels for bonded asbestos containing material (ACM) and asbestos fines/friable asbestos (AF/FA) as concentration by weight in soil (%w/w). Based on the proposed site use Open Space/Recreational C health screening levels for bonded ACM have been adopted for the results of gravimetric analysis and for AF and FA detected by laboratory assessment utilising Polarised Light Microscopy (PLM).

NEPM Ecological Assessment – Site Specific

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);
- DDT;
- Naphthalene;
- Nickel (Ni);
- Lead (Pb); and
- Zinc (Zn).

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 based on the proposed land use. Two surface soil samples from locations TP3/0.05 and TP17/0.2 were selected for laboratory analysis of clay content (% clay) cation exchange capacity (CEC) and pH by $CaCl_2$ extraction to determine appropriate EILs for site soils. Average background concentrations for an old (aged >2 years) NSW suburb with high traffic have been used in the calculation of EILs.

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

Contaminant	EIL (mg/kg)	Rationale
As	100	Value for public open space use irrespective of physicochemical properties.
Cu	110	Calculated using an Added Contaminant Limit (ACL) for public open space use based on a CEC of 11.5, the average of two samples submitted for physicochemical analysis, and an Ambient Background Concentration (ABC) typical of an old NSW suburb with high traffic.
Cr III	410	Calculated using an ACL for public open space use based on a clay content of 27%, the average of two samples submitted for physicochemical analysis, and an ABC typical of an old NSW suburb with high traffic.
Ni	190	Calculated using an ACL for public open space use based on a CEC of 11.5, the average of two samples submitted for physicochemical analysis, and an ABC typical of an old NSW suburb with high traffic.
Pb	1,300	Calculated using the ACL for public open space use which is irrespective of physicochemical properties and an ABC typical of an old NSW suburb with high traffic.
Zn	300	Calculated using an ACL for public open space use based on a pH of 4.95 and a CEC of 11.5, the average of two samples submitted for physicochemical analysis, and an ABC typical of an old NSW suburb with high traffic.
DDT	180	Value for public open space use irrespective of physicochemical properties.
Naphthalene	170	

In addition, Ecological Screening Levels (ESLs) have been developed as ecologically based criteria. 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	ESL (mg/kg)	Rationale
F1 C_6-C_{10}	180	Value for public open space use in fine grained soil.
F2 C_{10}-C_{16}	120	
F3 C_{16}-C_{34}	1,300	
F4 C_{34}-C_{40}	2,800	
Benzene	65	
Toluene	105	
Ethylbenzene	125	
Xylenes	45	
Benzo(a)pyrene	0.7	

7. INVESTIGATION METHODOLOGIES

Geo-Logix conducted environmental investigation during the period 13 to 14 September 2016.

7.1 Sampling Analysis Plan

Soil contamination, if present, is likely to be expressed in shallow soils. To assess for contamination Geo-Logix completed systematic sampling of shallow soils across the site from 19 locations (TP1–TP19) on a 20 m sampling grid. A 20 m grid is sufficient to identify circular contamination hotspots equal to or greater than 23.6 m diameter at 95% statistical degree of certainty. The sampling density meets minimum sampling standards for the site area (7,500 m^2) as per NSW EPA (1995).

Fill Soil

Based on the site history and field observations the onsite fill appears to comprise tilled earth resulting from past market gardening activities. The following sampling and analysis program was completed to target contamination of fill arising from market gardening, poultry farming, hazardous building materials from previously demolished buildings and, conservatively, fill of unknown origin:

- Analysis of a 10 L bulk shallow soil sample from each grid location for bonded asbestos by visual assessment in accordance with the gravimetric method described in the WA DOH Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA DOH, 2009);
- Analysis of three 500 mL shallow soil samples from selected locations for laboratory identification of asbestos fines and/or fibres by Polarised Light Microscopy (PLM) and Dispersion Staining (DS) in accordance with WA DOH (2009);
- Collection of a fill sample from the top 0.2 m of soil in each grid location;
- Analysis of each shallow soil sample collected in fill for TRH, BTEXN, PAH, OCPs, PCBs, and heavy metals,

Natural Soil

The following sampling and analysis program was completed to target contamination of natural soil arising from historical market gardening and poultry farming, and from hazardous building materials from previously demolished buildings:

- Analysis of a 10 L bulk shallow soil sample from each grid location for bonded asbestos by visual assessment in accordance with the gravimetric method described in WA DOH (2009);
- Collection of a soil sample from the top 0.2 m of natural soil in each grid sampling location;
- Where no fill was present this sample was submitted for laboratory analysis of OCPs and heavy metals; and
- Two natural soil samples, collected from the top 0.2 m of natural soil underlying fill, were selected from broadly spaced locations and submitted for analysis of OCPs, PCBs and heavy metals.

7.2 Soil Sampling Methodology

Test pits TP1 to TP19 were excavated with a shovel to a depth of approximately 200 mm below the base of fill. Soil samples were collected directly from the test pit.

Soil samples for laboratory analysis of COPC other than asbestos 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 analysis.

Soil samples for laboratory analysis of asbestos were placed in laboratory prepared bags, labelled and placed in an esky for transport under chain of custody to a NATA Accredited Laboratory for analysis.

Soil samples for gravimetric analysis were measured using a 10 L bucket and spread on a tarp of contrasting colour (blue) to facilitate visual identification of bonded ACM fragments.

Test pit logs are presented in Attachment D.

7.3 Delineation Sampling Methodology

Upon receipt of analytical results from the scope of work described in Section 7.1, Geo-Logix completed additional sampling and analysis to delineate the extent of PAH contamination identified in fill at test pit TP11:

- Analysis of the soil sample collected from the natural soil underlying fill in test pit TP11 for PAH;
- Excavation of four test pits (TP11/N, TP11/E, TP11/S and TP11/W) using a shovel. Test pits were located 1 m horizontal distance from test pit TP11 in each of the four cardinal directions;
- Collection of fill and natural soil samples from each test pit; and
- Analysis of the four fill samples collected for PAH.

7.4 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.* Geo-Logix QC samples included the following:

Sample Identification	Sample Type	Sample Matrix	Rate of Collection
SD1	Field duplicate of TP16/0.2	Soil	1 in 20 samples
ST1	Field triplicate of TP16/0.2	Soil	1 in 20 samples
SD2	Field duplicate of TP18/0.2	Soil	1 in 20 samples
ST2	Field triplicate of TP18/0.2	Soil	1 in 20 samples
R1	Sampling equipment rinsate	Water	1 per day of soil sampling
R2	Sampling equipment rinsate	Water	1 per day of soil sampling

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

Fill material was encountered across the majority of the site to a typical depth of 0.3 mbg. The fill material generally consisted of poorly graded sand. Trace anthropogenic material including concrete, brick and timber fragments was observed in fill. No hydrocarbon odours or staining were noted in fill and ACM was not observed in fill at all sample locations. The fill material overlay moderate reddish orange, stiff, highly plastic Clay (CH) with sand and trace gravel. For soil descriptions of specific locations please refer to the attached test pit logs.

8.2 Soil Analytical Results

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

TRH and BTEXN

TRH were detected at concentrations greater than laboratory reporting limits but less than assessment criteria in fill samples from locations TP6, TP8, TP11, TP12, TP15, TP17 and TP19.

Petroleum hydrocarbons were not detected at concentrations greater than assessment criteria in all soil samples analysed (Table 1).

TRH were not otherwise detected at concentrations greater than laboratory reporting limits in all soil samples analysed.

BTEXN were not detected at concentrations greater than laboratory reporting limits in all soil samples analysed.

PAH

Benzo(a)pyrene was detected at a concentration greater than 2.5 times the adopted assessment criteria for the protection of the environment in sample TP11/0.1 (Table 2). The benzo(a)pyrene toxicity equivalent quotient (TEQ) of carcinogenic PAH was calculated at a concentration greater than 2.5 times the adopted assessment criteria for the protection of human health in sample TP11/0.1.

PAH were not otherwise detected in soil at concentrations greater than assessment criteria in all soil samples analysed.

OCPs

OCPs were detected at concentrations greater than laboratory reporting limits but less than assessment criteria in shallow soil samples from locations TP11, TP12, TP13, TP16, TP17 and TP18 (Table 3).

OCPs were not otherwise detected in soil at concentrations greater than laboratory reporting limits in all soil samples analysed.

PCBs

PCBs were not detected in soil at concentrations greater than laboratory reporting limits in all soil samples analysed (Table 4).

Heavy Metals

Arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc were not detected at concentrations greater than the assessment criteria in all soil samples analysed (Table 5).

Asbestos

ACM was not visually identified during fieldworks. Asbestos was not detected in all soil samples analysed (Table 6).

8.3 Delineation Sample Analytical Results

PAH including benzo(a)pyrene were not detected at concentrations greater than laboratory reporting limits in the underlying natural soil sample from location TP11 or in the fill samples collected from test pits TP11/N, TP11/E, TP11/S or TP11/W.

8.4 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:

- Arsenic in triplicate pair TP16/0.2 and TS1

The RPD exceedance is attributed the low levels detected (< 5 times LOR).

COPC were not detected at concentrations above laboratory reporting limits in the rinsate samples collected from the soil sampling equipment indicating decontamination procedures were adequate to prevent cross contamination.

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

Report #	Analysis Within Holding Time	Surrogate Recovery	Lab. Duplicate RPD %	Lab Matrix Spike Recovery	Lab. Control Sample	Lab Method Blank
515897-S	✓	✓	X*	✓	✓	✓
515897-W	✓	✓	✓	✓	✓	✓
515899-S	-	-	-	-	-	-
515980-S-V2	✓	✓	✓	✓	✓	✓
517185-S	✓	✓	✓	✓	✓	✓
517594-S	✓	✓	✓	✓	✓	✓
✓ = Pass X = Fail - = not required * = refer to report text						

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

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

515897-S

The laboratory duplicate RPD exceeded acceptance criteria of 30–50% for 4.4'-DDE however was accepted under the laboratory QC guidelines as the results were <10 times the LOR.

Geo-Logix accepts the integrity of the analytical data.

9. DISCUSSION AND CONCLUSION

PAH were detected at elevated concentrations in fill at sample location TP11. The results of delineation sampling completed in the near vicinity indicate the PAH detection was a one-off isolated occurrence. The PAH in fill is not considered significant and does not warrant remediation.

No other COPC were detected at concentrations greater than assessment criteria. Geo-Logix considers the site suitable for the proposed Macquarie University – Biological Science Building.

10. 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 **13-14 September 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.

11. REFERENCES

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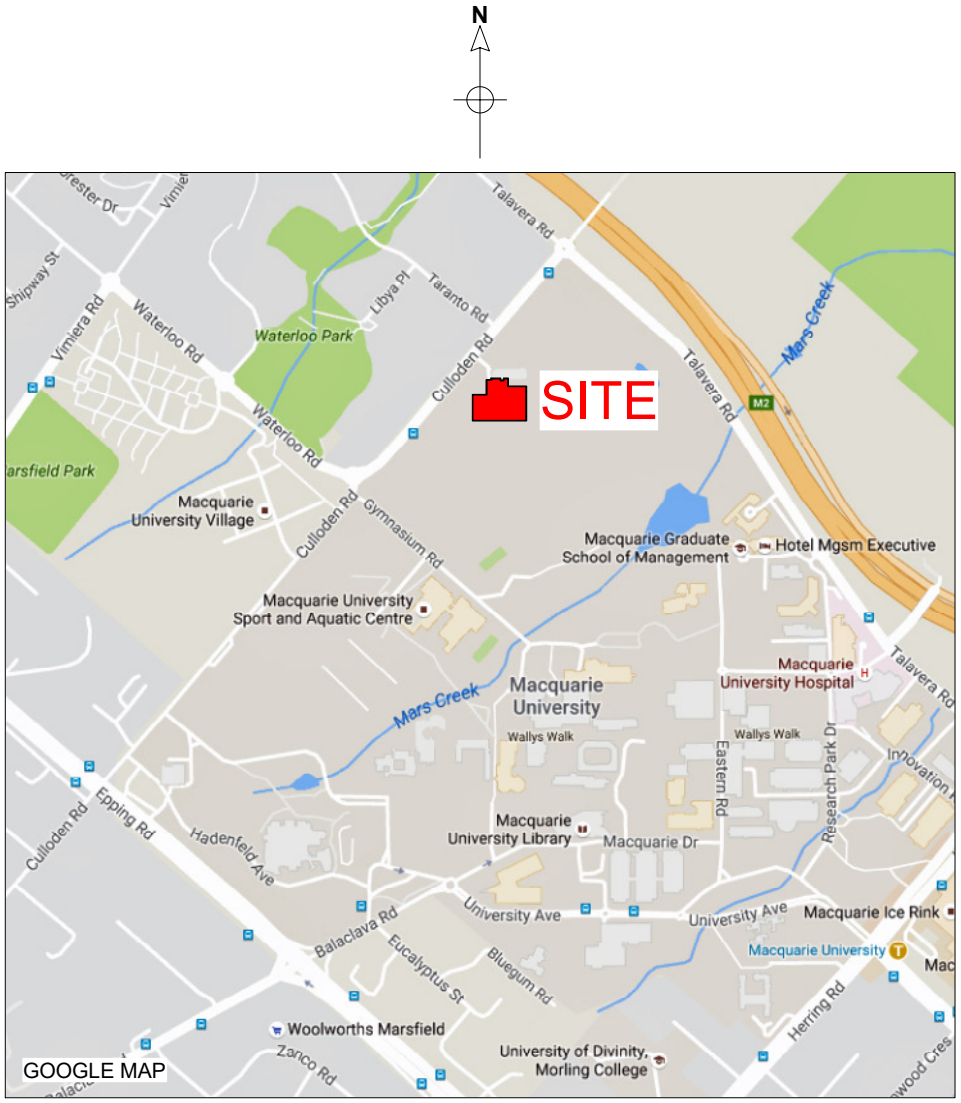
FIGURES



PART MAP MACQUARIE PARK

PART MAP SYDNEY

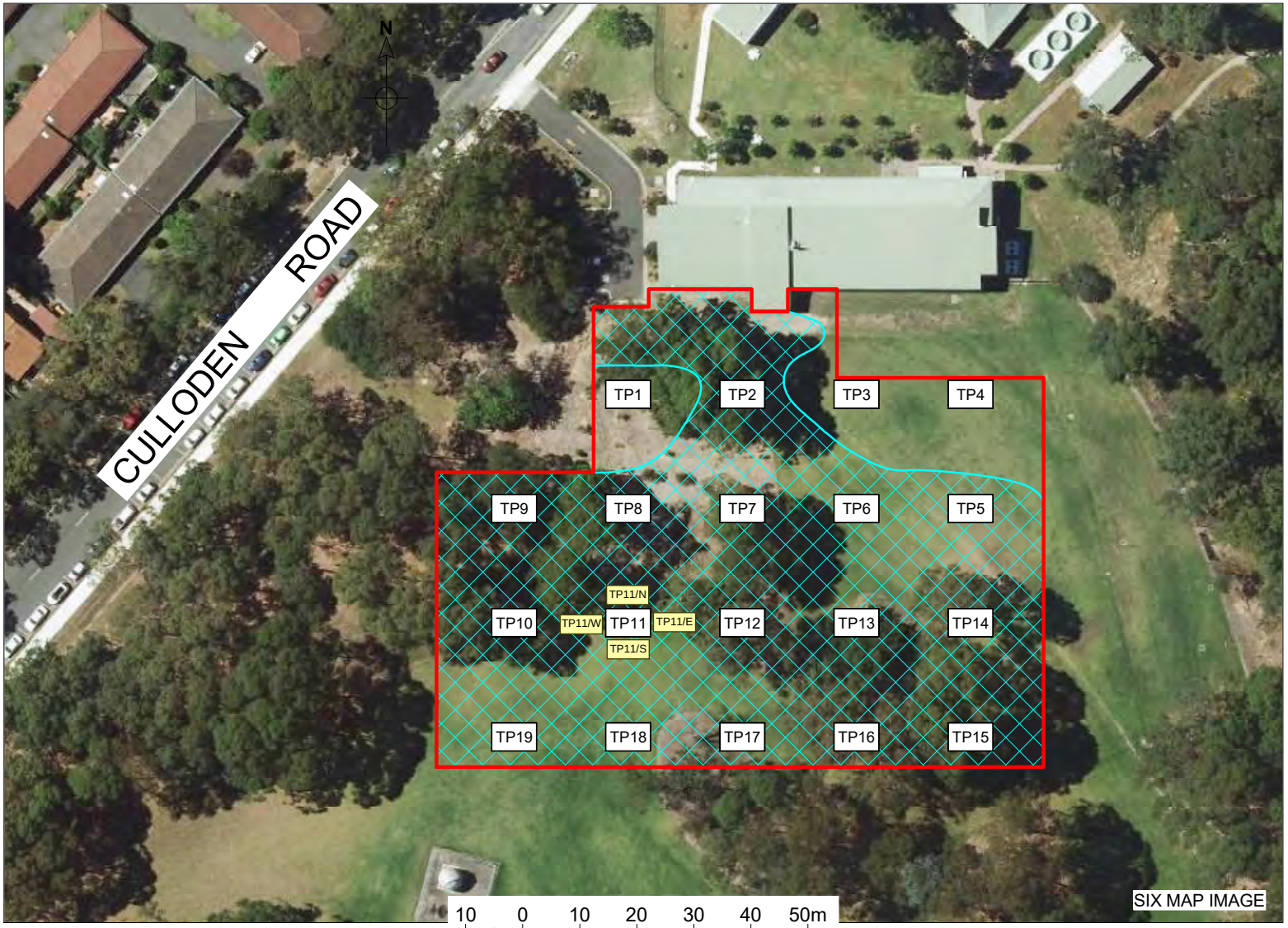
ISSUE	DATE	AMENDMENTS	DRAWN	CHECKED
01		ORIGINAL ISSUE		

Geo-Logix
environment • geotech

DRAWN:	CHECKED:
J.E.D.	T.L.
APPROVED:	B.P.
DATE:	23/09/2016

SITE LOCATION MAP
PHASE II ENVIRONMENTAL SITE ASSESSMENT
205a CULLODEN ROAD, MACQUARIE PARK NSW 2109

SHEET SIZE:	A4	PROJECT No.	1601086	REV:	01	FIGURE 1



10 0 10 20 30 40 50m

SCALE (SIX MAP)

N

AREA OF INVESTIGATION

APPROXIMATE AREA OF FILL

TP1 TEST PITS ON 20m GRID

TP11/N DELINEATION TEST PITS

ISSUE	DATE	AMENDMENTS	DRAWN	CHECKED
01		ORIGINAL ISSUE		

Geo-Logix
environment • geotech

DRAWN: J.E.D. CHECKED: T.L.
APPROVED: B.P.
DATE: 23/09/2016

SITE MAP
PHASE II ENVIRONMENTAL SITE ASSESSMENT
205a CULLODEN ROAD, MACQUARIE PARK NSW 2109

SHEET SIZE: A4 | PROJECT No. 1601086 | REV: 01 | FIGURE 2

TABLES

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
	HSLs - C	Management	ESLs	EILS	Depth (m)	0.1	0.1	0.05	0.05	0.2
	Silt	Limits	Urban Res	Urban	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
TRH C_6-C_{10}	-	800	-	-		--	< 20	--	--	< 20
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		--	< 20	--	--	< 20
TRH >C_{10}-C_{16}	-	1,000	-	-		--	< 50	--	--	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		--	< 50	--	--	< 50
TRH >C_{16}-C_{34}	-	3,500	1,300	-		--	< 100	--	--	< 100
TRH >C_{34}-C_{40}	-	10,000	5,600	-		--	< 100	--	--	< 100
Benzene	NL	-	65	-		--	< 0.1	--	--	< 0.1
Toluene	NL	-	105	-		--	< 0.1	--	--	< 0.1
Ethylbenzene	NL	-	125	-		--	< 0.1	--	--	< 0.1
m&p-Xylenes	-	-	-	-		--	< 0.2	--	--	< 0.2
o-Xylene	-	-	-	-		--	< 0.1	--	--	< 0.1
Xylenes - Total	NL	-	45	-		--	< 0.3	--	--	< 0.3
Naphthalene	NL	-	-	170		--	< 0.5	--	--	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational 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 II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
	HSLs - C	Management	ESLs	EILS	Depth (m)	0.1	0.1	0.15	0.1	0.3
	Silt	Limits	Urban Res	Urban	Type	Fill	Fill	Fill	Fill	Clay
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
TRH C_6-C_{10}	-	800	-	-		< 20	< 20	< 20	< 20	--
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		< 20	< 20	< 20	< 20	--
TRH >C_{10}-C_{16}	-	1,000	-	-		< 50	< 50	71	< 50	--
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		< 50	< 50	71	< 50	--
TRH >C_{16}-C_{34}	-	3,500	1,300	-		< 100	< 100	290	< 100	--
TRH >C_{34}-C_{40}	-	10,000	5,600	-		< 100	< 100	< 100	< 100	--
Benzene	NL	-	65	-		< 0.1	< 0.1	< 0.1	< 0.1	--
Toluene	NL	-	105	-		< 0.1	< 0.1	< 0.1	< 0.1	--
Ethylbenzene	NL	-	125	-		< 0.1	< 0.1	< 0.1	< 0.1	--
m&p-Xylenes	-	-	-	-		< 0.2	< 0.2	< 0.2	< 0.2	--
o-Xylene	-	-	-	-		< 0.1	< 0.1	< 0.1	< 0.1	--
Xylenes - Total	NL	-	45	-		< 0.3	< 0.3	< 0.3	< 0.3	--
Naphthalene	NL	-	-	170		< 0.5	< 0.5	< 0.5	< 0.5	--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.
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TS2 = triplicate of TP18/0.2

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Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	TP10/0.2	TP11/0.1	TP12/0.2	TP13/0.1	TP14/0.25
	HSLs - C	Management	ESLs	EILS	Depth (m)	0.2	0.1	0.2	0.1	0.25
	Silt	Limits	Urban Res	Urban	Type	Fill	Fill	Fill	Fill	Fill
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
TRH C_6-C_{10}	-	800	-	-		< 20	< 20	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		< 20	< 20	< 20	< 20	< 20
TRH >C_{10}-C_{16}	-	1,000	-	-		< 50	< 50	< 50	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		< 50	< 50	< 50	< 50	< 50
TRH >C_{16}-C_{34}	-	3,500	1,300	-		< 100	1,000	110	< 100	< 100
TRH >C_{34}-C_{40}	-	10,000	5,600	-		< 100	< 100	< 100	< 100	< 100
Benzene	NL	-	65	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	NL	-	105	-		< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	NL	-	125	-		< 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	NL	-	45	-		< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Naphthalene	NL	-	-	170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.
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Criteria 4 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
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DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2

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RS2 = rinsate sample
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Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
	HSLs - C	Management	ESLs	EILS	Depth (m)	0.2	0.4	0.2	-	-
	Silt	Limits	Urban Res	Urban	Type	Fill	Clay	Fill	Duplicate	-
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
TRH C_6-C_{10}	-	800	-	-		< 20	--	< 20	< 20	*nc*
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		< 20	--	< 20	< 20	*nc*
TRH >C_{10}-C_{16}	-	1,000	-	-		< 50	--	< 50	< 50	*nc*
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		< 50	--	< 50	< 50	*nc*
TRH >C_{16}-C_{34}	-	3,500	1,300	-		< 100	--	< 100	< 100	*nc*
TRH >C_{34}-C_{40}	-	10,000	5,600	-		< 100	--	< 100	< 100	*nc*
Benzene	NL	-	65	-		< 0.1	--	< 0.1	< 0.1	*nc*
Toluene	NL	-	105	-		< 0.1	--	< 0.1	< 0.1	*nc*
Ethylbenzene	NL	-	125	-		< 0.1	--	< 0.1	< 0.1	*nc*
m&p-Xylenes	-	-	-	-		< 0.2	--	< 0.2	< 0.2	*nc*
o-Xylene	-	-	-	-		< 0.1	--	< 0.1	< 0.1	*nc*
Xylenes - Total	NL	-	45	-		< 0.3	--	< 0.3	< 0.3	*nc*
Naphthalene	NL	-	-	170		< 0.5	--	< 0.5	< 0.5	*nc*

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Soil Health Screening Levels for vapour intrusion, silt 0 to <1m.
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Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
	HSLs - C	Management	ESLs	EILS	Depth (m)	-	-	0.2	0.2	-
	Silt	Limits	Urban Res	Urban	Type	Triplicate	-	Fill	Fill	Duplicate
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
TRH C_6-C_{10}	-	800	-	-		< 20	*nc*	< 20	< 20	< 20
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		< 20	*nc*	< 20	< 20	< 20
TRH >C_{10}-C_{16}	-	1,000	-	-		< 50	*nc*	63	< 50	< 50
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		< 50	*nc*	63	< 50	< 50
TRH >C_{16}-C_{34}	-	3,500	1,300	-		< 100	*nc*	250	< 100	100
TRH >C_{34}-C_{40}	-	10,000	5,600	-		< 100	*nc*	< 100	< 100	< 100
Benzene	NL	-	65	-		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
Toluene	NL	-	105	-		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
Ethylbenzene	NL	-	125	-		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
m&p-Xylenes	-	-	-	-		< 0.2	*nc*	< 0.2	< 0.2	< 0.2
o-Xylene	-	-	-	-		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
Xylenes - Total	NL	-	45	-		< 0.3	*nc*	< 0.3	< 0.3	< 0.3
Naphthalene	NL	-	-	170		< 0.5	*nc*	< 0.5	< 0.5	< 0.5

Notes:

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Phase II Environmental Site Assessment

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	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
	HSLs - C	Management	ESLs	EILS	Depth (m)	-	-	-	0.2	-
	Silt	Limits	Urban Res	Urban	Type	-	Triplicate	-	Fill	Rinsate
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	-	14/09/2016	-	14/09/2016	13/09/2016
TRH C_6-C_{10}	-	800	-	-		*nc*	< 20	*nc*	< 20	--
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		*nc*	< 20	*nc*	< 20	--
TRH >C_{10}-C_{16}	-	1,000	-	-		*nc*	< 50	*nc*	< 50	--
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		*nc*	< 50	*nc*	< 50	--
TRH >C_{16}-C_{34}	-	3,500	1,300	-		*nc*	< 100	*nc*	160	--
TRH >C_{34}-C_{40}	-	10,000	5,600	-		*nc*	< 100	*nc*	< 100	--
Benzene	NL	-	65	-		*nc*	< 0.1	*nc*	< 0.1	--
Toluene	NL	-	105	-		*nc*	< 0.1	*nc*	< 0.1	--
Ethylbenzene	NL	-	125	-		*nc*	< 0.1	*nc*	< 0.1	--
m&p-Xylenes	-	-	-	-		*nc*	< 0.2	*nc*	< 0.2	--
o-Xylene	-	-	-	-		*nc*	< 0.1	*nc*	< 0.1	--
Xylenes - Total	NL	-	45	-		*nc*	< 0.3	*nc*	< 0.3	--
Naphthalene	NL	-	-	170		*nc*	< 0.5	*nc*	< 0.5	--

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RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 1 : Summary of Soil Analytical Data - Petroleum Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Criteria 4	Sample ID	RS2
	HSLs - C	Management	ESLs	EILS	Depth (m)	-
	Silt	Limits	Urban Res	Urban	Type	Rinsate
	0 to <1 m	Res/Park	Fine Soil	Residential	Date	14/09/2016
TRH C_6-C_{10}	-	800	-	-		--
TRH C_6-C_{10} less BTEX (F1)	NL	-	180	-		--
TRH >C_{10}-C_{16}	-	1,000	-	-		--
TRH >C_{10}-C_{16} less Naphthalene (F2)	NL	-	120	-		--
TRH >C_{16}-C_{34}	-	3,500	1,300	-		--
TRH >C_{34}-C_{40}	-	10,000	5,600	-		--
Benzene	NL	-	65	-		--
Toluene	NL	-	105	-		--
Ethylbenzene	NL	-	125	-		--
m&p-Xylenes	-	-	-	-		--
o-Xylene	-	-	-	-		--
Xylenes - Total	NL	-	45	-		--
Naphthalene	NL	-	-	170		--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational 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.
Criteria 4 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
NL = not limiting
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2

RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
		ESLs	EILS	Depth (m)	0.1	0.1	0.05	0.05	0.2
	HILs - C	Urban Res	Urban	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
		Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Acenaphthene	-	-	-		--	< 0.5	--	--	< 0.5
Acenaphthylene	-	-	-		--	< 0.5	--	--	< 0.5
Anthracene	-	-	-		--	< 0.5	--	--	< 0.5
Benz(a)anthracene	-	-	-		--	< 0.5	--	--	< 0.5
Benzo(a)pyrene	-	0.7	-		--	< 0.5	--	--	< 0.5
Benzo(b&j)fluoranthene	-	-	-		--	< 0.5	--	--	< 0.5
Benzo(g.h.i)perylene	-	-	-		--	< 0.5	--	--	< 0.5
Benzo(k)fluoranthene	-	-	-		--	< 0.5	--	--	< 0.5
Chrysene	-	-	-		--	< 0.5	--	--	< 0.5
Dibenz(a.h)anthracene	-	-	-		--	< 0.5	--	--	< 0.5
Fluoranthene	-	-	-		--	< 0.5	--	--	< 0.5
Fluorene	-	-	-		--	< 0.5	--	--	< 0.5
Indeno(1.2.3-cd)pyrene	-	-	-		--	< 0.5	--	--	< 0.5
Naphthalene	-	-	170		--	< 0.5	--	--	< 0.5
Phenanthrene	-	-	-		--	< 0.5	--	--	< 0.5
Pyrene	-	-	-		--	< 0.5	--	--	< 0.5
Benzo(a)pyrene TEQ	3	-	-		--	0.6	--	--	0.6
Total PAH	300	-	-		--	< 0.5	--	--	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
		ESLs	EILS	Depth (m)	0.1	0.1	0.15	0.1	0.3
	HILs - C	Urban Res	Urban	Type	Fill	Fill	Fill	Fill	Clay
		Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Acenaphthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Acenaphthylene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benz(a)anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benzo(a)pyrene	-	0.7	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benzo(b&j)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benzo(g.h.i)perylene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benzo(k)fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Chrysene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Dibenz(a.h)anthracene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Fluoranthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Fluorene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Indeno(1.2.3-cd)pyrene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Naphthalene	-	-	170		< 0.5	< 0.5	< 0.5	< 0.5	--
Phenanthrene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Pyrene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Benzo(a)pyrene TEQ	3	-	-		0.6	0.6	0.6	0.6	--
Total PAH	300	-	-		< 0.5	< 0.5	< 0.5	< 0.5	--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TP10/0.2	TP11/0.1	TP11/0.3	TP11/E/0.1	TP11/N/0.1
		ESLs	EILS	Depth (m)	0.2	0.1	0.3	0.1	0.1
	HILs - C	Urban Res	Urban	Type	Fill	Fill	Clay	Fill	Fill
		Fine Soil	Residential	Date	13/09/2016	13/09/2016	13/09/2016	27/09/2016	27/09/2016
Acenaphthene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-	-		< 0.5	1.7	< 0.5	< 0.5	< 0.5
Anthracene	-	-	-		< 0.5	2.1	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-	-		< 0.5	7.7	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	0.7	-		< 0.5	**4.5**	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-	-		< 0.5	2.7	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-	-		< 0.5	3.3	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-	-		< 0.5	4.2	< 0.5	< 0.5	< 0.5
Chrysene	-	-	-		< 0.5	7.1	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-	-		< 0.5	1.5	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-	-		< 0.5	13	0.6	< 0.5	< 0.5
Fluorene	-	-	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-	-		< 0.5	3.3	< 0.5	< 0.5	< 0.5
Naphthalene	-	-	170		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-	-		< 0.5	4.4	< 0.5	< 0.5	< 0.5
Pyrene	-	-	-		< 0.5	11	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	3	-	-		0.6	**7.9**	0.6	0.6	0.6
Total PAH	300	-	-		< 0.5	66.5	0.6	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TP11/S/0.1	TP11/W/0.2	TP12/0.2	TP13/0.1	TP14/0.25
		ESLs	EILS	Depth (m)	0.1	0.2	0.2	0.1	0.25
	HILs - C	Urban Res	Urban	Type	Fill	Fill	Fill	Fill	Fill
		Fine Soil	Residential	Date	27/09/2016	27/09/2016	13/09/2016	13/09/2016	13/09/2016
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	-	-	170		< 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, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
		ESLs	EILS	Depth (m)	0.2	0.4	0.2	-	-
	HILs - C	Urban Res	Urban	Type	Fill	Clay	Fill	Duplicate	-
		Fine Soil	Residential	Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
Acenaphthene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Acenaphthylene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Anthracene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benz(a)anthracene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benzo(a)pyrene	-	0.7	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benzo(b&j)fluoranthene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benzo(g.h.i)perylene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benzo(k)fluoranthene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Chrysene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Dibenz(a.h)anthracene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Fluoranthene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Fluorene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Indeno(1.2.3-cd)pyrene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Naphthalene	-	-	170		< 0.5	--	< 0.5	< 0.5	*nc*
Phenanthrene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Pyrene	-	-	-		< 0.5	--	< 0.5	< 0.5	*nc*
Benzo(a)pyrene TEQ	3	-	-		0.6	--	0.6	0.6	*0%*
Total PAH	300	-	-		< 0.5	--	< 0.5	< 0.5	*nc*

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
		ESLs	EILS	Depth (m)	-	-	0.2	0.2	-
	HILs - C	Urban Res	Urban	Type	Triplicate	-	Fill	Fill	Duplicate
		Fine Soil	Residential	Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
Acenaphthene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Acenaphthylene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Anthracene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	-	0.7	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Chrysene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Fluoranthene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Fluorene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Naphthalene	-	-	170		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Phenanthrene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Pyrene	-	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ	3	-	-		0.6	*0%*	0.6	0.6	0.6
Total PAH	300	-	-		< 0.5	*nc*	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
		ESLs	EILS	Depth (m)	-	-	-	0.2	-
	HILs - C	Urban Res	Urban	Type	-	Triplicate	-	Fill	Rinsate
		Fine Soil	Residential	Date	-	14/09/2016	-	14/09/2016	13/09/2016
Acenaphthene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Acenaphthylene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Anthracene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Benz(a)anthracene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Benzo(a)pyrene	-	0.7	-		*nc*	< 0.5	*nc*	< 0.5	--
Benzo(b&j)fluoranthene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Benzo(g.h.i)perylene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Benzo(k)fluoranthene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Chrysene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Dibenz(a.h)anthracene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Fluoranthene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Fluorene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Indeno(1.2.3-cd)pyrene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Naphthalene	-	-	170		*nc*	< 0.5	*nc*	< 0.5	--
Phenanthrene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Pyrene	-	-	-		*nc*	< 0.5	*nc*	< 0.5	--
Benzo(a)pyrene TEQ	3	-	-		*0%*	0.6	*0%*	0.6	--
Total PAH	300	-	-		*nc*	< 0.5	*nc*	< 0.5	--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 2 : Summary of Soil Analytical Data - Polyaromatic Hydrocarbons

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Criteria 3	Sample ID	RS2
		ESLs	EILS	Depth (m)	-
	HILs - C	Urban Res	Urban	Type	Rinsate
		Fine Soil	Residential	Date	14/09/2016
Acenaphthene	-	-	-		--
Acenaphthylene	-	-	-		--
Anthracene	-	-	-		--
Benz(a)anthracene	-	-	-		--
Benzo(a)pyrene	-	0.7	-		--
Benzo(b&j)fluoranthene	-	-	-		--
Benzo(g.h.i)perylene	-	-	-		--
Benzo(k)fluoranthene	-	-	-		--
Chrysene	-	-	-		--
Dibenz(a.h)anthracene	-	-	-		--
Fluoranthene	-	-	-		--
Fluorene	-	-	-		--
Indeno(1.2.3-cd)pyrene	-	-	-		--
Naphthalene	-	-	170		--
Phenanthrene	-	-	-		--
Pyrene	-	-	-		--
Benzo(a)pyrene TEQ	3	-	-		--
Total PAH	300	-	-		--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Screening Levels for urban residential/public open space, fine soil.
Criteria 3 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample

RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
		EILS	Depth (m)	0.1	0.1	0.05	0.05	0.2
	HILs - C	Urban	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
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	70	-		< 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	20	-		< 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	10	-		< 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, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate

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

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
		EILS	Depth (m)	0.1	0.1	0.05	0.05	0.2
	HILs - C	Urban	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Methoxychlor	400	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	30	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	10	-		ND	ND	ND	ND	ND
Endosulfans - Total	340	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	400	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	ND

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate

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

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
		EILS	Depth (m)	0.1	0.1	0.15	0.1	0.3
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Clay
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
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	70	-		< 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	20	-		< 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	10	-		< 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, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
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nc = RPD not calculated, one or both samples below laboratory reporting limit
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Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
		EILS	Depth (m)	0.1	0.1	0.15	0.1	0.3
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Clay
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Methoxychlor	400	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	30	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	10	-		ND	ND	ND	ND	ND
Endosulfans - Total	340	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	400	-		ND	ND	ND	ND	ND
Scheduled Chemical Wastes	-	-		ND	ND	ND	ND	ND

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP10/0.2	TP11/0.1	TP12/0.2	TP13/0.1	TP14/0.25
		EILS	Depth (m)	0.2	0.1	0.2	0.1	0.25
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		< 0.05	0.07	0.13	< 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	70	-		< 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	0.07	< 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	20	-		< 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	10	-		< 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, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP10/0.2	TP11/0.1	TP12/0.2	TP13/0.1	TP14/0.25
		EILS	Depth (m)	0.2	0.1	0.2	0.1	0.25
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Methoxychlor	400	-		< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Toxaphene	30	-		< 1	< 1	< 1	< 1	< 1
Aldrin + Dieldrin	10	-		ND	ND	ND	0.07	ND
Endosulfans - Total	340	-		ND	ND	ND	ND	ND
DDD + DDE + DDT	400	-		ND	0.07	0.13	ND	ND
Scheduled Chemical Wastes	-	-		ND	0.07	0.13	0.07	ND

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
		EILS	Depth (m)	0.2	0.4	0.2	-	-
	HILs - C	Urban	Type	Fill	Clay	Fill	Duplicate	-
		Residential	Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
4.4'-DDD	-	-		< 0.05	< 0.05	< 0.05	< 0.05	*nc*
4.4'-DDE	-	-		< 0.05	< 0.05	0.19	0.25	*27%*
4.4'-DDT	-	180		< 0.05	< 0.05	< 0.05	0.05	*nc*
a-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	*nc*
Aldrin	-	-		< 0.05	< 0.05	< 0.05	< 0.05	*nc*
b-BHC	-	-		< 0.05	< 0.05	< 0.05	< 0.05	*nc*
Chlordanes - Total	70	-		< 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	20	-		< 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	10	-		< 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, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
		EILS	Depth (m)	0.2	0.4	0.2	-	-
	HILs - C	Urban	Type	Fill	Clay	Fill	Duplicate	-
		Residential	Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
Methoxychlor	400	-		< 0.2	< 0.2	< 0.2	< 0.2	*nc*
Toxaphene	30	-		< 1	< 1	< 1	< 1	*nc*
Aldrin + Dieldrin	10	-		ND	ND	ND	ND	*nc*
Endosulfans - Total	340	-		ND	ND	ND	ND	*nc*
DDD + DDE + DDT	400	-		ND	ND	0.19	0.3	*45%*
Scheduled Chemical Wastes	-	-		ND	ND	0.19	0.3	*45%*

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
		EILS	Depth (m)	-	-	0.2	0.2	-
	HILs - C	Urban	Type	Triplicate	-	Fill	Fill	Duplicate
		Residential	Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
4.4'-DDD	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
4.4'-DDE	-	-		0.28	*38%*	0.29	0.26	0.38
4.4'-DDT	-	180		0.06	*nc*	< 0.05	< 0.05	0.13
a-BHC	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Aldrin	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
b-BHC	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Chlordanes - Total	70	-		< 0.1	*nc*	< 0.1	< 0.1	< 0.1
d-BHC	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Dieldrin	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endosulfan I	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endosulfan II	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endrin	20	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endrin aldehyde	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Endrin ketone	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Heptachlor	10	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	-	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	10	-		< 0.05	*nc*	< 0.05	< 0.05	< 0.05

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate

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

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
		EILS	Depth (m)	-	-	0.2	0.2	-
	HILs - C	Urban	Type	Triplicate	-	Fill	Fill	Duplicate
		Residential	Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
Methoxychlor	400	-		< 0.05	*nc*	< 0.2	< 0.2	< 0.2
Toxaphene	30	-		< 1	*nc*	< 1	< 1	< 1
Aldrin + Dieldrin	10	-		ND	*nc*	ND	ND	ND
Endosulfans - Total	340	-		ND	*nc*	ND	ND	ND
DDD + DDE + DDT	400	-		0.34	*57%*	0.29	0.26	0.51
Scheduled Chemical Wastes	-	-		0.34	*57%*	0.29	0.26	0.51

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
		EILS	Depth (m)	-	-	-	0.2	-
	HILs - C	Urban	Type	-	Triplicate	-	Fill	Rinsate
		Residential	Date	-	14/09/2016	-	14/09/2016	13/09/2016
4.4'-DDD	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
4.4'-DDE	-	-		*38%*	0.13	*67%*	< 0.05	< 0.0001
4.4'-DDT	-	180		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
a-BHC	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Aldrin	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
b-BHC	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Chlordanes - Total	70	-		*nc*	< 0.1	*nc*	< 0.1	< 0.001
d-BHC	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Dieldrin	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endosulfan I	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endosulfan II	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endosulfan sulphate	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endrin	20	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endrin aldehyde	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Endrin ketone	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
g-BHC (Lindane)	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Heptachlor	10	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Heptachlor epoxide	-	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001
Hexachlorobenzene	10	-		*nc*	< 0.05	*nc*	< 0.05	< 0.0001

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate

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

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
		EILS	Depth (m)	-	-	-	0.2	-
	HILs - C	Urban	Type	-	Triplicate	-	Fill	Rinsate
		Residential	Date	-	14/09/2016	-	14/09/2016	13/09/2016
Methoxychlor	400	-		*nc*	< 0.05	*nc*	< 0.2	< 0.0001
Toxaphene	30	-		*nc*	< 1	*nc*	< 1	< 0.01
Aldrin + Dieldrin	10	-		*nc*	ND	*nc*	ND	ND
Endosulfans - Total	340	-		*nc*	ND	*nc*	ND	ND
DDD + DDE + DDT	400	-		*65%*	0.13	*67%*	ND	ND
Scheduled Chemical Wastes	-	-		*65%*	0.13	*67%*	ND	ND

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate

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

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RS2
		EILS	Depth (m)	-
	HILs - C	Urban	Type	Rinsate
		Residential	Date	14/09/2016
4.4'-DDD	-	-		< 0.0001
4.4'-DDE	-	-		< 0.0001
4.4'-DDT	-	180		< 0.0001
a-BHC	-	-		< 0.0001
Aldrin	-	-		< 0.0001
b-BHC	-	-		< 0.0001
Chlordanes - Total	70	-		< 0.001
d-BHC	-	-		< 0.0001
Dieldrin	-	-		< 0.0001
Endosulfan I	-	-		< 0.0001
Endosulfan II	-	-		< 0.0001
Endosulfan sulphate	-	-		< 0.0001
Endrin	20	-		< 0.0001
Endrin aldehyde	-	-		< 0.0001
Endrin ketone	-	-		< 0.0001
g-BHC (Lindane)	-	-		< 0.0001
Heptachlor	10	-		< 0.0001
Heptachlor epoxide	-	-		< 0.0001
Hexachlorobenzene	10	-		< 0.0001

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 3 : Summary of Soil Analytical Data - Organochlorine Pesticides

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RS2
		EILS	Depth (m)	-
	HILs - C	Urban	Type	Rinsate
		Residential	Date	14/09/2016
Methoxychlor	400	-		< 0.0001
Toxaphene	30	-		< 0.01
Aldrin + Dieldrin	10	-		ND
Endosulfans - Total	340	-		ND
DDD + DDE + DDT	400	-		ND
Scheduled Chemical Wastes	-	-		ND

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
		Depth (m)	0.1	0.1	0.05	0.05	0.2
	HILs - C	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
		Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Aroclor 1016	-		--	< 0.5	--	--	< 0.5
Aroclor 1232	-		--	< 0.5	--	--	< 0.5
Aroclor 1242	-		--	< 0.5	--	--	< 0.5
Aroclor 1248	-		--	< 0.5	--	--	< 0.5
Aroclor 1254	-		--	< 0.5	--	--	< 0.5
Aroclor 1260	-		--	< 0.5	--	--	< 0.5
Total PCBs	1		--	< 0.5	--	--	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
		Depth (m)	0.1	0.1	0.15	0.1	0.3
	HILs - C	Type	Fill	Fill	Fill	Fill	Clay
		Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Aroclor 1016	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Aroclor 1232	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Aroclor 1242	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Aroclor 1248	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Aroclor 1254	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Aroclor 1260	-		< 0.5	< 0.5	< 0.5	< 0.5	--
Total PCBs	1		< 0.5	< 0.5	< 0.5	< 0.5	--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	TP10/0.2	TP11/0.1	TP12/0.2	TP13/0.1	TP14/0.25
		Depth (m)	0.2	0.1	0.2	0.1	0.25
	HILs - C	Type	Fill	Fill	Fill	Fill	Fill
		Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Aroclor 1016	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1232	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1242	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1248	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1254	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor 1260	-		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Total PCBs	1		< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
		Depth (m)	0.2	0.4	0.2	-	-
	HILs - C	Type	Fill	Clay	Fill	Duplicate	-
		Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
Aroclor 1016	-		< 0.5	--	< 0.5	< 0.5	*nc*
Aroclor 1232	-		< 0.5	--	< 0.5	< 0.5	*nc*
Aroclor 1242	-		< 0.5	--	< 0.5	< 0.5	*nc*
Aroclor 1248	-		< 0.5	--	< 0.5	< 0.5	*nc*
Aroclor 1254	-		< 0.5	--	< 0.5	< 0.5	*nc*
Aroclor 1260	-		< 0.5	--	< 0.5	< 0.5	*nc*
Total PCBs	1		< 0.5	--	< 0.5	< 0.5	*nc*

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
		Depth (m)	-	-	0.2	0.2	-
	HILs - C	Type	Triplicate	-	Fill	Fill	Duplicate
		Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
Aroclor 1016	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Aroclor 1232	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Aroclor 1242	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Aroclor 1248	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Aroclor 1254	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Aroclor 1260	-		< 0.1	*nc*	< 0.5	< 0.5	< 0.5
Total PCBs	1		< 0.1	*nc*	< 0.5	< 0.5	< 0.5

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
		Depth (m)	-	-	-	0.2	-
	HILs - C	Type	-	Triplicate	-	Fill	Rinsate
		Date	-	14/09/2016	-	14/09/2016	13/09/2016
Aroclor 1016	-		*nc*	< 0.1	*nc*	< 0.5	--
Aroclor 1232	-		*nc*	< 0.1	*nc*	< 0.5	--
Aroclor 1242	-		*nc*	< 0.1	*nc*	< 0.5	--
Aroclor 1248	-		*nc*	< 0.1	*nc*	< 0.5	--
Aroclor 1254	-		*nc*	< 0.1	*nc*	< 0.5	--
Aroclor 1260	-		*nc*	< 0.1	*nc*	< 0.5	--
Total PCBs	1		*nc*	< 0.1	*nc*	< 0.5	--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 4 : Summary of Soil Analytical Data - Polychlorinated Biphenyls

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Sample ID	RS2
		Depth (m)	-
	HILs - C	Type	Rinsate
		Date	14/09/2016
Aroclor 1016	-		--
Aroclor 1232	-		--
Aroclor 1242	-		--
Aroclor 1248	-		--
Aroclor 1254	-		--
Aroclor 1260	-		--
Total PCBs	1		--

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit

< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05	TP5/0.2
		EILS	Depth (m)	0.1	0.1	0.05	0.05	0.2
	HILs - C	Urban	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Arsenic	300	100		5	15	11	18	10
Cadmium	90	-		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	300[1]	410[2]		20	47	110	110	76
Copper	17,000	110		24	40	21	24	11
Lead	600	1,300		50	57	42	44	32
Mercury	80	-		0.11	0.3	0.4	0.43	0.5
Nickel	1,200	190		< 5	< 5	< 5	< 5	< 5
Zinc	30,000	300		94	75	49	32	23

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP6/0.1	TP7/0.1	TP8/0.15	TP9/0.1	TP9/0.3
		EILS	Depth (m)	0.1	0.1	0.15	0.1	0.3
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Clay
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Arsenic	300	100		14	3.9	6	35	9.8
Cadmium	90	-		< 0.4	< 0.4	< 0.4	2.6	< 0.4
Chromium	300[1]	410[2]		67	15	11	44	16
Copper	17,000	110		19	20	11	80	10
Lead	600	1,300		51	31	20	140	22
Mercury	80	-		0.4	0.1	< 0.05	0.69	< 0.05
Nickel	1,200	190		< 5	< 5	< 5	26	< 5
Zinc	30,000	300		61	79	34	180	21

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
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[2]Guideline for Chromium (III) used conservatively.
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< # or ND = analyte(s) not detected in excess of laboratory reporting limit
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Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP10/0.2	TP11/0.1	TP12/0.2	TP13/0.1	TP14/0.25
		EILS	Depth (m)	0.2	0.1	0.2	0.1	0.25
	HILs - C	Urban	Type	Fill	Fill	Fill	Fill	Fill
		Residential	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Arsenic	300	100		9.1	15	14	5.2	12
Cadmium	90	-		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	300[1]	410[2]		30	37	32	29	39
Copper	17,000	110		23	20	22	34	14
Lead	600	1,300		46	87	95	37	22
Mercury	80	-		0.1	0.1	0.14	0.16	0.25
Nickel	1,200	190		< 5	< 5	< 5	< 5	< 5
Zinc	30,000	300		59	60	110	55	21

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
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Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
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DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
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Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP15/0.2	TP15/0.4	TP16/0.2	DS1	RPD_DS1
		EILS	Depth (m)	0.2	0.4	0.2	-	-
	HILs - C	Urban	Type	Fill	Clay	Fill	Duplicate	-
		Residential	Date	14/09/2016	14/09/2016	14/09/2016	14/09/2016	-
Arsenic	300	100		18	11	13	15	*14%*
Cadmium	90	-		< 0.4	< 0.4	< 0.4	< 0.4	*nc*
Chromium	300[1]	410[2]		48	31	38	45	*17%*
Copper	17,000	110		16	< 5	8	13	*48%*
Lead	600	1,300		31	17	31	38	*20%*
Mercury	80	-		0.26	< 0.05	0.06	0.07	*15%*
Nickel	1,200	190		< 5	< 5	< 5	< 5	*nc*
Zinc	30,000	300		40	5.8	27	36	*29%*

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
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TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
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< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TS1	RPD_TS1	TP17/0.2	TP18/0.2	DS2
		EILS	Depth (m)	-	-	0.2	0.2	-
	HILs - C	Urban	Type	Triplicate	-	Fill	Fill	Duplicate
		Residential	Date	14/09/2016	-	14/09/2016	14/09/2016	14/09/2016
Arsenic	300	100		4.5	*97%*	16	12	13
Cadmium	90	-		< 0.4	*nc*	0.4	< 0.4	< 0.4
Chromium	300[1]	410[2]		33	*14%*	59	32	37
Copper	17,000	110		8.3	*4%*	18	12	12
Lead	600	1,300		26	*18%*	53	30	41
Mercury	80	-		< 0.1	*nc*	0.13	0.12	0.16
Nickel	1,200	190		< 5	*nc*	< 5	< 5	< 5
Zinc	30,000	300		33	*20%*	72	34	36

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RPD_DS2	TS2	RPD_TS2	TP19/0.2	RS1
		EILS	Depth (m)	-	-	-	0.2	-
	HILs - C	Urban	Type	-	Triplicate	-	Fill	Rinsate
		Residential	Date	-	14/09/2016	-	14/09/2016	13/09/2016
Arsenic	300	100		*8%*	8.6	*33%*	11	< 0.001
Cadmium	90	-		*nc*	< 0.4	*nc*	< 0.4	< 0.0002
Chromium	300[1]	410[2]		*14%*	39	*20%*	20	< 0.001
Copper	17,000	110		*0%*	14	*15%*	18	< 0.001
Lead	600	1,300		*31%*	34	*13%*	40	< 0.001
Mercury	80	-		*29%*	< 0.1	*nc*	0.05	< 0.0001
Nickel	1,200	190		*nc*	< 5	*nc*	< 5	< 0.001
Zinc	30,000	300		*6%*	52	*42%*	70	< 0.005

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 5 : Summary of Soil Analytical Data - Heavy Metals

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	RS2
		EILS	Depth (m)	-
	HILs - C	Urban	Type	Rinsate
		Residential	Date	14/09/2016
Arsenic	300	100		< 0.001
Cadmium	90	-		< 0.0002
Chromium	300[1]	410[2]		< 0.001
Copper	17,000	110		< 0.001
Lead	600	1,300		< 0.001
Mercury	80	-		< 0.0001
Nickel	1,200	190		< 0.001
Zinc	30,000	300		< 0.005

Notes:

Criteria 1 = NEPC (1999) Amended, 'C' Recreational Health-based Investigation Levels for soil contaminants.
Criteria 2 = NEPC (1999) Amended, Ecological Investigation Levels for urban residential/public open space, site specific values
Total concentrations in mg/kg
Rinsate concentrations in µg/L.
- = assessment criteria not available
[1]Guideline for Cromium (VI) used conservatively.
[2]Guideline for Chromium (III) used conservatively.
DS1 = duplicate of TP16/0.2
TS1 = triplicate of TP16/0.2
DS2 = duplicate of TP18/0.2
TS2 = triplicate of TP18/0.2
RS1 = rinsate sample
RS2 = rinsate sample
RPD = relative percent difference of duplicate/triplicate
nc = RPD not calculated, one or both samples below laboratory reporting limit
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria

Table 6 : Summary of Soil Analytical Data - Asbestos

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP1[g]	TP2[g]	TP3[g]	TP4[g]	TP5[g]
	Asbestos	Asbestos	Depth (m)	0.0-0.1	0.0-0.3	0.0-0.05	0.0-0.05	0.0-0.25
	HSLs - Surface	HSLs - C	Type	Topsoil	Fill	Topsoil	Topsoil	Fill
	(Top 10 cm)	(Below 10 cm)	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Approximate Sample Volume (L)	-	-		10	10	10	10	10
Approximate Sample Density (g/L)	-	-		1,500	1,500	1,500	1,500	1,500
Approximate Sample Mass (g)	-	-		15,000	15,000	15,000	15,000	15,000
Mass ACM (g)	-	-		ND	ND	ND	ND	ND
Mass Asbestos in ACM (g)	-	-		ND	ND	ND	ND	ND
Asbestos from ACM in Soil (%w/w)	ND	0.02		ND	ND	ND	ND	ND
Mass FA (g)	-	-		--	--	--	--	--
Mass Asbestos in FA (g)	-	-		--	--	--	--	--
Mass AF (g)	-	-		--	--	--	--	--
Mass Asbestos in AF (g)	-	-		--	--	--	--	--
Mass Asbestos in FA & AF (g)	-	-		--	--	--	--	--
Asbestos from FA & AF in Soil (%w/w	ND	0.001		--	--	--	--	--

Notes:

Criteria 1 = NEPC (1999) Amended, Health Screening Levels for asbestos contamination in soil.
Criteria 2 = NEPC (1999) Amended, 'C' Recreational Health Screening Levels for asbestos contamination in soil.
- = assessment criteria not available
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria
ACM = Bonded Asbestos Containing Material
FA = Fibrous Asbestos
AF = Asbestos Fines
[g]Analysis completed by visual assessment in accordance with the WA DOH (2009) Gravimetric Method.
[l]Analysis completed by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

Table 6 : Summary of Soil Analytical Data - Asbestos

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP6[g]	TP7[g]	TP7/0.1-0.3[I]	TP8[g]	TP9[g]
	Asbestos	Asbestos	Depth (m)	0.0-0.2	0.0-0.4	0.1-0.3	0.0-0.15	0.0-0.2
	HSLs - Surface	HSLs - C	Type	Fill	Fill	Fill	Fill	Fill
	(Top 10 cm)	(Below 10 cm)	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Approximate Sample Volume (L)	-	-		10	10	--	10	10
Approximate Sample Density (g/L)	-	-		1,500	1,500	--	1,500	1,500
Approximate Sample Mass (g)	-	-		15,000	15,000	770	15,000	15,000
Mass ACM (g)	-	-		ND	ND	ND	ND	ND
Mass Asbestos in ACM (g)	-	-		ND	ND	ND	ND	ND
Asbestos from ACM in Soil (%w/w)	ND	0.02		ND	ND	ND	ND	ND
Mass FA (g)	-	-		--	--	ND	--	--
Mass Asbestos in FA (g)	-	-		--	--	ND	--	--
Mass AF (g)	-	-		--	--	ND	--	--
Mass Asbestos in AF (g)	-	-		--	--	ND	--	--
Mass Asbestos in FA & AF (g)	-	-		--	--	ND	--	--
Asbestos from FA & AF in Soil (%w/w	ND	0.001		--	--	ND	--	--

Notes:

Criteria 1 = NEPC (1999) Amended, Health Screening Levels for asbestos contamination in soil.
Criteria 2 = NEPC (1999) Amended, 'C' Recreational Health Screening Levels for asbestos contamination in soil.
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< # or ND = analyte(s) not detected in excess of laboratory reporting limit
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ACM = Bonded Asbestos Containing Material
FA = Fibrous Asbestos
AF = Asbestos Fines
[g]Analysis completed by visual assessment in accordance with the WA DOH (2009) Gravimetric Method.
[I]Analysis completed by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

Table 6 : Summary of Soil Analytical Data - Asbestos

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP9/0.1-0.3[l]	TP10[g]	TP11[g]	TP12[g]	TP13[g]
	Asbestos	Asbestos	Depth (m)	0.1-0.3	0.0-0.3	0.0-0.25	0.0-0.4	0.0-0.3
	HSLs - Surface	HSLs - C	Type	Fill	Fill	Fill	Fill	Fill
	(Top 10 cm)	(Below 10 cm)	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Approximate Sample Volume (L)	-	-		--	10	10	10	10
Approximate Sample Density (g/L)	-	-		--	1,500	1,500	1,500	1,500
Approximate Sample Mass (g)	-	-		1,077	15,000	15,000	15,000	15,000
Mass ACM (g)	-	-		ND	ND	ND	ND	ND
Mass Asbestos in ACM (g)	-	-		ND	ND	ND	ND	ND
Asbestos from ACM in Soil (%w/w)	ND	0.02		ND	ND	ND	ND	ND
Mass FA (g)	-	-		ND	--	--	--	--
Mass Asbestos in FA (g)	-	-		ND	--	--	--	--
Mass AF (g)	-	-		ND	--	--	--	--
Mass Asbestos in AF (g)	-	-		ND	--	--	--	--
Mass Asbestos in FA & AF (g)	-	-		ND	--	--	--	--
Asbestos from FA & AF in Soil (%w/w	ND	0.001		ND	--	--	--	--

Notes:

Criteria 1 = NEPC (1999) Amended, Health Screening Levels for asbestos contamination in soil.
Criteria 2 = NEPC (1999) Amended, 'C' Recreational Health Screening Levels for asbestos contamination in soil.
- = assessment criteria not available
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-- = sample not analysed
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ACM = Bonded Asbestos Containing Material
FA = Fibrous Asbestos
AF = Asbestos Fines
[g]Analysis completed by visual assessment in accordance with the WA DOH (2009) Gravimetric Method.
[l]Analysis completed by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

Table 6 : Summary of Soil Analytical Data - Asbestos

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP14[g]	TP15[g]	TP16[g]	TP16/0.1-0.3[I]	TP17[g]
	Asbestos	Asbestos	Depth (m)	0.0-0.25	0.0-0.3	0.0-0.2	0.1-0.3	0.0-0.3
	HSLs - Surface	HSLs - C	Type	Fill	Fill	Fill	Fill	Fill
	(Top 10 cm)	(Below 10 cm)	Date	13/09/2016	13/09/2016	13/09/2016	13/09/2016	13/09/2016
Approximate Sample Volume (L)	-	-		10	10	10	--	10
Approximate Sample Density (g/L)	-	-		1,500	1,500	1,500	--	1,500
Approximate Sample Mass (g)	-	-		15,000	15,000	15,000	1,042	15,000
Mass ACM (g)	-	-		ND	ND	ND	ND	ND
Mass Asbestos in ACM (g)	-	-		ND	ND	ND	ND	ND
Asbestos from ACM in Soil (%w/w)	ND	0.02		ND	ND	ND	ND	ND
Mass FA (g)	-	-		--	--	--	ND	--
Mass Asbestos in FA (g)	-	-		--	--	--	ND	--
Mass AF (g)	-	-		--	--	--	ND	--
Mass Asbestos in AF (g)	-	-		--	--	--	ND	--
Mass Asbestos in FA & AF (g)	-	-		--	--	--	ND	--
Asbestos from FA & AF in Soil (%w/w	ND	0.001		--	--	--	ND	--

Notes:

Criteria 1 = NEPC (1999) Amended, Health Screening Levels for asbestos contamination in soil.
Criteria 2 = NEPC (1999) Amended, 'C' Recreational Health Screening Levels for asbestos contamination in soil.
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ACM = Bonded Asbestos Containing Material
FA = Fibrous Asbestos
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[I]Analysis completed by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

Table 6 : Summary of Soil Analytical Data - Asbestos

Phase II Environmental Site Assessment

Project No.: 1601086

205a Culloden Road
Macquarie Park NSW 2109

	Criteria 1	Criteria 2	Sample ID	TP18[g]	TP19[g]
	Asbestos	Asbestos	Depth (m)	0.0-0.3	0.0-0.15
	HSLs - Surface	HSLs - C	Type	Fill	Fill
	(Top 10 cm)	(Below 10 cm)	Date	13/09/2016	13/09/2016
Approximate Sample Volume (L)	-	-		10	10
Approximate Sample Density (g/L)	-	-		1,500	1,500
Approximate Sample Mass (g)	-	-		15,000	15,000
Mass ACM (g)	-	-		ND	ND
Mass Asbestos in ACM (g)	-	-		ND	ND
Asbestos from ACM in Soil (%w/w)	ND	0.02		ND	ND
Mass FA (g)	-	-		--	--
Mass Asbestos in FA (g)	-	-		--	--
Mass AF (g)	-	-		--	--
Mass Asbestos in AF (g)	-	-		--	--
Mass Asbestos in FA & AF (g)	-	-		--	--
Asbestos from FA & AF in Soil (%w/w	ND	0.001		--	--

Notes:

Criteria 1 = NEPC (1999) Amended, Health Screening Levels for asbestos contamination in soil.
Criteria 2 = NEPC (1999) Amended, 'C' Recreational Health Screening Levels for asbestos contamination in soil.
- = assessment criteria not available
< # or ND = analyte(s) not detected in excess of laboratory reporting limit
-- = sample not analysed
Bold/red indicates exceedance of assessment criteria
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FA = Fibrous Asbestos
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[l]Analysis completed by polarised light microscopy (PLM) and dispersion staining (DS) techniques.

ATTACHMENT A

Photographic Plate 1: Brick and metal clad building north of site.

Photographic Plate 2: Brick and metal clad building north of site.

Photographic Plate 3: Brick and metal clad building northwest of site.

Photographic Plate 4: Mulch fill and sidewalk, northwest of site.

Photographic Plate 5: Looking southwest across site towards University in background.

Photographic Plate 6: Looking southwest across site towards University in background.

Photographic Plate 7: Looking south from north eastern corner of site

Photographic Plate 8: Fill with concrete and masonry blocks in treed area, near centre of site.

Photographic Plate 9: Looking at treed area in northern corner of site from centre of site.

Photographic Plate 10: Fill in treed area, northern corner of site.

Photographic Plate 11: Looking southeast from the southern site boundary.

ATTACHMENT B

All Groundwater

All Groundwater Map

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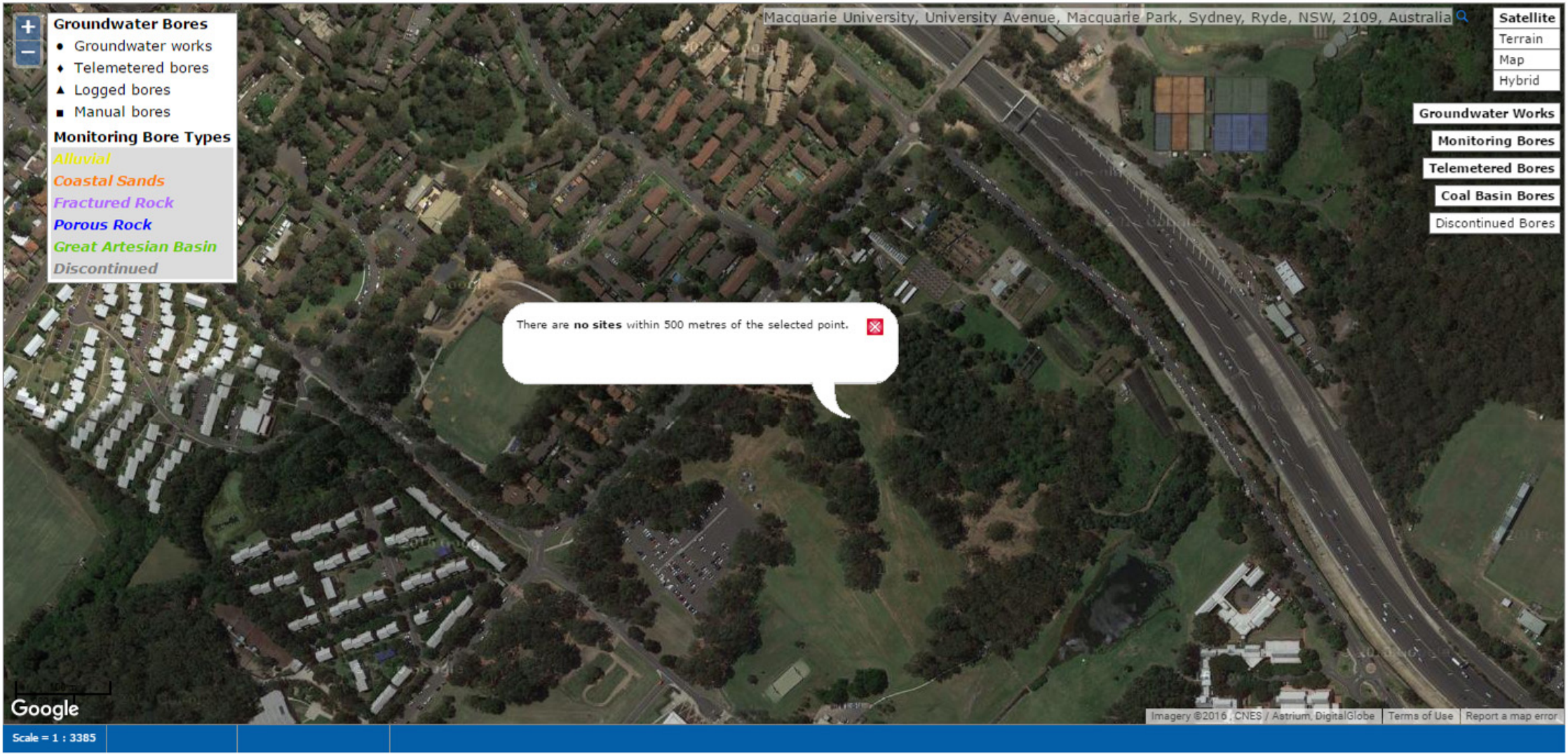
All data times are Eastern Standard Time

Map | Info



Scale = 1 : 3385

ATTACHMENT C

Job No 11050404

Phone: 1100
www.1100.com.au

Caller Details

Contact: Mr Aidan McKenzie
Company: Geo-Logix
Address: Unit 2309 4 Daydream Street
Warriewood NSW 2102

Caller Id: 1565424 **Phone:** 0299791722
Mobile: Not Supplied **Fax:** Not Supplied
Email: amckenzie@geo-logix.com.au

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.

User Reference: 1601086
Working on Behalf of:
Private

Enquiry Date:	Start Date:	End Date:
03/08/2016	06/08/2016	06/09/2016

Address:
Culloden Road
Marsfield NSW 2122

Job Purpose: Excavation
Onsite Activity: Vertical Boring
Location of Workplace: Private Property
Location 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.

Notes/Description of Works:
Not Supplied

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.

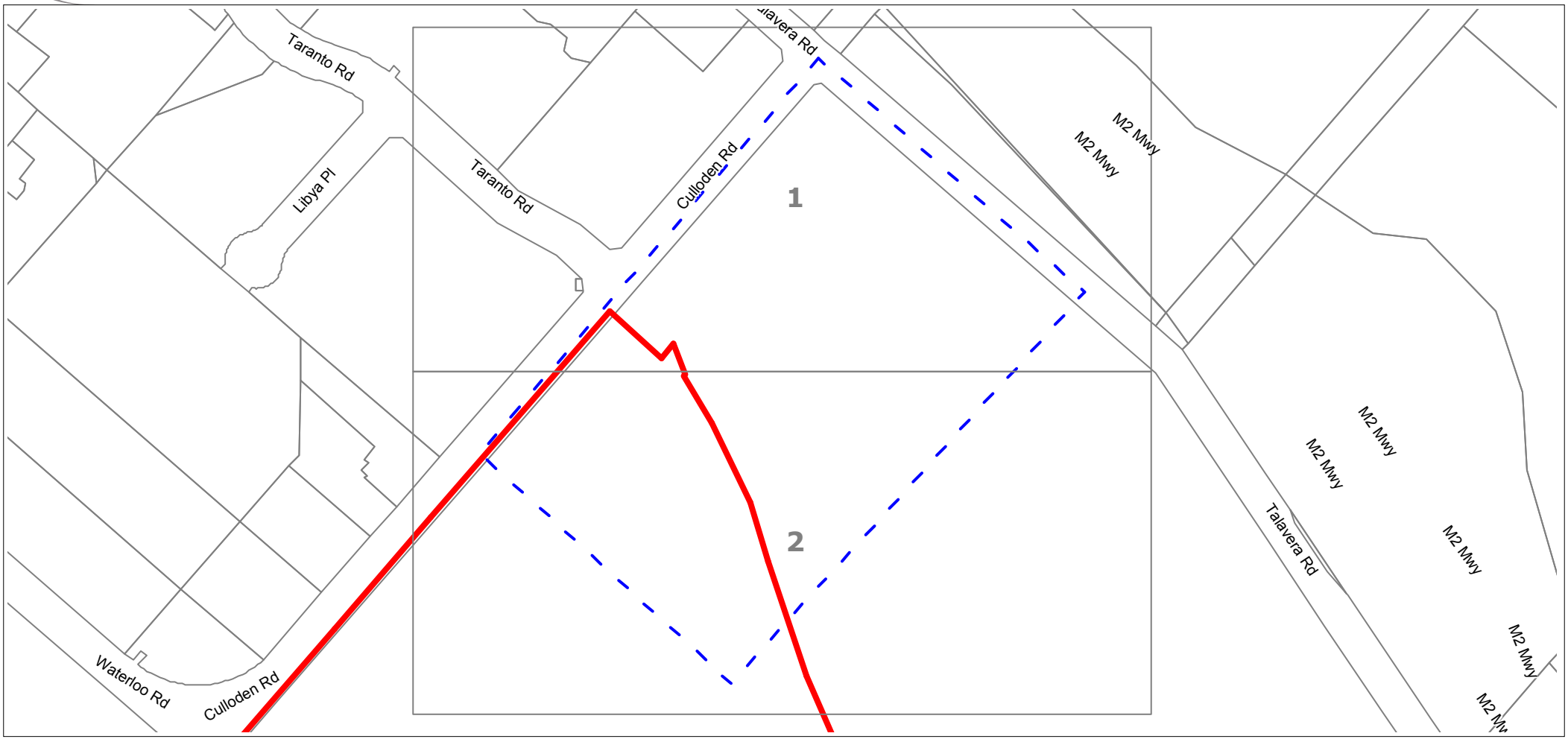
Seq. No.	Authority Name	Phone	Status
54696766	AARNet Pty Ltd, Nsw	1300275662	NOTIFIED
54696761	Ausgrid	0249510899	NOTIFIED
54696758	City Of Ryde	0299528130	NOTIFIED
54696764	Jemena Gas North	1300880906	NOTIFIED
54696759	Nextgen, NCC - NSW	1800032532	NOTIFIED
54696763	Optus and/or Uecomm, Nsw	1800505777	NOTIFIED
54696760	PIPE Networks, Nsw	1800201100	NOTIFIED
54696765	Sydney Water	132092	NOTIFIED
54696762	Telstra NSW, Central	1800653935	NOTIFIED

END OF UTILITIES LIST

AARNet

Sequence Number: 54696766

Address:Culloden Road, Marsfield, NSW, 2122



Create Date: 03/08/2016

Scale 1:1500

N

Enquiry Area

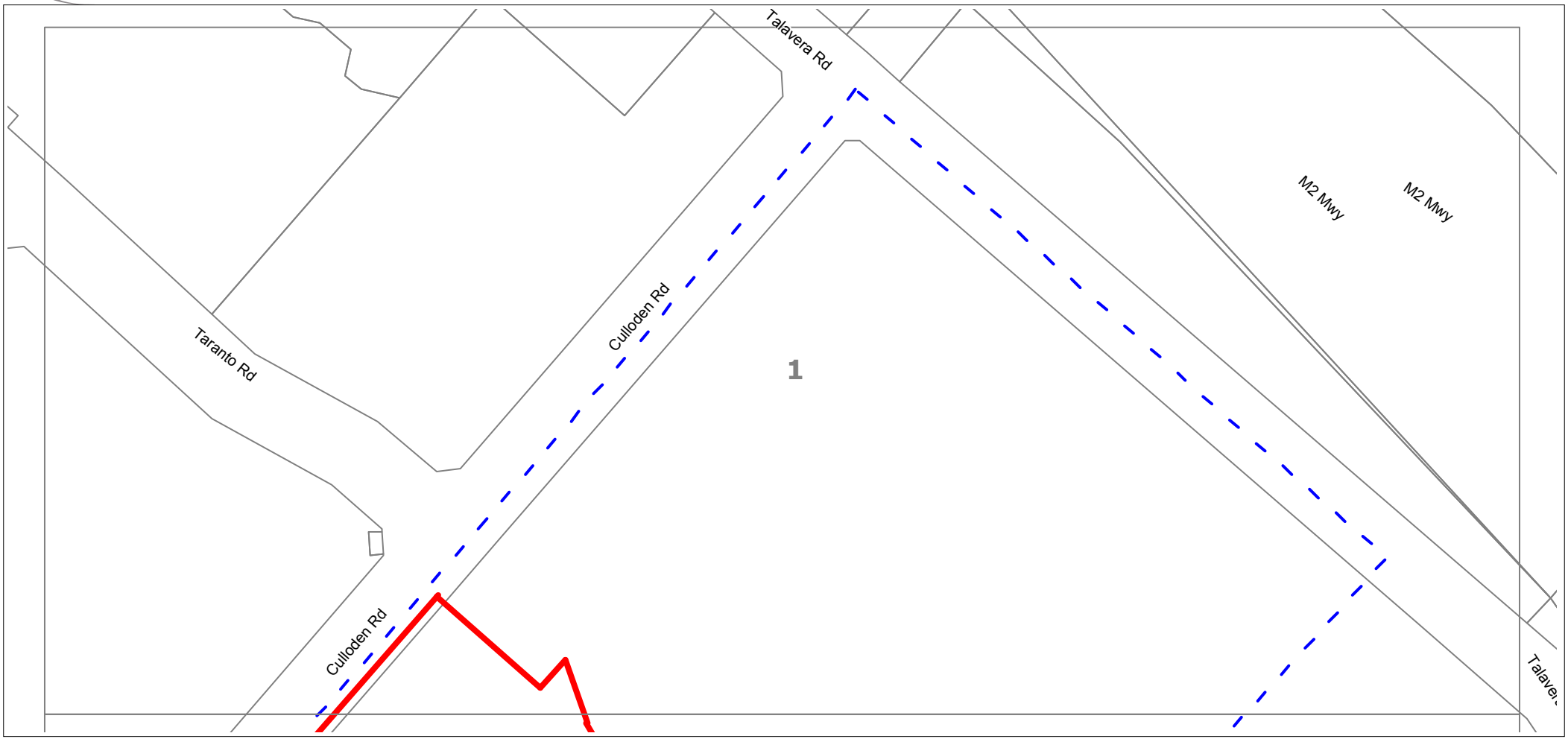
AARNet Assets

Cadastre

AARNet

Sequence Number: 54696766

Address:Culloden Road, Marsfield, NSW, 2122



Create Date: 03/08/2016

Scale 1:1500

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Enquiry Area

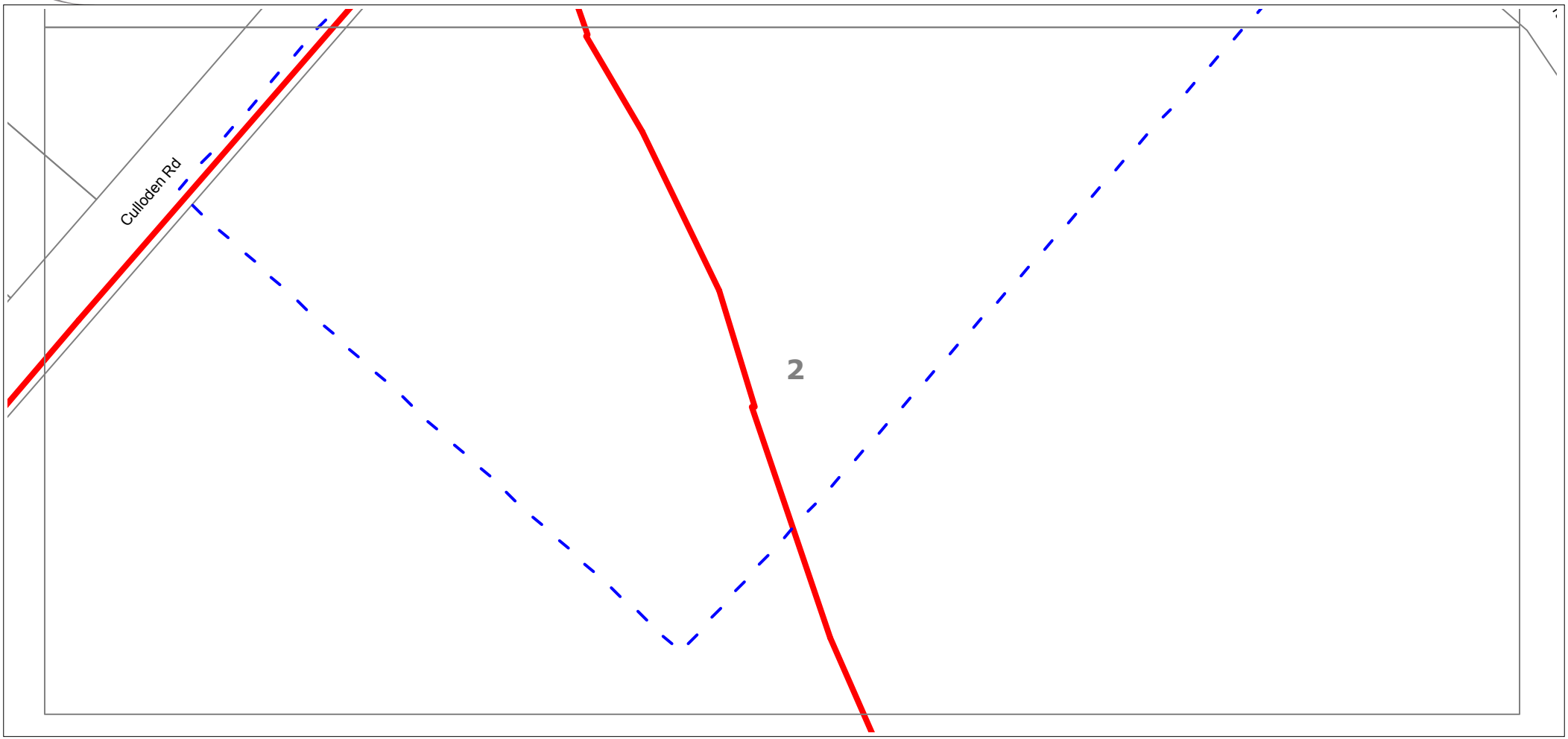
AARNet Assets

Cadastre

AARNet

Sequence Number: 54696766

Address:Culloden Road, Marsfield, NSW, 2122



Create Date: 03/08/2016

Scale 1:1500

N

Enquiry Area

AARNet Assets

Cadastre

P 72131

P 72132

P 72133

P 72134

WARN NG

PY 2 M 0
u n 9
g 0 g
02

N

Ausgrid

P 71241

P 71242

P 71243

P 71244

WARN NG

PY 2 M 0
u n 9
g 0 g
02
N

Ausgrid

PYMBLE 7B

SCALE 1:2000

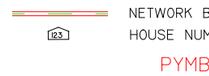
50 0 50 100 150 200

THIS MAP UPDATED ON 18/02/13
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

DATE ALTERED:..... BY:.....

PY4C	PY4D	PY5C
PY7A	PY7B	PY8A
PY7C	PY7D	PY8C

ADJOINING MAPS



NETWORK AREA

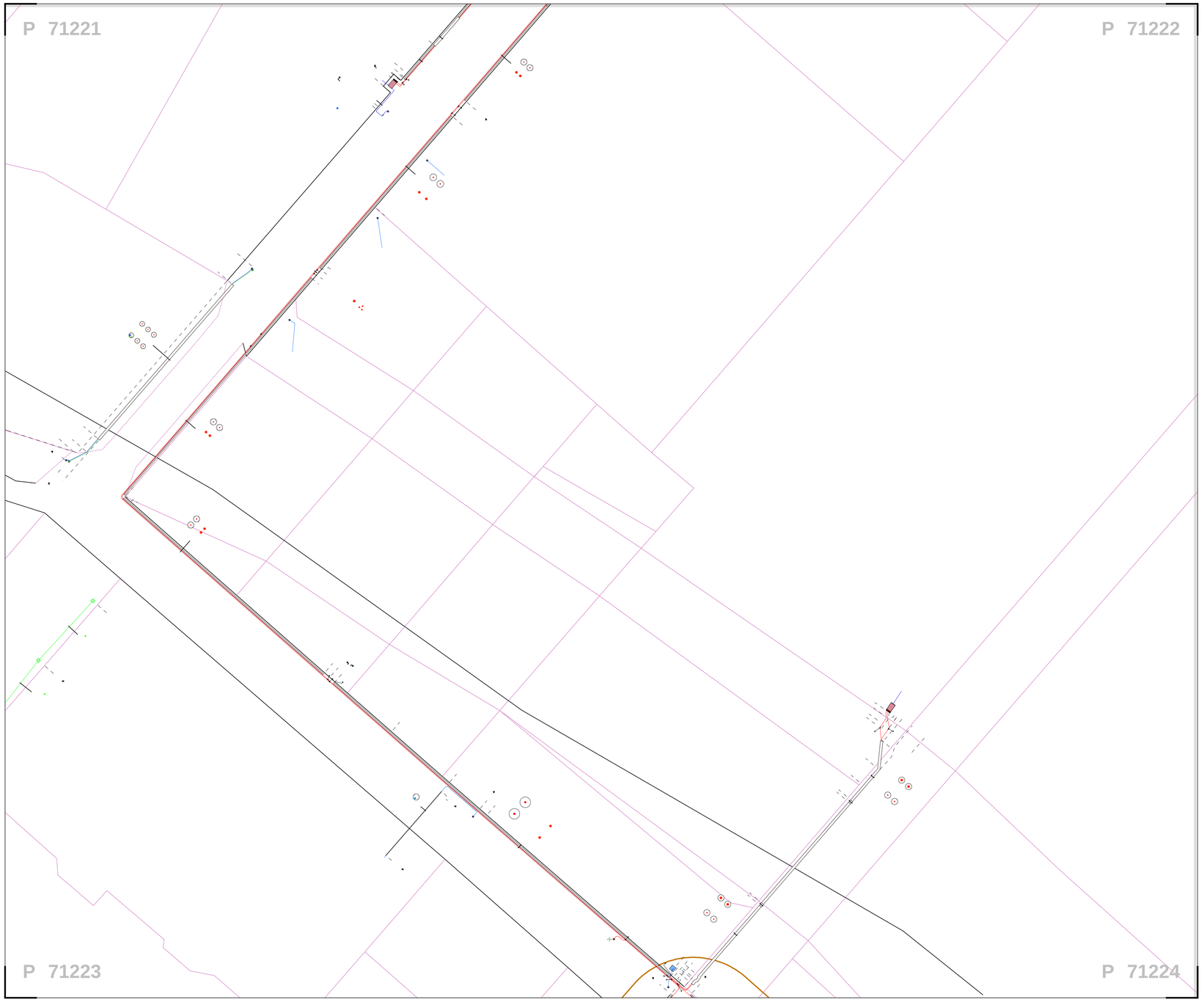
MUNICIPALITY AREA

Jemena

KEY

		MAX ALLOWABLE OPERATING PRESSURE
T	TRUNK PIPELINE	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
400	NETWORK MAIN	400 kPa
	NETWORK MAIN	300 kPa
	NETWORK MAIN	210 kPa
100	NETWORK MAIN	100 kPa
30	NETWORK MAIN	30 kPa
	NETWORK MAIN	7 kPa
	NETWORK MAIN	2 kPa
	PROPOSED MAINS	
PR 11-2 3	STEEL MAIN PROJECT NUMBER	
P	PRESSURE MONITORING STATION	
	VALVE	
	SYSTEM PRESSURE REGULATOR	
S	SIPHON	
123	NETWORK NODE	
123S	NETWORK VALVE NODE	
298	VALVE NUMBER	
6NB	6 INCH CAST IRON MAIN	
150MM	150MM STEEL MAIN	
110MM PE/NY	110MM POLYETHYLENE/NYLON MAIN	
6NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN	
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE	
1957	YEAR LAID	
	MUNICIPALITY BOUNDARY	
	NETWORK BOUNDARY	
123	HOUSE NUMBER	

PYMBLE 7B



WARN NG

PY 2 M 0
u n 9
g 0 g
02
N

Ausgrid

PYMBLE 7A

SCALE 1:2000

50 0 50 100 150 200

THIS MAP UPDATED ON 27/11/2014
THIS PLAN IS DIAGRAMATIC ONLY. DISTANCES SCALED FROM THIS PLAN MAY NOT BE ACCURATE.

DATE ALTERED:..... BY:.....

E6D	PY4C	PY4D
E9B	PY7A	PY7B
E9D	PY7C	PY7D

ADJOINING MAPS

NETWORK AREA	MUNICIPALITY AREA
656, 263, 264	HORNSBY, RYDE

Jemena

KEY

		MAX ALLOWABLE OPERATING PRESSURE
T	TRUNK PIPELINE	7000 kPa
P	PRIMARY MAIN	3500 kPa
S	SECONDARY MAIN	1050 kPa
400	NETWORK MAIN	400 kPa
	NETWORK MAIN	300 kPa
	NETWORK MAIN	210 kPa
100	NETWORK MAIN	100 kPa
30	NETWORK MAIN	30 kPa
	NETWORK MAIN	7 kPa
	NETWORK MAIN	2 kPa
	PROPOSED MAINS	

PR II-2 3	STEEL MAIN PROJECT NUMBER
P	PRESSURE MONITORING STATION
	VALVE
	SYSTEM PRESSURE REGULATOR
S	SIPHON
123	NETWORK NODE
123S	NETWORK VALVE NODE
1298	VALVE NUMBER
6NB	6 INCH CAST IRON MAIN
150MM	150MM STEEL MAIN
110MM PE/NY	110MM POLYETHYLENE/NYLON MAIN
6NB 50MM NY	50MM NYLON INSERTED INTO 6NB MAIN CAST IRON MAIN
1.2MBL	DISTANCE IN METRES OF MAIN FROM BOUNDARY LINE
1957	YEAR LAID
	MUNICIPALITY BOUNDARY
	NETWORK BOUNDARY
123	HOUSE NUMBER

PYMBLE 7A

Response Cover Letter

Date: 03/08/2016

PIPE Networks
Level 17, 127 Creek St
Brisbane QLD 4000
Phone: +61 732339895
Fax: +61 732339880

To:
Mr Aidan McKenzie - Customer ID: 1565424
Geo-Logix - Mr Aidan McKenzie
Unit 2309 4 Daydream Street
Warriewood
NSW
2102

Email: amckenzie@geo-logix.com.au
Phone: 0299791722
Fax: Not Supplied
Mobile: Not Supplied

Dear Mr Aidan McKenzie

The following is our response to your Dial Before You Dig enquiry.

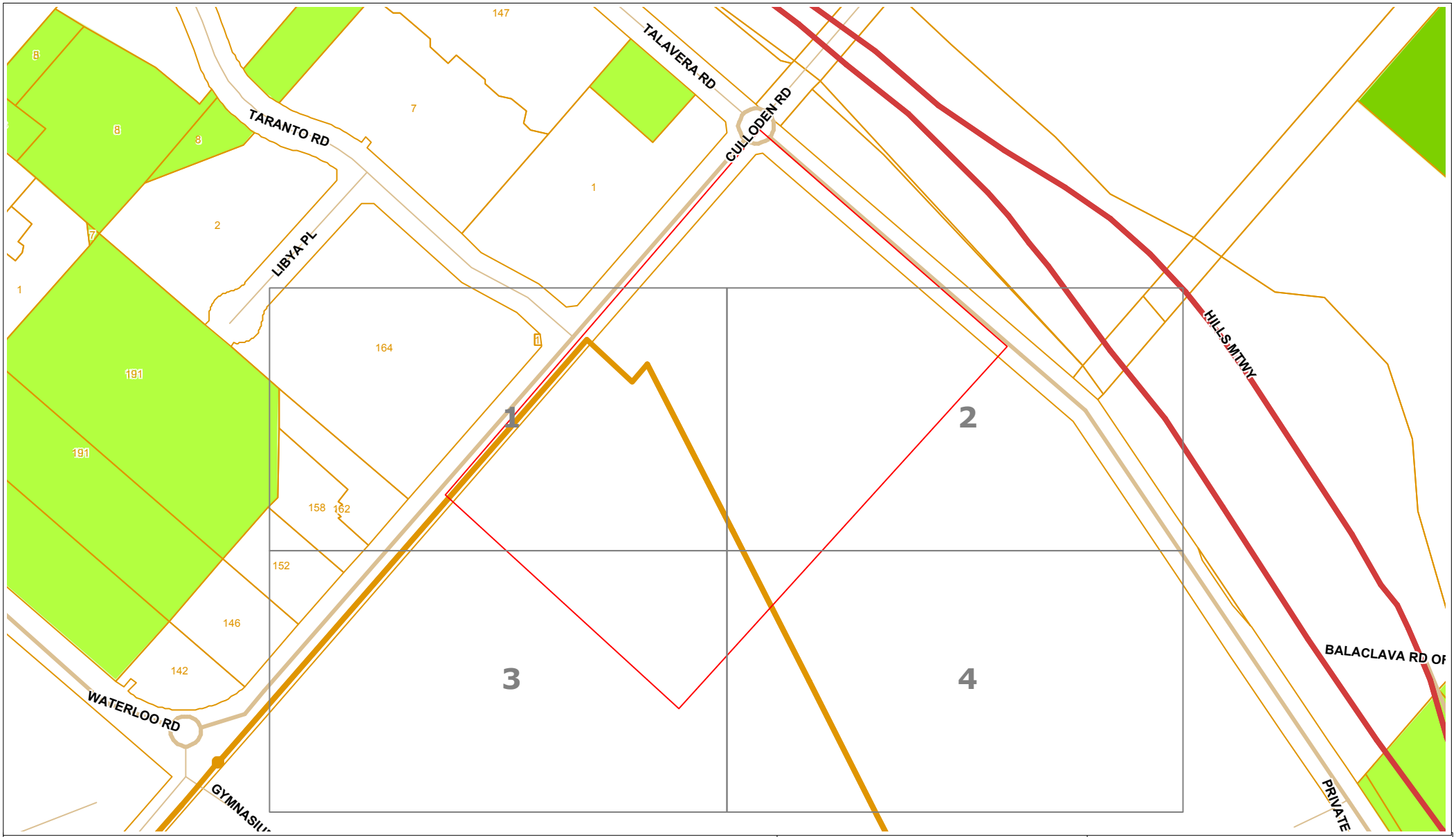
Assets Affected: Telstra

Sequence Number: 54696760

Location: Culloden Road
Marsfield
NSW 2122

Commencement Date: 06/08/2016

Please read over the attached documents for more information about your enquiry.



Sequence Number: 54696759

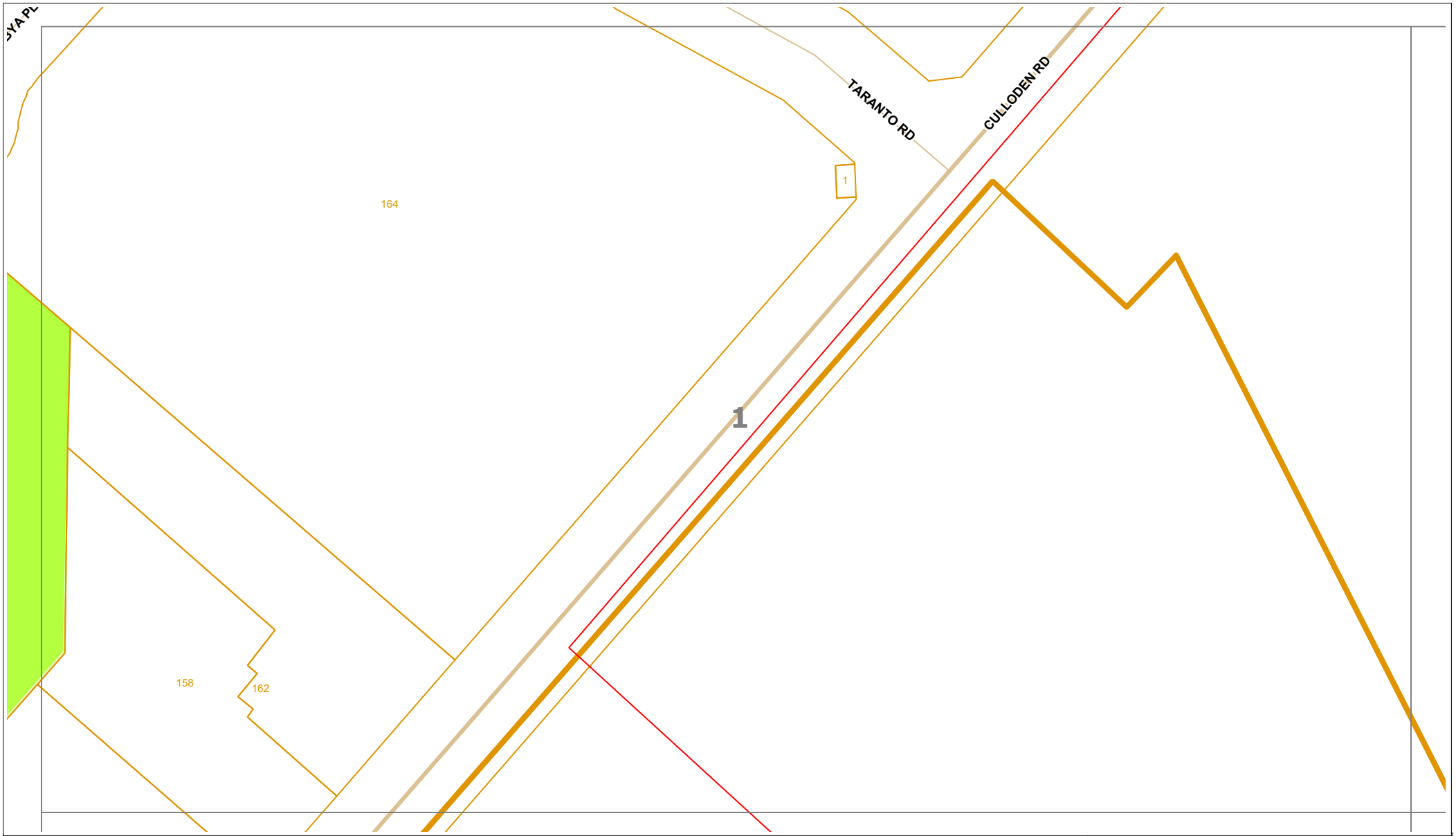
Date: 03/08/2016

DISCLAIMER: THIS DRAWING SHOULD NOT BE SCALED TO LOCATE CABLES. NO WARRANTY IS GIVEN THAT THE INFORMATION IS ACCURATE OR COMPLETE. IF YOU REQUIRE INFORMATION REGARDING LOCATING THE CABLE PLEASE CALL NEXTGEN. THIS DOCUMENT HAS BEEN PREPARED SOLELY FOR DIAL BEFORE YOU DIG USE. THIS PLAN CONTAINS COMMERCIALLY SENSITIVE INFORMATION AND IS TO BE TREATED ACCORDINGLY. NO SUCH INFORMATION IS TO BE PASSED ONTO OTHER PARTIES WITHOUT WRITTEN CONSENT FROM NEXTGEN PTY LTD.

nextgen GROUP

LEGEND

Digsite		Assets	
Point		Cable	
Line		3rd Party Duct	
Area		Marker Post	



Sequence Number: 54696759

Date: 03/08/2016

nextgen GROUP

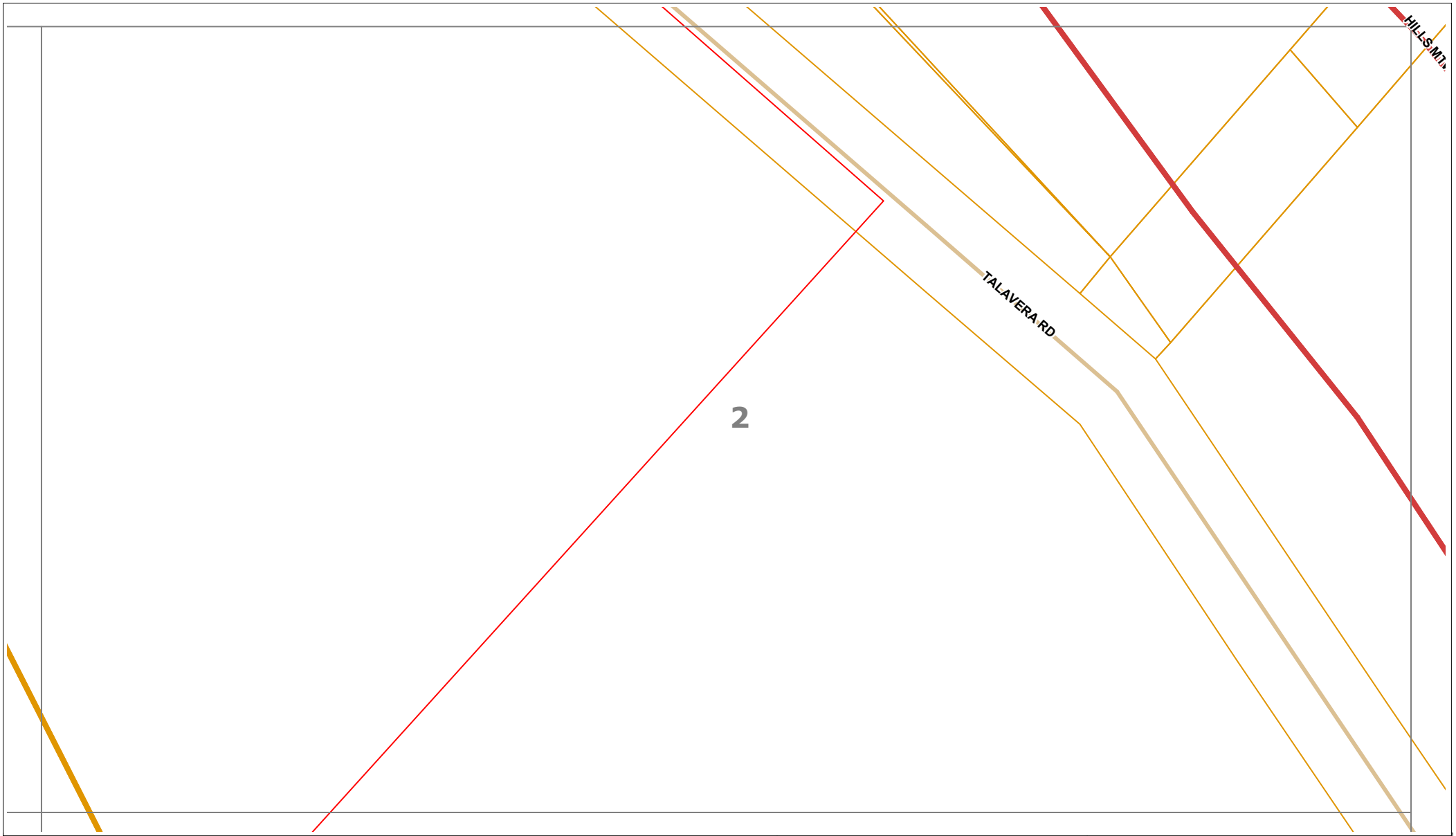
LEGEND

Digsite

- Point
- Line
- Area

Assets

- Cable
- 3rd Party Duct
- Marker Post



Sequence Number: 54696759

Date: 03/08/2016

nextgen GROUP

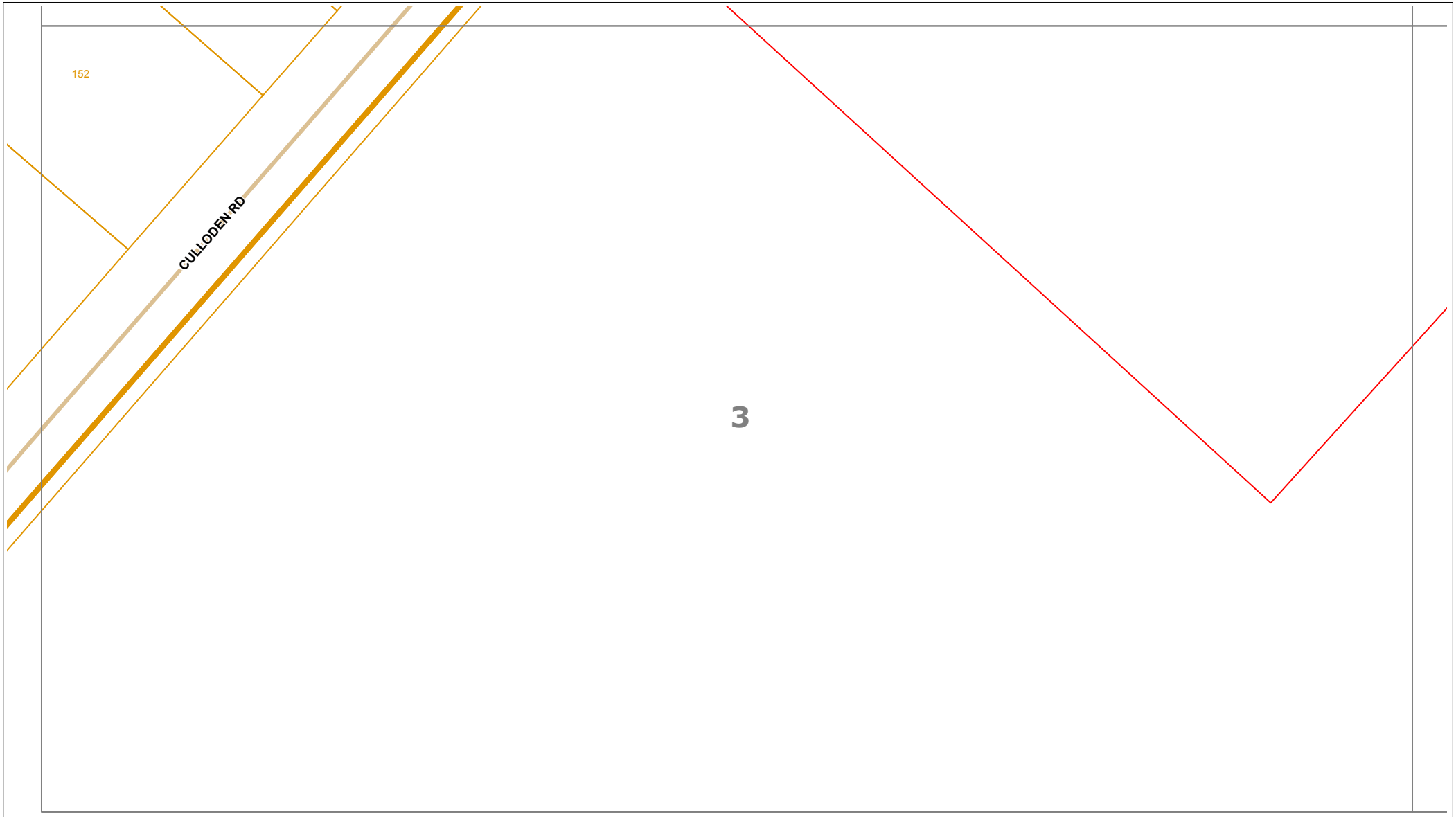
LEGEND

Digsite

- Point
- Line
- Area

Assets

- Cable
- 3rd Party Duct
- Marker Post



Sequence Number: 54696759

Date: 03/08/2016

nextgen GROUP

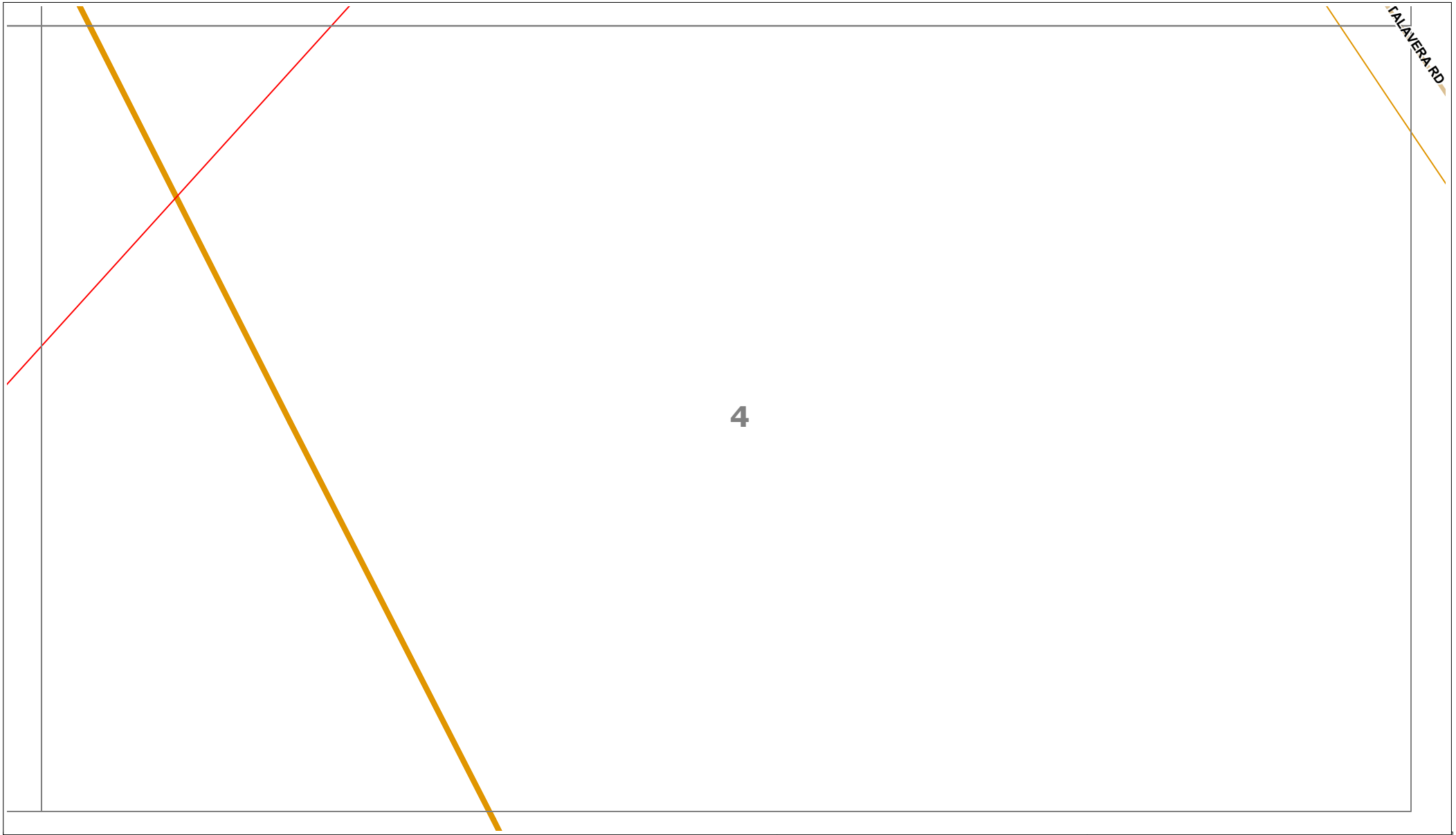
LEGEND

Digsite

- Point
- Line
- Area

Assets

- Cable
- 3rd Party Duct
- Marker Post



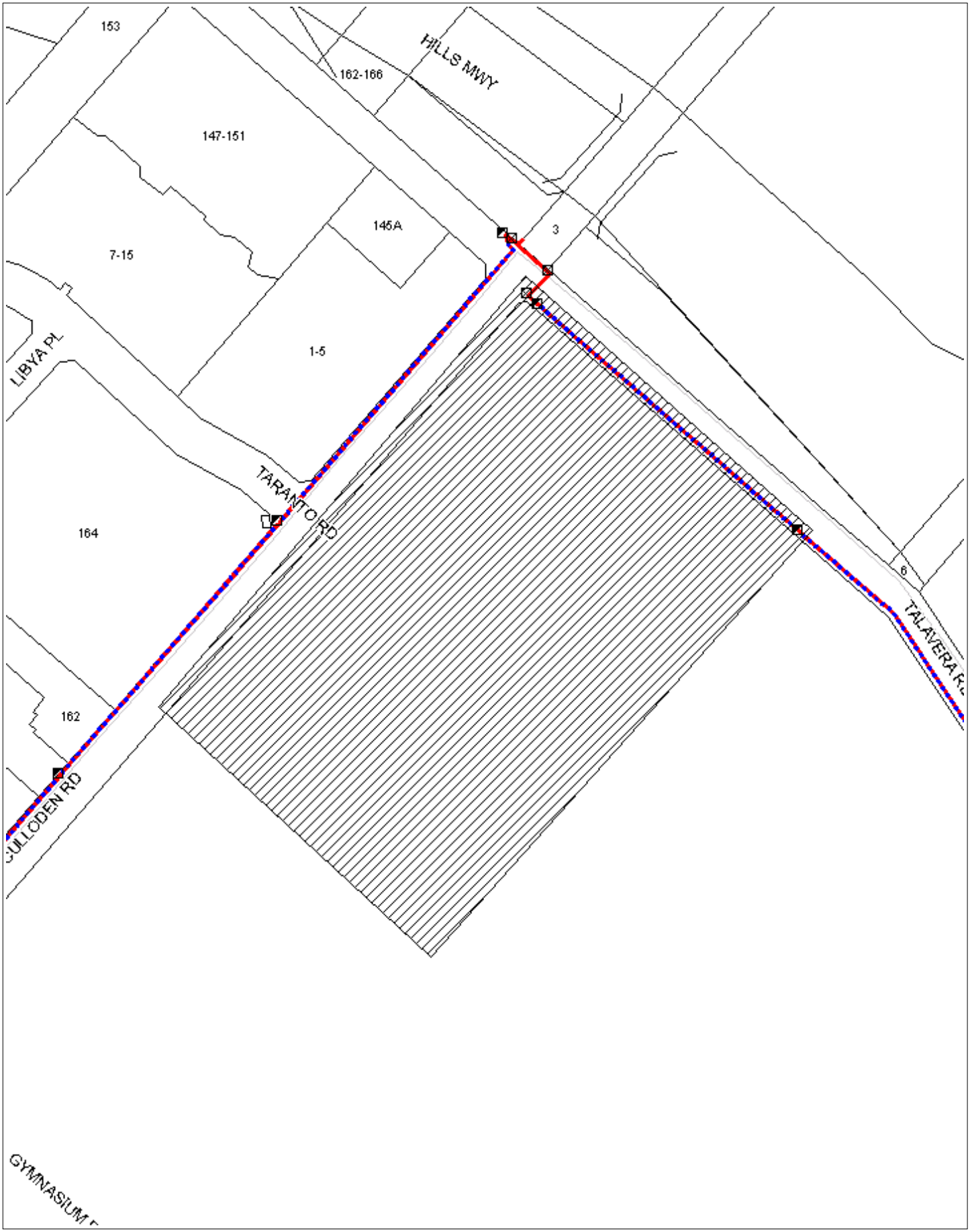
Sequence Number: 54696759

Date: 03/08/2016

nextgen GROUP

LEGEND

Digsite		Assets	
	Point		Cable
	Line		3rd Party Duct
	Area		Marker Post



Sequence Number: 54696763

Date Generated: 03/08/2016

For all Optus DBYD plan enquiries –
Email: Fibre.Locations@optus.net.au
For urgent onsite assistance contact 1800 505 777
Optus Limited ACN 052 833 208

A3

RD

RD

CULLODEN

TALAVERA

M2

300 VC

225 VC

225 VC

150 CICL

100 CICL

250 CICL

300 SCL

400 VC

400 VC

400 VC

DBYD Address:
n/a Culloden Road
Marsfield NSW 2122

DBYD Job No: 11050404

DBYD Sequence No: 54696765

Scale: 1:1500

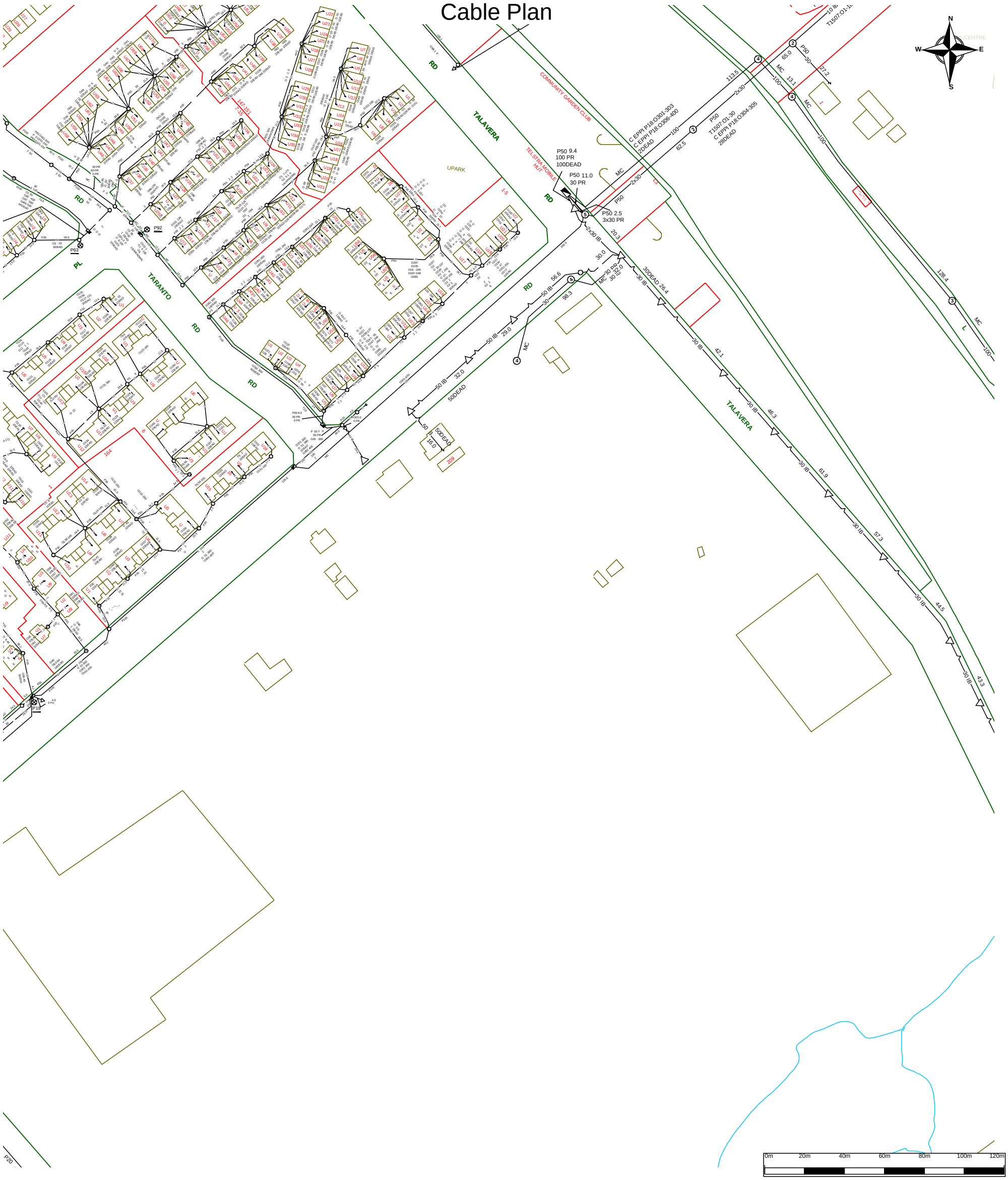
Date of Production: 03/08/2016

Plan 1 of 1

N

0m 7m 14m 21m 28m

Cable Plan



Telstra	For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	
Generated On 03/08/2016 13:35:07	Sequence Number: 54696762
	CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

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

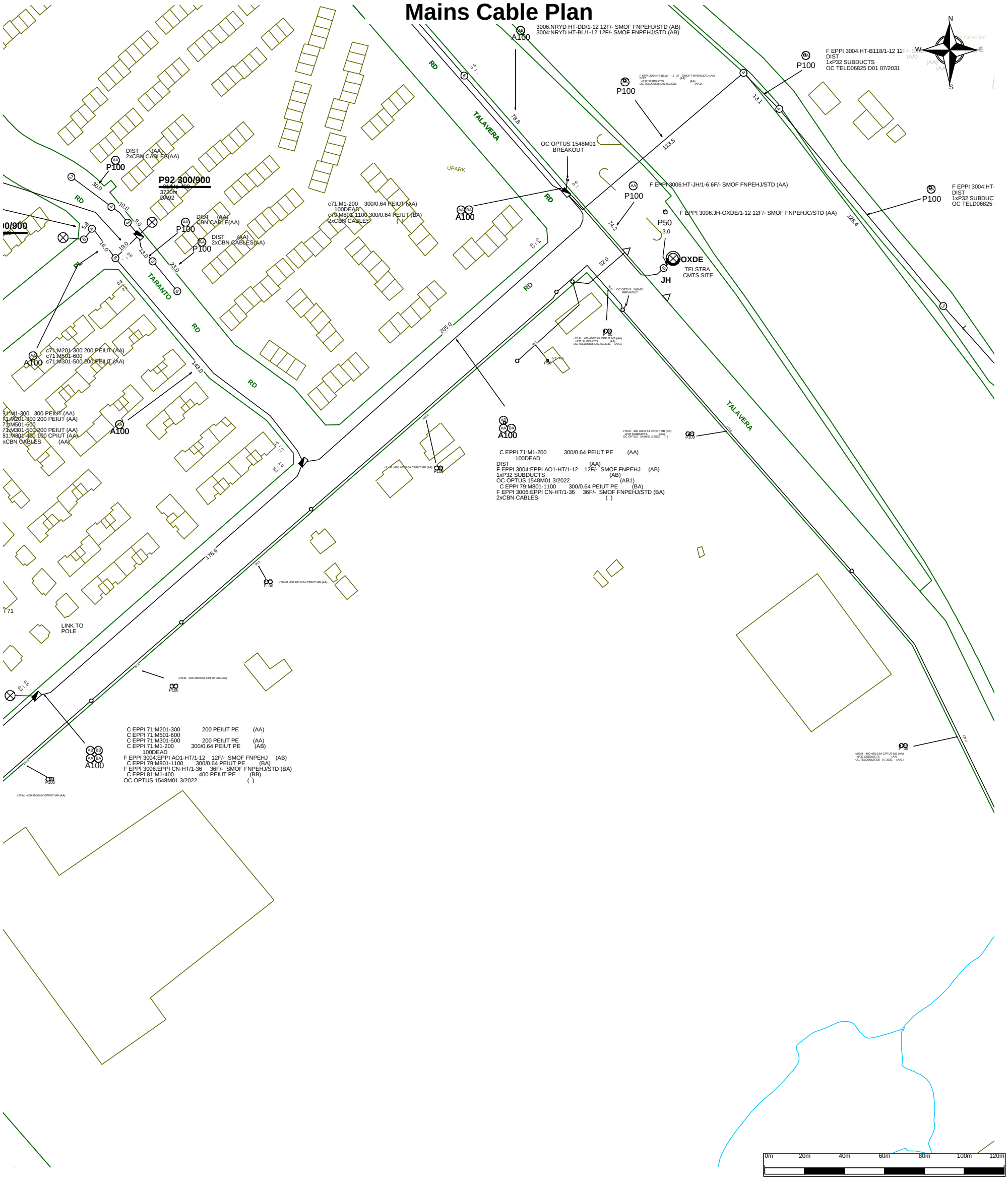
WARNING - Due to the nature of Telstra underground plant and the age of some cables and records, it is impossible to ascertain the precise location of all Telstra plant from Telstra's plans. The accuracy and/or completeness of the information supplied can not be guaranteed as property boundaries, depths 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.

Mains Cable Plan



Telstra	For all Telstra DBYD plan enquiries - email - Telstra.Plans@team.telstra.com For urgent onsite contact only - ph 1800 653 935 (bus hrs)
TELSTRA CORPORATION LIMITED A.C.N. 051 775 556	
Generated On 03/08/2016 13:35:15	

Sequence Number: 54696762

CAUTION: Fibre optic and/ or major network present in plot area. Please read the Duty of Care and contact Telstra Plan Services should you require any assistance.

LEGEND

IT'S HOW WE CONNECT

For more info contact a Telstra Accredited Locater or Telstra Plan Services 1800 653 935

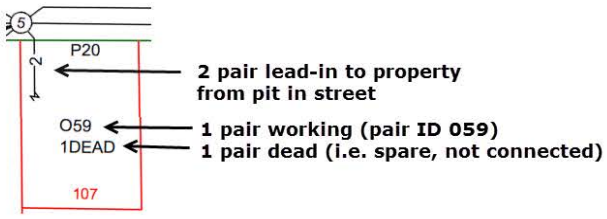
Exchange
(major cable present)

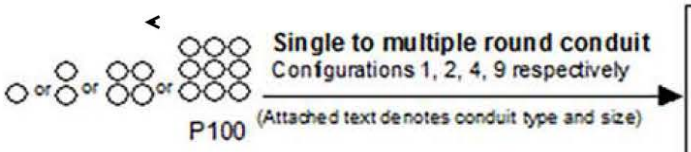
Footway access chamber
(can vary from 1-lid to 12-lid)

or **Pillar/cabinet**
(above the ground / free standing)

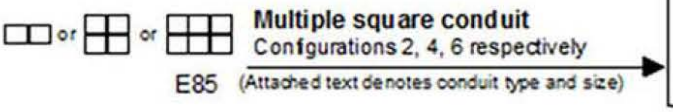
Above ground complex equipment housing (eg RIM)
Please Note: This equipment is powered by 240V electricity.

OC **other carrier**





Single to multiple round conduit
Configurations 1, 2, 4, 9 respectively
(Attached text denotes conduit type and size)



Multiple square conduit
Configurations 2, 4, 6 respectively
(Attached text denotes conduit type and size)

Some examples of conduit type and size:
A - Asbestos cement, P - PVC / plastic, C - Concrete, GI - Galvanised iron, E - Earthenware.
Conduit sizes *nominally* range from 20mm to 100mm.

P50	50mm PVC conduit
P100	100mm PVC conduit
A100	100mm asbestos cement conduit
E 85	85mm square earthenware conduit

Cable jointing pit
(number indicating pit type)

Elevated cable joint
(above ground joint on buried cable)

Telstra Plant in shared utility trench

Aerial Cable
(above ground)

Aerial Cable
(attached to joint use pole e.g. power)

Direct buried cable

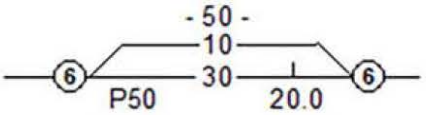
M **Marker post installed**

TR **Buried transponder**

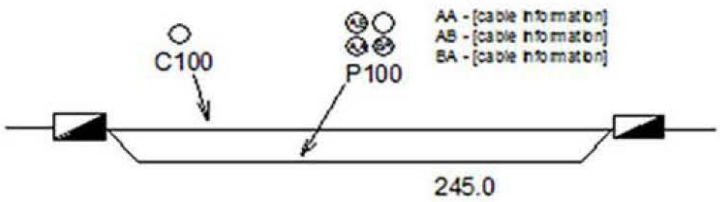
MT **Marker, transponder**

SMOF **Optical fibre cable direct buried**

Some examples of how to read Telstra plans:



One 50mm PVC conduit (P50) containing a 50-pair and a 10-pair cable between two 6-pits, 20.0m apart, with a direct buried 30-pair cable along the same route.



Two separate conduit runs between two footway access chambers (manholes) 245m apart. A nest of four 100mm PVC conduits (P100) containing assorted cables in three ducts (one being empty) and one empty 100mm concrete duct (C100) along the same route.

WARNING: Telstra plans and location information conform to Quality Level 'D' of the Australian Standard AS 5488 - Classification of Subsurface Utility Information. As such, Telstra supplied location information is indicative only. Spatial accuracy is not applicable to Quality Level D. Refer to AS 5488 for further details. Telstra does not warrant or hold out that its plans are accurate and accepts no responsibility for any inaccuracy shown on the plans. FURTHER ON SITE INVESTIGATION IS REQUIRED TO VALIDATE THE EXACT LOCATION OF TELSTRA PLANT PRIOR TO COMMENCING CONSTRUCTION WORK. A plant location service is an essential part of the process to validate the exact location of Telstra assets and to ensure the asset is protected during construction works. The exact position of Telstra assets can only be validated by physically exposing it. Telstra will seek compensation for damages caused to its property and losses caused to Telstra and its customers.

ATTACHMENT D

Geo-Logix

Test Pit Logs

Phase II Environmental Site Assesment

Project No.: 1601086

205a Culloden Road,
Macquarie Park NSW 2109

Location	Depth	Description
TP1	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp, with woodchips.
	0.1 - 0.2	**Gravelly Clay (CL)** - moderate brown (5YR4/4), 60% clay, 10% sand, 30% gravel, damp, very stiff, low plasticity.
TP2	0 - 0.1	**Topsoil** - moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.3	**Fill -** moderate brown (5YR3/4), 20% clay, 30% silt, 40% sand, 10% gravel, damp, moderately compacted.
	0.3 - 0.4	**Gravelly Clay (CL)** - moderate brown (5YR4/4), 70% clay, 10% sand, 20% gravel, damp, very stiff, low plasticity.
TP3	0 - 0.05	**Topsoil** - moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.05 - 0.4	**Lean Clay (CL)** - moderate brown (5YR4/4), 80% clay, 20% sand, damp, firm, low plasticity.
TP4	0 - 0.05	**Topsoil** - moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.05 - 0.4	**Lean Clay (CL)** - moderate brown (5YR4/4), 80% clay, 20% sand, damp, firm, low plasticity.
TP5	0 - 0.1	**Topsoil** - moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - dark yellowish orange (10YR6/6), 40% silt, 30% sand, 30% gravel, damp, moderately compacted.
	0.25 - 0.4	**Lean Clay (CL)** - light brown (5YR5/6), 80% clay, 20% sand, damp, very stiff, low plasticity.
TP6	0 - 0.2	**Lean Clay (CL) -** moderate brown (5YR3/4), 85% clay, 10% sand, 5% gravel, damp, soft, low plasticity.
	0.2 - 0.4	**Lean Clay (CL) -** dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP7	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp, with woodchips.
	0.1 - 0.4	**Fill** - dark reddish brown (10R3/4), 10% clay, 20% silt, 60% sand, 10% gravel, damp, poorly compacted.
	0.4 - 0.7	**Lean Clay (CL)** - moderate brown (5YR4/4), 90% clay, 10% sand, damp, very stiff, low plasticity, with sandstone fragments.
TP8	0 - 0.15	**Fill -** dark reddish brown (10R3/4), 70% silt, 30% sand, damp, moderately compacted.
	0.15 - 0.3	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP9	0 - 0.05	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.05 - 0.2	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted, with pieces of chipboard.
	0.2 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP10	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.3	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.3 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.

Location	Depth	Description
TP11	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP12	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.4	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted with chipboard fragments.
	0.4 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP13	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.3	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted with chipboard fragments.
	0.3 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP14	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 20% clay, 60% silt, 10% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.4	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP15	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.3	**Fill** - moderate brown (5YR4/4), 20% clay, 50% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.3 - 0.4	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP16	0 - 0.05	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.05 - 0.2	**Fill** - moderate brown (5YR4/4), 40% clay, 40% silt,10% sand, 10% gravel, damp, moderately compacted.
	0.2 - 0.4	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP17	0 - 0.15	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp with woodchips.
	0.15 - 0.3	**Fill** - light brown (5YR6/4), 70% clay, 20% sand, 10% gravel, damp, moderately compacted.
	0.3 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP18	0 - 0.05	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp with woodchips.
	0.15 - 0.3	**Fill** - moderate brown (5YR4/4), 60% clay, 30% sand, 10% gravel, damp, moderately compacted.
	0.3 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 85% clay, 15% sand, damp, stiff, low plasticity.
TP19	0 - 0.15	**Fill** - moderate brown (5YR4/4), 60% clay, 30% sand, 10% gravel, damp, moderately compacted.
	0.15 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 85% clay, 15% sand, damp, stiff, low plasticity.

Test Pit Logs

Phase II Environmental Site Assesment

Project No.: 1601086

205a Culloden Road,
Macquarie Park NSW 2109

Location	Depth	Description
TP11/N	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP11/E	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP11/S	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.
TP11/W	0 - 0.1	**Topsoil -** moderate brown (5YR3/4), 80% silt, 20% sand, damp.
	0.1 - 0.25	**Fill** - moderate brown (5YR4/4), 40% clay, 30% silt, 20% sand, 10% gravel, damp, moderately compacted.
	0.25 - 0.5	**Lean Clay (CL)** - dark yellowish orange (10YR6/6), 90% clay, 10% sand, damp, stiff, low plasticity.

ATTACHMENT E

eurofins | mgt

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Ted Lilly**

Report **515897-S**
Project name MACQUARIE UNIVERSITY
Project ID 1601086
Received Date Sep 15, 2016

Client Sample ID			**TP1/0.1**	**TP2/0.1**	**TP3/0.05**	**TP4/0.05**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14668**	**S16-Se14669**	**S16-Se14670**	**S16-Se14671**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
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	-	-
BTEX						
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	%	-	68	-	-
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)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	-	-

Client Sample ID			TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14668**	**S16-Se14669**	**S16-Se14670**	**S16-Se14671**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	-	114	-	-
p-Terphenyl-d14 (surr.)	1	%	-	139	-	-
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	%	INT	105	113	112
Tetrachloro-m-xylene (surr.)	1	%	126	96	112	120
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	-	105	-	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	-	< 50	-	-
TRH >C16-C34	100	mg/kg	-	< 100	-	-
TRH >C34-C40	100	mg/kg	-	< 100	-	-
% Clay	1	%	-	-	25	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	-	-	32	-
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	-	4.8	-
% Moisture	1	%	51	18	25	28
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	-	-	10	-

Client Sample ID			TP1/0.1	TP2/0.1	TP3/0.05	TP4/0.05
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14668**	**S16-Se14669**	**S16-Se14670**	**S16-Se14671**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.0	15	11	18
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	20	47	110	110
Copper	5	mg/kg	24	40	21	24
Lead	5	mg/kg	50	57	42	44
Mercury	0.05	mg/kg	0.11	0.30	0.40	0.43
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	94	75	49	32

Client Sample ID			TP5/0.2	TP6/0.1	TP7/0.1	TP8/0.15
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14672**	**S16-Se14673**	**S16-Se14674**	**S16-Se14675**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 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	< 20	< 20	< 20	40
TRH C15-C28	50	mg/kg	< 50	52	< 50	180
TRH C29-C36	50	mg/kg	< 50	51	< 50	170
TRH C10-36 (Total)	50	mg/kg	< 50	103	< 50	390
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	%	72	75	66	71
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	71
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	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

Client Sample ID			TP5/0.2	TP6/0.1	TP7/0.1	TP8/0.15
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S16-Se14672	S16-Se14673	S16-Se14674	S16-Se14675
Date Sampled			Sep 13, 2016	Sep 13, 2016	Sep 13, 2016	Sep 13, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	94	98	95	95
p-Terphenyl-d14 (surr.)	1	%	128	129	119	103
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	%	102	105	125	139
Tetrachloro-m-xylene (surr.)	1	%	106	114	110	115
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	102	105	125	139
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	71
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	290
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	8.8	23	21	7.6

Client Sample ID			TP5/0.2	TP6/0.1	TP7/0.1	TP8/0.15
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14672**	**S16-Se14673**	**S16-Se14674**	**S16-Se14675**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	10	14	3.9	6.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	76	67	15	11
Copper	5	mg/kg	11	19	20	11
Lead	5	mg/kg	32	51	31	20
Mercury	0.05	mg/kg	0.50	0.40	0.10	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	23	61	79	34

Client Sample ID			TP9/0.1	TP10/0.2	TP11/0.1	TP12/0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14676**	**S16-Se14677**	**S16-Se14678**	**S16-Se14679**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 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	< 20	< 20	38	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	910	62
TRH C29-C36	50	mg/kg	< 50	< 50	91	65
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	1039	127
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	%	73	76	75	73
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	7.9	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	7.9	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	7.9	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	1.7	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	2.1	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	7.7	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	4.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	2.7	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	3.3	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	4.2	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	7.1	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	1.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	13	< 0.5

Client Sample ID			TP9/0.1	TP10/0.2	TP11/0.1	TP12/0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14676**	**S16-Se14677**	**S16-Se14678**	**S16-Se14679**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	3.3	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	4.4	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	11	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	66.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	103	102	122	91
p-Terphenyl-d14 (surr.)	1	%	116	118	89	103
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	0.07	0.13
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	116	100	105
Tetrachloro-m-xylene (surr.)	1	%	100	113	96	102
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	116	116	100	105
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	1000	110
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Moisture	1	%	23	22	21	23

Client Sample ID			TP9/0.1	TP10/0.2	TP11/0.1	TP12/0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14676**	**S16-Se14677**	**S16-Se14678**	**S16-Se14679**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	35	9.1	15	14
Cadmium	0.4	mg/kg	2.6	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	44	30	37	32
Copper	5	mg/kg	80	23	20	22
Lead	5	mg/kg	140	46	87	95
Mercury	0.05	mg/kg	0.69	0.10	0.10	0.14
Nickel	5	mg/kg	26	< 5	< 5	< 5
Zinc	5	mg/kg	180	59	60	110

Client Sample ID			TP13/0.1	TP14/0.25	TP15/0.2	TP15/0.4
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14680**	**S16-Se14681**	**S16-Se14682**	**S16-Se14683**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 14, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	< 20	25	-
TRH C15-C28	50	mg/kg	< 50	< 50	53	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	78	-
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	75	77	75	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene[N02]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH >C10-C16 less Naphthalene (F2)[N01]	50	mg/kg	< 50	< 50	< 50	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1)[N04]	20	mg/kg	< 20	< 20	< 20	-
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	-

Client Sample ID			TP13/0.1	TP14/0.25	TP15/0.2	TP15/0.4
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14680**	**S16-Se14681**	**S16-Se14682**	**S16-Se14683**
Date Sampled			**Sep 13, 2016**	**Sep 13, 2016**	**Sep 14, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	91	98	92	-
p-Terphenyl-d14 (surr.)	1	%	101	114	106	-
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	0.07	< 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	%	124	105	100	100
Tetrachloro-m-xylene (surr.)	1	%	124	100	97	99
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Dibutylchlorendate (surr.)	1	%	124	105	100	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	-
% Moisture	1	%	32	17	16	22

Client Sample ID			TP13/0.1	TP14/0.25	TP15/0.2	TP15/0.4
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S16-Se14680	S16-Se14681	S16-Se14682	S16-Se14683
Date Sampled			Sep 13, 2016	Sep 13, 2016	Sep 14, 2016	Sep 14, 2016
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	5.2	12	18	11
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	29	39	48	31
Copper	5	mg/kg	34	14	16	< 5
Lead	5	mg/kg	37	22	31	17
Mercury	0.05	mg/kg	0.16	0.25	0.26	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	55	21	40	5.8

Client Sample ID			TP16/0.2	TP17/0.2	TP18/0.2	TP19/0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S16-Se14684	S16-Se14685	S16-Se14686	S16-Se14687
Date Sampled			Sep 14, 2016	Sep 14, 2016	Sep 14, 2016	Sep 14, 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	< 20	40	< 20	24
TRH C15-C28	50	mg/kg	< 50	150	< 50	92
TRH C29-C36	50	mg/kg	< 50	150	< 50	100
TRH C10-36 (Total)	50	mg/kg	< 50	340	< 50	216
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	%	73	72	73	75
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	63	< 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	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

Client Sample ID			TP16/0.2	TP17/0.2	TP18/0.2	TP19/0.2
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins | mgt Sample No.			S16-Se14684	S16-Se14685	S16-Se14686	S16-Se14687
Date Sampled			Sep 14, 2016	Sep 14, 2016	Sep 14, 2016	Sep 14, 2016
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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	%	93	96	94	91
p-Terphenyl-d14 (surr.)	1	%	111	113	111	102
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	0.19	0.29	0.26	< 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	%	88	126	115	124
Tetrachloro-m-xylene (surr.)	1	%	99	108	97	111
Polychlorinated Biphenyls (PCB)						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibutylchlorendate (surr.)	1	%	88	126	115	124
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C10-C16	50	mg/kg	< 50	63	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	250	< 100	160
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
% Clay	1	%	-	29	-	-
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	-	56	-	-
pH (units)(1:5 soil:CaCl2 extract)	0.1	pH Units	-	5.1	-	-
% Moisture	1	%	20	36	21	28

Client Sample ID			TP16/0.2	TP17/0.2	TP18/0.2	TP19/0.2
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14684**	**S16-Se14685**	**S16-Se14686**	**S16-Se14687**
Date Sampled			**Sep 14, 2016**	**Sep 14, 2016**	**Sep 14, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit				
Ion Exchange Properties						
Cation Exchange Capacity	0.05	meq/100g	-	13	-	-
Heavy Metals						
Arsenic	2	mg/kg	13	16	12	11
Cadmium	0.4	mg/kg	< 0.4	0.4	< 0.4	< 0.4
Chromium	5	mg/kg	38	59	32	20
Copper	5	mg/kg	8.0	18	12	18
Lead	5	mg/kg	31	53	30	40
Mercury	0.05	mg/kg	0.06	0.13	0.12	0.05
Nickel	5	mg/kg	< 5	< 5	< 5	< 5
Zinc	5	mg/kg	27	72	34	70

Client Sample ID			DS1	DS2	TP9/0.3
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14688**	**S16-Se14689**	**S16-Se14699**
Date Sampled			**Sep 14, 2016**	**Sep 14, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions					
TRH C6-C9	20	mg/kg	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	27	-
TRH C15-C28	50	mg/kg	< 50	71	-
TRH C29-C36	50	mg/kg	< 50	61	-
TRH C10-36 (Total)	50	mg/kg	< 50	159	-
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	-
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	-
4-Bromofluorobenzene (surr.)	1	%	75	71	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
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					
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	-

Client Sample ID			DS1	DS2	TP9/0.3
Sample Matrix			Soil	Soil	Soil
Eurofins | mgt Sample No.			S16-Se14688	S16-Se14689	S16-Se14699
Date Sampled			Sep 14, 2016	Sep 14, 2016	Sep 13, 2016
Test/Reference	LOR	Unit			
Polycyclic Aromatic Hydrocarbons					
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	%	77	89	-
p-Terphenyl-d14 (surr.)	1	%	83	99	-
Organochlorine Pesticides					
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	< 0.1
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	< 0.05
4.4'-DDE	0.05	mg/kg	0.25	0.38	< 0.05
4.4'-DDT	0.05	mg/kg	0.05	0.13	< 0.05
a-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Aldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
b-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
d-BHC	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	< 0.05
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	< 0.05
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	< 0.2
Toxaphene	1	mg/kg	< 1	< 1	< 1
Dibutylchlorendate (surr.)	1	%	109	118	128
Tetrachloro-m-xylene (surr.)	1	%	111	112	116
Polychlorinated Biphenyls (PCB)					
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	-
Dibutylchlorendate (surr.)	1	%	109	118	-
Total Recoverable Hydrocarbons - 2013 NEPM Fractions					
TRH >C10-C16	50	mg/kg	< 50	< 50	-
TRH >C16-C34	100	mg/kg	< 100	100	-
TRH >C34-C40	100	mg/kg	< 100	< 100	-
% Moisture	1	%	18	21	21

Client Sample ID			DS1	DS2	TP9/0.3
Sample Matrix			**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se14688**	**S16-Se14689**	**S16-Se14699**
Date Sampled			**Sep 14, 2016**	**Sep 14, 2016**	**Sep 13, 2016**
Test/Reference	LOR	Unit			
Heavy Metals					
Arsenic	2	mg/kg	15	13	9.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	45	37	16
Copper	5	mg/kg	13	12	10
Lead	5	mg/kg	38	41	22
Mercury	0.05	mg/kg	0.07	0.16	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5
Zinc	5	mg/kg	36	36	21

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Sep 16, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
BTEX	Sydney	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 16, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Sydney	Sep 16, 2016	28 Day
- Method: LTM-MET-3040_R0 TOTAL AND DISSOLVED METALS AND MERCURY IN WATERS BY ICP-MS			
Eurofins | mgt Suite B13			
Organochlorine Pesticides	Sydney	Sep 16, 2016	14 Day
- Method: E013 Organochlorine Pesticides (OC)			
Polychlorinated Biphenyls (PCB)	Sydney	Sep 16, 2016	28 Day
- Method: E013 Polychlorinated Biphenyls (PCB)			
% Clay	Brisbane	Sep 19, 2016	6 Day
- Method: LTM-GEN-7040			
pH (units)(1:5 soil:CaCl2 extract)	Sydney	Sep 21, 2016	7 Day
- Method: LTM-GEN-7090 pH in soil by ISE			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	Sep 20, 2016	7 Day
- Method: LTM-INO-4030			
Ion Exchange Properties	Melbourne	Sep 21, 2016	
% Moisture	Sydney	Sep 15, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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Brisbane
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Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Geo-Logix P/L	**Order No.:**	PO1509	**Received:**	Sep 15, 2016 4:13 PM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	515897	**Due:**	Sep 22, 2016
		Phone:	02 9979 1722	**Priority:**	5 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP1/0.1	Sep 13, 2016		Soil	S16-Se14668				X	X		X		
2	TP2/0.1	Sep 13, 2016		Soil	S16-Se14669						X	X		X
3	TP3/0.05	Sep 13, 2016		Soil	S16-Se14670	X		X	X	X		X	X	
4	TP4/0.05	Sep 13, 2016		Soil	S16-Se14671				X	X		X		
5	TP5/0.2	Sep 13, 2016		Soil	S16-Se14672						X	X		X
6	TP6/0.1	Sep 13, 2016		Soil	S16-Se14673						X	X		X
7	TP7/0.1	Sep 13, 2016		Soil	S16-Se14674						X	X		X
8	TP8/0.15	Sep 13, 2016		Soil	S16-Se14675						X	X		X
9	TP9/0.1	Sep 13, 2016		Soil	S16-Se14676						X	X		X
10	TP10/0.2	Sep 13, 2016		Soil	S16-Se14677						X	X		X

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

Project Name: MACQUARIE UNIVERSITY
Project ID: 1601086

Order No.: PO1509
Report #: 515897
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Sep 15, 2016 4:13 PM
Due: Sep 22, 2016
Priority: 5 Day
Contact Name: Ted Lilly

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
11	TP11/0.1	Sep 13, 2016		Soil	S16-Se14678						X	X		X
12	TP12/0.2	Sep 13, 2016		Soil	S16-Se14679						X	X		X
13	TP13/0.1	Sep 13, 2016		Soil	S16-Se14680						X	X		X
14	TP14/0.25	Sep 13, 2016		Soil	S16-Se14681						X	X		X
15	TP15/0.2	Sep 14, 2016		Soil	S16-Se14682						X	X		X
16	TP15/0.4	Sep 14, 2016		Soil	S16-Se14683				X	X		X		
17	TP16/0.2	Sep 14, 2016		Soil	S16-Se14684						X	X		X
18	TP17/0.2	Sep 14, 2016		Soil	S16-Se14685	X		X			X	X	X	X
19	TP18/0.2	Sep 14, 2016		Soil	S16-Se14686						X	X		X
20	TP19/0.2	Sep 14, 2016		Soil	S16-Se14687						X	X		X
21	DS1	Sep 14, 2016		Soil	S16-Se14688						X	X		X
22	DS2	Sep 14, 2016		Soil	S16-Se14689						X	X		X

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Project ID: 1601086

Order No.: PO1509
Report #: 515897
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Sep 15, 2016 4:13 PM
Due: Sep 22, 2016
Priority: 5 Day
Contact Name: Ted Lilly

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
23	RS1	Sep 13, 2016		Water	S16-Se14690				X	X				
24	RS2	Sep 14, 2016		Water	S16-Se14691				X	X				
25	TP1/0.2	Sep 13, 2016		Soil	S16-Se14692		X							
26	TP2/0.3	Sep 13, 2016		Soil	S16-Se14693		X							
27	TP3/0.3	Sep 13, 2016		Soil	S16-Se14694		X							
28	TP4/0.3	Sep 13, 2016		Soil	S16-Se14695		X							
29	TP5/0.4	Sep 13, 2016		Soil	S16-Se14696		X							
30	TP6/0.3	Sep 13, 2016		Soil	S16-Se14697		X							
31	TP7/0.5	Sep 13, 2016		Soil	S16-Se14698		X							
32	TP9/0.3	Sep 13, 2016		Soil	S16-Se14699				X	X		X		
33	TP10/0.4	Sep 13, 2016		Soil	S16-Se14700		X							
34	TP11/0.3	Sep 13, 2016		Soil	S16-Se14701		X							

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Project Name:	MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
35	TP12/0.4	Sep 13, 2016		Soil	S16-Se14702		X							
36	TP13/0.3	Sep 13, 2016		Soil	S16-Se14703		X							
37	TP14/0.1	Sep 13, 2016		Soil	S16-Se14704		X							
38	TP16/0.3	Sep 14, 2016		Soil	S16-Se14705		X							
39	TP17/0.5	Sep 14, 2016		Soil	S16-Se14706		X							
Test Counts						2	14	2	7	7	18	23	2	18

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

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
Method Blank							
BTEX							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total	mg/kg	< 0.3			0.3	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
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	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 1			1	Pass	
Method Blank							
Polychlorinated Biphenyls (PCB)							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
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							
% Clay	%	< 1			1	Pass	
Conductivity (1:5 aqueous extract at 25°C)	uS/cm	< 5			5	Pass	
Method Blank							
Ion Exchange Properties							
Cation Exchange Capacity	meq/100g	< 0.05			0.05	Pass	
Method Blank							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.05			0.05	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C6-C9	%	78			70-130	Pass	
TRH C10-C14	%	84			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	94			70-130	Pass	
Toluene	%	99			70-130	Pass	
Ethylbenzene	%	98			70-130	Pass	
m&p-Xylenes	%	98			70-130	Pass	
o-Xylene	%	98			70-130	Pass	
Xylenes - Total	%	98			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	124			70-130	Pass	
TRH C6-C10	%	82			70-130	Pass	
LCS - % Recovery							

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	100			70-130	Pass	
Acenaphthylene	%	103			70-130	Pass	
Anthracene	%	114			70-130	Pass	
Benz(a)anthracene	%	95			70-130	Pass	
Benzo(a)pyrene	%	108			70-130	Pass	
Benzo(b&j)fluoranthene	%	115			70-130	Pass	
Benzo(g.h.i)perylene	%	95			70-130	Pass	
Benzo(k)fluoranthene	%	127			70-130	Pass	
Chrysene	%	101			70-130	Pass	
Dibenz(a.h)anthracene	%	96			70-130	Pass	
Fluoranthene	%	97			70-130	Pass	
Fluorene	%	100			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	95			70-130	Pass	
Naphthalene	%	111			70-130	Pass	
Phenanthrene	%	126			70-130	Pass	
Pyrene	%	96			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
Chlordanes - Total	%	105			70-130	Pass	
4.4'-DDD	%	107			70-130	Pass	
4.4'-DDE	%	109			70-130	Pass	
4.4'-DDT	%	119			70-130	Pass	
a-BHC	%	105			70-130	Pass	
Aldrin	%	105			70-130	Pass	
b-BHC	%	98			70-130	Pass	
d-BHC	%	104			70-130	Pass	
Dieldrin	%	107			70-130	Pass	
Endosulfan I	%	106			70-130	Pass	
Endosulfan II	%	108			70-130	Pass	
Endosulfan sulphate	%	114			70-130	Pass	
Endrin	%	104			70-130	Pass	
Endrin aldehyde	%	115			70-130	Pass	
Endrin ketone	%	109			70-130	Pass	
g-BHC (Lindane)	%	106			70-130	Pass	
Heptachlor	%	95			70-130	Pass	
Heptachlor epoxide	%	106			70-130	Pass	
Hexachlorobenzene	%	102			70-130	Pass	
Methoxychlor	%	112			70-130	Pass	
Toxaphene	%	115			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls (PCB)							
Aroclor-1260	%	121			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	92			70-130	Pass	
LCS - % Recovery							
% Clay	%	105			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	92			70-130	Pass	
Cadmium	%	94			70-130	Pass	
Chromium	%	94			70-130	Pass	
Copper	%	95			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Lead			%	95			70-130	Pass	
Mercury			%	94			70-130	Pass	
Nickel			%	93			70-130	Pass	
Zinc			%	94			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	S16-Se13317	NCP	%	105			70-130	Pass	
4.4'-DDT	S16-Se15944	NCP	%	106			70-130	Pass	
Toxaphene	S16-Se11041	NCP	%	113			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S16-Se14669	CP	%	110			70-130	Pass	
4.4'-DDE	S16-Se14669	CP	%	118			70-130	Pass	
a-BHC	S16-Se14669	CP	%	101			70-130	Pass	
Aldrin	S16-Se14669	CP	%	106			70-130	Pass	
b-BHC	S16-Se14669	CP	%	98			70-130	Pass	
d-BHC	S16-Se14669	CP	%	104			70-130	Pass	
Dieldrin	S16-Se14669	CP	%	112			70-130	Pass	
Endosulfan I	S16-Se14669	CP	%	109			70-130	Pass	
Endosulfan II	S16-Se14669	CP	%	110			70-130	Pass	
Endosulfan sulphate	S16-Se14669	CP	%	113			70-130	Pass	
Endrin	S16-Se14669	CP	%	102			70-130	Pass	
Endrin aldehyde	S16-Se14669	CP	%	110			70-130	Pass	
Endrin ketone	S16-Se14669	CP	%	100			70-130	Pass	
g-BHC (Lindane)	S16-Se14669	CP	%	99			70-130	Pass	
Heptachlor	S16-Se14669	CP	%	87			70-130	Pass	
Heptachlor epoxide	S16-Se14669	CP	%	117			70-130	Pass	
Hexachlorobenzene	S16-Se14669	CP	%	101			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-Se14672	CP	%	82			70-130	Pass	
Toluene	S16-Se14672	CP	%	84			70-130	Pass	
Ethylbenzene	S16-Se14672	CP	%	82			70-130	Pass	
m&p-Xylenes	S16-Se14672	CP	%	83			70-130	Pass	
o-Xylene	S16-Se14672	CP	%	83			70-130	Pass	
Xylenes - Total	S16-Se14672	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-Se14672	CP	%	91			70-130	Pass	
TRH C6-C10	S16-Se14672	CP	%	73			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Se14672	CP	%	107			70-130	Pass	
Acenaphthylene	S16-Se14672	CP	%	103			70-130	Pass	
Anthracene	S16-Se14672	CP	%	128			70-130	Pass	
Benz(a)anthracene	S16-Se14672	CP	%	119			70-130	Pass	
Benzo(a)pyrene	S16-Se14672	CP	%	112			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Se14672	CP	%	90			70-130	Pass	
Benzo(g.h.i)perylene	S16-Se14672	CP	%	93			70-130	Pass	
Benzo(k)fluoranthene	S16-Se14672	CP	%	101			70-130	Pass	
Chrysene	S16-Se14672	CP	%	111			70-130	Pass	
Dibenz(a.h)anthracene	S16-Se14672	CP	%	90			70-130	Pass	
Fluoranthene	S16-Se14672	CP	%	125			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Fluorene	S16-Se14672	CP	%	105			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se14672	CP	%	93			70-130	Pass	
Naphthalene	S16-Se14672	CP	%	107			70-130	Pass	
Phenanthrene	S16-Se14672	CP	%	116			70-130	Pass	
Pyrene	S16-Se14672	CP	%	124			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls (PCB)				Result 1					
Aroclor-1260	S16-Se14672	CP	%	126			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Se14676	CP	%	78			70-130	Pass	
Cadmium	S16-Se14676	CP	%	87			70-130	Pass	
Chromium	S16-Se14676	CP	%	82			70-130	Pass	
Mercury	S16-Se14676	CP	%	87			70-130	Pass	
Nickel	S16-Se14676	CP	%	82			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S16-Se14679	CP	%	110			70-130	Pass	
a-BHC	S16-Se14679	CP	%	104			70-130	Pass	
Aldrin	S16-Se14679	CP	%	109			70-130	Pass	
b-BHC	S16-Se14679	CP	%	106			70-130	Pass	
d-BHC	S16-Se14679	CP	%	107			70-130	Pass	
Dieldrin	S16-Se14679	CP	%	113			70-130	Pass	
Endosulfan I	S16-Se14679	CP	%	110			70-130	Pass	
Endosulfan II	S16-Se14679	CP	%	105			70-130	Pass	
Endosulfan sulphate	S16-Se14679	CP	%	109			70-130	Pass	
Endrin	S16-Se14679	CP	%	91			70-130	Pass	
Endrin aldehyde	S16-Se14679	CP	%	120			70-130	Pass	
Endrin ketone	S16-Se14679	CP	%	78			70-130	Pass	
g-BHC (Lindane)	S16-Se14679	CP	%	103			70-130	Pass	
Heptachlor	S16-Se14679	CP	%	84			70-130	Pass	
Heptachlor epoxide	S16-Se14679	CP	%	116			70-130	Pass	
Hexachlorobenzene	S16-Se14679	CP	%	103			70-130	Pass	
Methoxychlor	S16-Se14679	CP	%	106			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S16-Se14682	CP	%	82			70-130	Pass	
TRH C10-C14	S16-Se14682	CP	%	88			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S16-Se14682	CP	%	84			70-130	Pass	
Toluene	S16-Se14682	CP	%	86			70-130	Pass	
Ethylbenzene	S16-Se14682	CP	%	82			70-130	Pass	
m&p-Xylenes	S16-Se14682	CP	%	89			70-130	Pass	
o-Xylene	S16-Se14682	CP	%	88			70-130	Pass	
Xylenes - Total	S16-Se14682	CP	%	89			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S16-Se14682	CP	%	100			70-130	Pass	
TRH C6-C10	S16-Se14682	CP	%	77			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Se14682	CP	%	95			70-130	Pass	
Acenaphthylene	S16-Se14682	CP	%	93			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Anthracene	S16-Se14682	CP	%	109			70-130	Pass	
Benz(a)anthracene	S16-Se14682	CP	%	107			70-130	Pass	
Benzo(a)pyrene	S16-Se14682	CP	%	101			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Se14682	CP	%	97			70-130	Pass	
Benzo(g.h.i)perylene	S16-Se14682	CP	%	83			70-130	Pass	
Benzo(k)fluoranthene	S16-Se14682	CP	%	83			70-130	Pass	
Chrysene	S16-Se14682	CP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	S16-Se14682	CP	%	79			70-130	Pass	
Fluoranthene	S16-Se14682	CP	%	106			70-130	Pass	
Fluorene	S16-Se14682	CP	%	93			70-130	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se14682	CP	%	83			70-130	Pass	
Naphthalene	S16-Se14682	CP	%	95			70-130	Pass	
Phenanthrene	S16-Se14682	CP	%	102			70-130	Pass	
Pyrene	S16-Se14682	CP	%	103			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls (PCB)				Result 1					
Aroclor-1260	S16-Se14682	CP	%	121			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S16-Se14682	CP	%	97			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Se14686	CP	%	91			70-130	Pass	
Cadmium	S16-Se14686	CP	%	110			70-130	Pass	
Chromium	S16-Se14686	CP	%	123			70-130	Pass	
Copper	S16-Se14686	CP	%	109			70-130	Pass	
Lead	S16-Se14686	CP	%	101			70-130	Pass	
Mercury	S16-Se14686	CP	%	99			70-130	Pass	
Nickel	S16-Se14686	CP	%	105			70-130	Pass	
Zinc	S16-Se14686	CP	%	127			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
Chlordanes - Total	S16-Se14689	CP	%	129			70-130	Pass	
4.4'-DDE	S16-Se14689	CP	%	128			70-130	Pass	
a-BHC	S16-Se14689	CP	%	124			70-130	Pass	
Aldrin	S16-Se14689	CP	%	129			70-130	Pass	
b-BHC	S16-Se14689	CP	%	124			70-130	Pass	
d-BHC	S16-Se14689	CP	%	130			70-130	Pass	
Dieldrin	S16-Se14689	CP	%	130			70-130	Pass	
Endosulfan I	S16-Se14689	CP	%	130			70-130	Pass	
Endosulfan II	S16-Se14689	CP	%	126			70-130	Pass	
Endosulfan sulphate	S16-Se14689	CP	%	130			70-130	Pass	
Endrin	S16-Se14689	CP	%	130			70-130	Pass	
Endrin aldehyde	S16-Se14689	CP	%	113			70-130	Pass	
g-BHC (Lindane)	S16-Se14689	CP	%	130			70-130	Pass	
Heptachlor	S16-Se14689	CP	%	126			70-130	Pass	
Heptachlor epoxide	S16-Se14689	CP	%	129			70-130	Pass	
Hexachlorobenzene	S16-Se14689	CP	%	117			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Se14668	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
4.4'-DDT	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Se14668	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Se14668	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Se14668	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Se14668	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-Se14669	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C10-C14	S16-Se14669	CP	mg/kg	< 20	< 20	<1	30%	Pass	
TRH C15-C28	S16-Se14669	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH C29-C36	S16-Se14669	CP	mg/kg	< 50	< 50	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Se14669	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Se14669	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Se14669	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Se14669	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Se14669	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Se14669	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-Se14669	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Benzo(g.h.i)perylene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Se14669	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Se14669	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Se14669	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Se14669	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
TRH >C10-C16	S16-Se14669	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S16-Se14669	CP	mg/kg	< 100	< 100	<1	30%	Pass	
TRH >C34-C40	S16-Se14669	CP	mg/kg	< 100	< 100	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Clay	M16-Se01711	NCP	%	2.5	2.5	<1	30%	Pass	
Conductivity (1:5 aqueous extract at 25°C)	S16-Se14916	NCP	uS/cm	120	110	4.0	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Se14675	CP	%	7.6	8.5	12	30%	Pass	

Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Se14675	CP	mg/kg	6.0	6.9	14	30%	Pass	
Cadmium	S16-Se14675	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	S16-Se14675	CP	mg/kg	11	13	17	30%	Pass	
Copper	S16-Se14675	CP	mg/kg	11	12	6.0	30%	Pass	
Lead	S16-Se14675	CP	mg/kg	20	20	<1	30%	Pass	
Mercury	S16-Se14675	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Nickel	S16-Se14675	CP	mg/kg	< 5	< 5	<1	30%	Pass	
Zinc	S16-Se14675	CP	mg/kg	34	38	10	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Se14678	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Se14678	CP	mg/kg	0.07	< 0.05	59	30%	Fail	Q15
4.4'-DDT	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Se14678	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Se14678	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Se14678	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Se14678	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S16-Se14681	CP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	S16-Se14681	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S16-Se14681	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S16-Se14681	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	S16-Se14681	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	S16-Se14681	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	S16-Se14681	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S16-Se14681	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	S16-Se14681	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
b-BHC	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	S16-Se14681	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	S16-Se14681	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
Toxaphene	S16-Se14681	CP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Se14681	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Se14685	CP	%	36	42	16	30%	Pass	

Duplicate									
Polychlorinated Biphenyls (PCB)				Result 1	Result 2	RPD			
Aroclor-1016	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1232	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1242	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1248	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1254	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Aroclor-1260	S16-Se14688	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

Code	Description
N01	F2 is determined by arithmetically subtracting the "naphthalene" value from the ">C10-C16" value. The naphthalene value used in this calculation is obtained from volatiles (Purge & Trap analysis).
N02	Where we have reported both volatile (P&T GCMS) and semivolatile (GCMS) naphthalene data, results may not be identical. Provided correct sample handling protocols have been followed, any observed differences in results are likely to be due to procedural differences within each methodology. Results determined by both techniques have passed all QAQC acceptance criteria, and are entirely technically valid.
N04	F1 is determined by arithmetically subtracting the "Total BTEX" value from the "C6-C10" value. The "Total BTEX" value is obtained by summing the concentrations of BTEX analytes. The "C6-C10" value is obtained by quantitating against a standard of mixed aromatic/aliphatic analytes.
N07	Please note:- These two PAH isomers closely co-elute using the most contemporary analytical methods and both the reported concentration (and the TEQ) apply specifically to the total of the two co-eluting PAHs
Q15	The RPD reported passes Eurofins | mgt's QC - Acceptance Criteria as defined in the Internal Quality Control Review and Glossary page of this report.

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
Ivan Taylor	Senior Analyst-Metal (NSW)
Jonathon Angell	Senior Analyst-Inorganic (QLD)
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

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

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

Attention: **Ted Lilly**

Report **515897-W**
Project name MACQUARIE UNIVERSITY
Project ID 1601086
Received Date Sep 15, 2016

Client Sample ID			**RS1**	**RS2**
Sample Matrix			**Water**	**Water**
Eurofins | mgt Sample No.			**S16-Se14690**	**S16-Se14691**
Date Sampled			**Sep 13, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit		
Organochlorine Pesticides				
Chlordanes - Total	0.001	mg/L	< 0.001	< 0.001
4.4'-DDD	0.0001	mg/L	< 0.0001	< 0.0001
4.4'-DDE	0.0001	mg/L	< 0.0001	< 0.0001
4.4'-DDT	0.0001	mg/L	< 0.0001	< 0.0001
a-BHC	0.0001	mg/L	< 0.0001	< 0.0001
Aldrin	0.0001	mg/L	< 0.0001	< 0.0001
b-BHC	0.0001	mg/L	< 0.0001	< 0.0001
d-BHC	0.0001	mg/L	< 0.0001	< 0.0001
Dieldrin	0.0001	mg/L	< 0.0001	< 0.0001
Endosulfan I	0.0001	mg/L	< 0.0001	< 0.0001
Endosulfan II	0.0001	mg/L	< 0.0001	< 0.0001
Endosulfan sulphate	0.0001	mg/L	< 0.0001	< 0.0001
Endrin	0.0001	mg/L	< 0.0001	< 0.0001
Endrin aldehyde	0.0001	mg/L	< 0.0001	< 0.0001
Endrin ketone	0.0001	mg/L	< 0.0001	< 0.0001
g-BHC (Lindane)	0.0001	mg/L	< 0.0001	< 0.0001
Heptachlor	0.0001	mg/L	< 0.0001	< 0.0001
Heptachlor epoxide	0.0001	mg/L	< 0.0001	< 0.0001
Hexachlorobenzene	0.0001	mg/L	< 0.0001	< 0.0001
Methoxychlor	0.0001	mg/L	< 0.0001	< 0.0001
Toxaphene	0.01	mg/L	< 0.01	< 0.01
Dibutylchlorendate (surr.)	1	%	62	50
Tetrachloro-m-xylene (surr.)	1	%	103	101
Heavy Metals				
Arsenic	0.001	mg/L	< 0.001	< 0.001
Cadmium	0.0002	mg/L	< 0.0002	< 0.0002
Chromium	0.001	mg/L	< 0.001	< 0.001
Copper	0.001	mg/L	< 0.001	< 0.001
Lead	0.001	mg/L	< 0.001	< 0.001
Mercury	0.0001	mg/L	< 0.0001	< 0.0001
Nickel	0.001	mg/L	< 0.001	< 0.001
Zinc	0.005	mg/L	< 0.005	< 0.005

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B13			
Organochlorine Pesticides	Sydney	Sep 19, 2016	7 Day
- Method: E013 Organochlorine Pesticides (OC)			
Metals M8	Sydney	Sep 15, 2016	28 Day
- Method: LTM-MET-3040 Metals in Waters by ICP-MS			

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Site # 1254 & 14271

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NATA # 1261 Site # 18217

Brisbane
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Murarrie QLD 4172
Phone : +61 7 3902 4600
NATA # 1261 Site # 20794

Company Name:	Geo-Logix P/L	**Order No.:**	PO1509	**Received:**	Sep 15, 2016 4:13 PM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	515897	**Due:**	Sep 22, 2016
		Phone:	02 9979 1722	**Priority:**	5 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**									
1	TP1/0.1	Sep 13, 2016		Soil	S16-Se14668				X	X		X		
2	TP2/0.1	Sep 13, 2016		Soil	S16-Se14669						X	X		X
3	TP3/0.05	Sep 13, 2016		Soil	S16-Se14670	X		X	X	X		X	X	
4	TP4/0.05	Sep 13, 2016		Soil	S16-Se14671				X	X		X		
5	TP5/0.2	Sep 13, 2016		Soil	S16-Se14672						X	X		X
6	TP6/0.1	Sep 13, 2016		Soil	S16-Se14673						X	X		X
7	TP7/0.1	Sep 13, 2016		Soil	S16-Se14674						X	X		X
8	TP8/0.15	Sep 13, 2016		Soil	S16-Se14675						X	X		X
9	TP9/0.1	Sep 13, 2016		Soil	S16-Se14676						X	X		X
10	TP10/0.2	Sep 13, 2016		Soil	S16-Se14677						X	X		X

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Project ID: 1601086

Order No.: PO1509
Report #: 515897
Phone: 02 9979 1722
Fax: 02 9979 1222

Received: Sep 15, 2016 4:13 PM
Due: Sep 22, 2016
Priority: 5 Day
Contact Name: Ted Lilly

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
11	TP11/0.1	Sep 13, 2016		Soil	S16-Se14678						X	X		X
12	TP12/0.2	Sep 13, 2016		Soil	S16-Se14679						X	X		X
13	TP13/0.1	Sep 13, 2016		Soil	S16-Se14680						X	X		X
14	TP14/0.25	Sep 13, 2016		Soil	S16-Se14681						X	X		X
15	TP15/0.2	Sep 14, 2016		Soil	S16-Se14682						X	X		X
16	TP15/0.4	Sep 14, 2016		Soil	S16-Se14683				X	X		X		
17	TP16/0.2	Sep 14, 2016		Soil	S16-Se14684						X	X		X
18	TP17/0.2	Sep 14, 2016		Soil	S16-Se14685	X		X			X	X	X	X
19	TP18/0.2	Sep 14, 2016		Soil	S16-Se14686						X	X		X
20	TP19/0.2	Sep 14, 2016		Soil	S16-Se14687						X	X		X
21	DS1	Sep 14, 2016		Soil	S16-Se14688						X	X		X
22	DS2	Sep 14, 2016		Soil	S16-Se14689						X	X		X

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Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
23	RS1	Sep 13, 2016		Water	S16-Se14690				X	X				
24	RS2	Sep 14, 2016		Water	S16-Se14691				X	X				
25	TP1/0.2	Sep 13, 2016		Soil	S16-Se14692		X							
26	TP2/0.3	Sep 13, 2016		Soil	S16-Se14693		X							
27	TP3/0.3	Sep 13, 2016		Soil	S16-Se14694		X							
28	TP4/0.3	Sep 13, 2016		Soil	S16-Se14695		X							
29	TP5/0.4	Sep 13, 2016		Soil	S16-Se14696		X							
30	TP6/0.3	Sep 13, 2016		Soil	S16-Se14697		X							
31	TP7/0.5	Sep 13, 2016		Soil	S16-Se14698		X							
32	TP9/0.3	Sep 13, 2016		Soil	S16-Se14699				X	X		X		
33	TP10/0.4	Sep 13, 2016		Soil	S16-Se14700		X							
34	TP11/0.3	Sep 13, 2016		Soil	S16-Se14701		X							

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Sample Detail						% Clay	HOLD	pH (units)(1:5 soil:CaCl2 extract)	Organochlorine Pesticides	Metals M8	Eurofins | mgt Suite B13	Moisture Set	Cation Exchange Capacity	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271													X	
Sydney Laboratory - NATA Site # 18217							X	X	X	X	X	X	X	X
Brisbane Laboratory - NATA Site # 20794						X								
External Laboratory														
35	TP12/0.4	Sep 13, 2016		Soil	S16-Se14702		X							
36	TP13/0.3	Sep 13, 2016		Soil	S16-Se14703		X							
37	TP14/0.1	Sep 13, 2016		Soil	S16-Se14704		X							
38	TP16/0.3	Sep 14, 2016		Soil	S16-Se14705		X							
39	TP17/0.5	Sep 14, 2016		Soil	S16-Se14706		X							
Test Counts						2	14	2	7	7	18	23	2	18

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

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
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	
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							
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							
Organochlorine Pesticides							
Chlordanes - Total	%	130			70-130	Pass	
4.4'-DDD	%	130			70-130	Pass	
4.4'-DDE	%	130			70-130	Pass	
4.4'-DDT	%	130			70-130	Pass	
a-BHC	%	120			70-130	Pass	
Aldrin	%	130			70-130	Pass	
b-BHC	%	130			70-130	Pass	
d-BHC	%	120			70-130	Pass	
Dieldrin	%	130			70-130	Pass	
Endosulfan I	%	130			70-130	Pass	
Endosulfan II	%	120			70-130	Pass	
Endosulfan sulphate	%	120			70-130	Pass	
Endrin	%	130			70-130	Pass	
Endrin aldehyde	%	130			70-130	Pass	
g-BHC (Lindane)	%	130			70-130	Pass	
Heptachlor	%	120			70-130	Pass	
Heptachlor epoxide	%	130			70-130	Pass	

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Methoxychlor			%	120			70-130	Pass	
LCS - % Recovery									
Heavy Metals									
Arsenic			%	101			70-130	Pass	
Cadmium			%	106			70-130	Pass	
Chromium			%	106			70-130	Pass	
Copper			%	105			70-130	Pass	
Lead			%	106			70-130	Pass	
Mercury			%	102			70-130	Pass	
Nickel			%	101			70-130	Pass	
Zinc			%	100			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	S16-Se14691	CP	%	99			70-130	Pass	
Cadmium	S16-Se14691	CP	%	101			70-130	Pass	
Chromium	S16-Se14691	CP	%	103			70-130	Pass	
Copper	S16-Se14691	CP	%	101			70-130	Pass	
Lead	S16-Se14691	CP	%	104			70-130	Pass	
Mercury	S16-Se14691	CP	%	100			70-130	Pass	
Nickel	S16-Se14691	CP	%	99			70-130	Pass	
Zinc	S16-Se14691	CP	%	96			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	S16-Se14690	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Cadmium	S16-Se14690	CP	mg/L	< 0.0002	< 0.0002	<1	30%	Pass	
Chromium	S16-Se14690	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Copper	S16-Se14690	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Lead	S16-Se14690	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Mercury	S16-Se14690	CP	mg/L	< 0.0001	< 0.0001	<1	30%	Pass	
Nickel	S16-Se14690	CP	mg/L	< 0.001	< 0.001	<1	30%	Pass	
Zinc	S16-Se14690	CP	mg/L	< 0.005	< 0.005	<1	30%	Pass	

Comments

Sample Integrity

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

Authorised By

Nibha Vaidya	Analytical Services Manager
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (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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Sample Receipt Advice

Company name:	Geo-Logix P/L
Contact name:	Ted Lilly
Project name:	MACQUARIE UNIVERSITY
Project ID:	1601086
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 15, 2016 4:13 PM
Eurofins | mgt reference:	515897

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 : 3 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).

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 Ted Lilly - tlilly@geo-logix.com.au.

CHAIN OF CUSTODY

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

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160186

Page 1 of 2
Purchase Order No: PO 1509
Quote Reference: 515897
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: 5 d

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP1/0.1	13/9/16	X													X				X												
	TP1/0.2																														X	
	TP2/0.1																															B7, B13
	TP2/0.3																														X	
	TP3/0.05															X				X												
	TP3/0.3																														X	
	TP4/0.05															X				X												
	TP4/0.3																														X	
	TP5/0.2																															B7, B13
	TP5/0.4																														X	
	TP6/0.1																															B7, B13
	TP6/0.3																														X	
	TP7/0.1																															B7, B13
	TP7/0.5																														X	
	TP8/0.15																															B7, B13
	TP9/0.1															X				X												B7, B13
	TP9/0.3																														X	
	TP10/0.2																															B7, B13
	TP10/0.4																														X	
	TP11/0.1	↓	✓																													B7, B13

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
B2	TRH/BTEXN/Pb
B2A	TRH/MAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/NH_3/NO
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH_4/Alk/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe++/HPC/CUB
B18	Cl-/SO_4/pH
B19	N/P/K
B20	CEC/%ESP/Ca/Mg/Na/K

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 14/9/16 Signature: A. McKenzie
Received by: Pedro Date/Time: 14/9/16 Signature: PS 21

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Warriewood, NSW 2102
ABN: 86 116 892 936
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CHAIN OF CUSTODY

Page 2 of 2

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160108G

Purchase Order No: 1509
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: 5 Td

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP11/0-3	13/9/16	X																												X	
	TP12/0.2																															B7, B13
	TP12/0.4																														X	
	TP13/0.1																															B7, B13
	TP13/0.3																														X	
	TP14/0.25																															B7, B13
	TP14/0.1																														X	
	TP15/0.2	14/9/16																														B7, B13
	TP5/0.4															X			X													
	TP16/0.2																															B7, B13
	TP16/0.3																														X	
	TP17/0.2																															B7, B13
	TP17/0.5																														X	
	TP8/0.2																															B7, B13
	TP14/0.2																															B7, B13
	DS1																															B7, B13
	DS2																															B7, B13
	RS1	13/9/16		X												X			X													
	RS2	14/9/16		X												X			X													

Eurofins MGT Suite Codes

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: Signature:
Received by: Reon Date/Time: 14/9/16 Signature: RS

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CHAIN OF CUSTODY

Page 1 of 2

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160186

Purchase Order No: PO 1509
Quote Reference: 515897
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: 5 d

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP1/0.1	13/9/16	X													X				X												
	TP1/0.2																														X	
	TP2/0.1																															B7, B13
	TP2/0.3																														X	
	TP3/0.05															X				X												
	TP3/0.3																														X	
	TP4/0.05															X				X												
	TP4/0.3																														X	
	TP5/0.2																															B7, B13
	TP5/0.4																														X	
	TP6/0.1																															B7, B13
	TP6/0.3																														X	
	TP7/0.1																															B7, B13
	TP7/0.5																														X	
	TP8/0.15																															B7, B13
	TP9/0.1															X				X												B7, B13
	TP9/0.3																														X	
	TP10/0.2																															B7, B13
	TP10/0.4																														X	
	TP11/0.1	↓	↓																													B7, B13

Eurofins MGT Suite Codes

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 14/9/16 Signature: A.McKenzie

Received by: Pedro Elkin Wn. Effingt · 140916 1720 Date/Time: 14/9/16 Signature: PS 21

Geo-Logix Pty Ltd
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CHAIN OF CUSTODY

Page 2 of 2

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 1601086

Purchase Order No: 1509
Quote Reference:
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: 5 Td

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP11/0-3	13/9/16	X																												X	
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	TP13/0.1																															B7, B13
	TP13/0.3																														X	
	TP14/0.25																															B7, B13
	TP14/0.1																														X	
	TP15/0.2	14/9/16																														B7, B13
	TP15/0.4															X			X													
	TP16/0.2																															B7, B13
	TP16/0.3																														X	
	TP17/0.2																															B7, B13
	TP17/0.5																														X	
	TP18/0.2																															B7, B13
	TP19/0.2																															B7, B13
	DS1																															B7, B13
	DS2																															B7, B13
	RS1	13/9/16		X												X			X													
	RS2	14/9/16		X												X			X													

Eurofins MGT Suite Codes

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: _____ Signature: _____

Received by: Rean Date/Time: 14/9/16 Signature: _____
Eltrog. 140916 1720

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CHAIN OF CUSTODY

Page 1 of 2

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160186

Purchase Order No: PO 1509
Quote Reference: 515897
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: STD

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP1/0.1	13/9/16	X													X			X	X												
	TP1/0.2																														X	
	TP2/0.1																															B7, B13
	TP2/0.3																														X	
	TP3/0.05															X			X	X												
	TP3/0.3																														X	
	TP4/0.05															X			X	X												
	TP4/0.3																														X	
	TP5/0.2																															B7, B13
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	TP6/0.1																															B7, B13
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	TP7/0.1																															B7, B13
	TP7/0.5																														X	
	TP8/0.15																															B7, B13
	TP9/0.1																															B7, B13
	TP9/0.3																															
	TP10/0.2																															B7, B13
	TP10/0.4																														X	
	TP11/0.1	↓	✓																													B7, B13

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/MAH
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B2A	TRH/MAH/Pb
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B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO_4/CO_3/HCO_3/pH/NO_3
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO_4/CH/AlN/BOD/COD/HPC/CUB
B17	SO_4/NO_3/Fe/HPC/CUB
B18	Cl/SO_4/pH
B19	N/P/K
B20	CEC/ESP/Ca/Mg/Na/K

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 14/9/16 Signature: A. McKenzie Received by: Pedro Date/Time: 14/9/16 Signature: PS

Amended COC Recd 15/09/16 1603 PS

Geo-Logix Pty Ltd
Building Q2, Level 3
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ABN: 86 116 282 936
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CHAIN OF CUSTODY

Page 2 of 2

Project Manager: Ted Lilly
Contact email: tlilly@geo-logix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160108G

Purchase Order No: 1509
Quote Reference:
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	TP11/0.3	13/9/16	X																												X	
	TP12/0.2																															B7, B13
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	TP13/0.3																														X	
	TP14/0.25																															B7, B13
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	TP15/0.2	14/9/16																														B7, B13
	TP5/0.4															X			X													
	TP16/0.2																															B7, B13
	TP16/0.3																														X	
	TP17/0.2																															B7, B13
	TP17/0.5																														X	
	TP18/0.2																															B7, B13
	TP19/0.2																															B7, B13
	DS1																															B7, B13
	DS2																															B7, B13
	RS1	13/9/16		X												X			X													
	RS2	14/9/16		X												X			X													

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

Eurofins MGT Suite Codes

B1	TRH/BTEXN
B1A	TRH/AAH
B2	TRH/BTEXN/Pb
B2A	TRH/AAH/Pb
B3	PAH/Phenols
B4	TRH/BTEXN/PAH
B4A	TRH/BTEXN/PAH/Phenols
B5	TRH/BTEXN/M7
B6	TRH/BTEXN/M8
B7	TRH/BTEXN/PAH/M8
B7A	TRH/BTEXN/PAH/Phenols/M8
B8	TRH/VOC/PAH/M8
B9	TRH/BTEXN/PAH/OCP/M8
B10	TRH/BTEXN/PAH/OCP/OPP/M8
B11	Na/K/Ca/Mg/Cl/SO4/CO3/HCO3/pH/EC
B11A	B11/Alkalinity
B11B	B11/EC/TDS
B12	TRH/BTEXN/Oxygenates/Ethanol
B12A	TRH/BTEXN/Oxygenates
B13	OCP/PCB
B14	OCP/OPP
B15	OCP/OPP/PCB
B16	TDS/SO4/CH4/Alk/BOD/COD/HPC/CUB
B17	SO4/NO3/Free Cl/HPC/CUB
B18	Cl/SO4/pH
B19	NPW
B20	CEC/ESP/Calculation

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: _____ Signature: _____ Received by: _____ Date/Time: 14/9/16 Signature: _____

Ellen Wandala Gamage

Subject: FW: Revised COC for Report 515897

-----Original Message-----
From: Ted Lilly [mailto:tlilly@geo-logix.com.au]
Sent: Thursday, 15 September 2016 4:13 PM
To: Nibha Vaidya
Subject: RE: Revised COC for Report 515897

Nibha,

Also, please analyse samples TP3/0.05 and TP17/0.2 for pH(CaCl2), % Clay Content, and Cation Exchange Capacity (CEC).

Cheers,

Ted Lilly | Senior Geotechnical Engineer Unit 2309/4 Daydream St, Warriewood NSW 2102
T: 02 9979 1722 | M: 0412 708 868 | W: www.geo-logix.com.au

-----Original Message-----
From: Ted Lilly
Sent: Thursday, 15 September 2016 4:03 PM
To: 'NibhaVaidya@eurofins.com' <NibhaVaidya@eurofins.com>
Subject: Revised COC for Report 515897

Nibha,

Please find attached revised lab assignments for report 515897.

Cheers,

EWG #515897

Ted Lilly | Senior Geotechnical Engineer Unit 2309/4 Daydream St, Warriewood NSW 2102
T: 02 9979 1722 | M: 0412 708 868 | W: www.geo-logix.com.au

-----Original Message-----

Certificate of Analysis

NATA Accredited
Accreditation Number 1261
Site Number 18217

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

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

Attention:	Ted Lilly
Report	515899-AID
Project Name	MACQUARIE UNIVERSITY
Project ID	1601086
Received Date	Sep 14, 2016
Date Reported	Sep 20, 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 asbestos-containing 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.

Project Name MACQUARIE UNIVERSITY
Project ID 1601086
Date Sampled Sep 13, 2016
Report 515899-AID

Client Sample ID	Eurofins | mgt Sample No.	Date Sampled	Sample Description	Result
TP7/0.1-0.3	16-Se14708	Sep 13, 2016	Approximate Sample 770g Sample consisted of: Brown coarse grain soil and rocks.	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
TP9/0.1-0.3	16-Se14709	Sep 13, 2016	Approximate Sample 1077g Sample consisted of: Brown coarse grain soil and rocks.	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]
TP16/0.1-0.3	16-Se14710	Sep 13, 2016	Approximate Sample 1042g Sample consisted of: Brown coarse grain soil and rocks.	No asbestos detected at the reporting limit of 0.001% w/w.* Organic fibre detected. No respirable fibres detected.[M11]

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Asbestos - LTM-ASB-8020	Sydney	Sep 20, 2016	Indefinite

eurofins | mgt

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

Company Name:	Geo-Logix P/L	**Order No.:**	PO1510	**Received:**	Sep 14, 2016 5:20 PM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	515899	**Due:**	Sep 21, 2016
		Phone:	02 9979 1722	**Priority:**	5 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Asbestos - WA guidelines
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217						X
Brisbane Laboratory - NATA Site # 20794						
External Laboratory						
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**	
1	TP7/0.1-0.3	Sep 13, 2016		Soil	S16-Se14708	X
2	TP9/0.1-0.3	Sep 13, 2016		Soil	S16-Se14709	X
3	TP16/0.1-0.3	Sep 13, 2016		Soil	S16-Se14710	X
Test Counts						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

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.
AF	Asbestos fines (AF) are defined as free fibres, or fibre bundles, smaller than 7mm. It is the free fibres which present the greatest risk to human health, although very small fibres (< 5 microns in length) are not considered to be such a risk. AF also includes small fragments of bonded ACM that pass through a 7 mm x 7 mm sieve. (Note that for bonded ACM fragments to pass through a 7 mm x 7 mm sieve implies a substatntial degree of damage which increases the potential for fibre release.)
AC	Asbestos cement means a mixture of cement and asbestos fibres (typically 90:10 ratios).

Comments

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	N/A
Samples received within HoldingTime	Yes
Some samples have been subcontracted	No

Qualifier Codes/Comments

Code	Description
N/A	Not applicable
M11	NATA accreditation does not cover the performance of this service.

Authorised by:

Rhys Thomas Senior Analyst-Asbestos (NSW)

Glenn Jackson
National Operations Manager

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

eurofins | mgt

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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

Sample Receipt Advice

Company name:	Geo-Logix P/L
Contact name:	Ted Lilly
Project name:	MACQUARIE UNIVERSITY
Project ID:	1601086
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 14, 2016 5:20 PM
Eurofins | mgt reference:	515899

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 : 3 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.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

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

Results will be delivered electronically via e.mail to Ted Lilly - tlilly@geo-logix.com.au.

CHAIN OF CUSTODY

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

Project Manager: Ted Lilly
Contact email: tlilly@geologix.com.au
CC email: amckenzie@geo-logix.com.au
Project Name: Macquarie University
Project Number: 160186

Page 1 of 1
Purchase Order No: P01510
Quote Reference: S15899
Send Invoice to: accounts@geo-logix.com.au
Date Submitted: 14/9/16
TAT required: 5-7d

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TS1	14/9/16	X					Please send																								B7, B13
	TS2	↓	X					to Melbourne																								B7, B13
	TP7/0.1-0.3	13/9	X					Bag																X								
	TP9/0.1-0.3	13/9	X					Bag																X								
	TP16/0.1-0.3	14/9	X					Bag																X								

Eurofins MGT Suite Codes

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 14/9/16 Signature: A.McKenzie
Received by: Pedro Date/Time: 14/09/16 Signature: PS

Ice cool Esky with Effingf. 1409161720

eurofins | mgt

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 1254

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

Attention: **Ted Lilly**

Report **515980-S-V2**
Project name MACQUARIE UNIVERSITY
Project ID 1601086
Received Date Sep 16, 2016

Client Sample ID			**TS1**	**TS2**
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Se15161**	**M16-Se15162**
Date Sampled			**Sep 14, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit		
TRH C6-C9	20	mg/kg	< 20	< 20
% Moisture	1	%	17	21
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
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	70	71
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
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
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				
TRH C10-C14	20	mg/kg	< 20	< 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
Polycyclic Aromatic Hydrocarbons				
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

Client Sample ID			TS1	TS2
Sample Matrix			Soil	Soil
Eurofins | mgt Sample No.			M16-Se15161	M16-Se15162
Date Sampled			Sep 14, 2016	Sep 14, 2016
Test/Reference	LOR	Unit		
Polycyclic Aromatic Hydrocarbons				
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	%	113	124
p-Terphenyl-d14 (surr.)	1	%	107	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	0.28	0.13
4.4'-DDT	0.05	mg/kg	0.06	< 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	88
Tetrachloro-m-xylene (surr.)	1	%	126	80
Polychlorinated Biphenyls				
Aroclor-1016	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1232	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1242	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1248	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1254	0.1	mg/kg	< 0.1	< 0.1
Aroclor-1260	0.1	mg/kg	< 0.1	< 0.1
Total PCB*	0.1	mg/kg	< 0.1	< 0.1
Dibutylchlorendate (surr.)	1	%	93	88
Tetrachloro-m-xylene (surr.)	1	%	126	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100

Client Sample ID			TS1	TS2
Sample Matrix			**Soil**	**Soil**
Eurofins | mgt Sample No.			**M16-Se15161**	**M16-Se15162**
Date Sampled			**Sep 14, 2016**	**Sep 14, 2016**
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	2	mg/kg	4.5	8.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	33	39
Copper	5	mg/kg	8.3	14
Lead	5	mg/kg	26	34
Mercury	0.1	mg/kg	< 0.1	< 0.1
Nickel	5	mg/kg	< 5	< 5
Zinc	5	mg/kg	33	52

Sample History

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

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

Description	Testing Site	Extracted	Holding Time
Eurofins | mgt Suite B7			
TRH C6-C9	Melbourne	Sep 16, 2016	14 Day
- Method: MGT 100A			
BTEX	Melbourne	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Melbourne	Sep 16, 2016	14 Day
- Method: TRH C6-C36 - LTM-ORG-2010			
Polycyclic Aromatic Hydrocarbons	Melbourne	Sep 16, 2016	14 Day
- Method: USEPA 8270 Polycyclic Aromatic Hydrocarbons			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Melbourne	Sep 16, 2016	14 Day
- Method: TRH C6-C40 - LTM-ORG-2010			
Metals M8	Melbourne	Sep 16, 2016	28 Days
- Method: LTM-MET-3030 by ICP-OES (hydride ICP-OES for Mercury)			
% Moisture	Melbourne	Sep 16, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			
Eurofins | mgt Suite B13			
Organochlorine Pesticides	Melbourne	Sep 16, 2016	14 Day
- Method: USEPA 8081 Organochlorine Pesticides			
Polychlorinated Biphenyls	Melbourne	Sep 16, 2016	28 Days
- Method: USEPA 8082 Polychlorinated Biphenyls			

eurofins | mgt

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

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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.:**	PO1510	**Received:**	Sep 16, 2016 8:10 AM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	515980	**Due:**	Sep 23, 2016
		Phone:	02 9979 1722	**Priority:**	5 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Eurofins | mgt Suite B13	Moisture Set	Eurofins | mgt Suite B7
Melbourne Laboratory - NATA Site # 1254 & 14271						X	X	X
Sydney Laboratory - NATA Site # 18217								
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	TS1	Sep 14, 2016		Soil	M16-Se15161	X	X	X
2	TS2	Sep 14, 2016		Soil	M16-Se15162	X	X	X
Test Counts						2	2	2

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.
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.

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Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
TRH C6-C9	mg/kg	< 20			20	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							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
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							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
Method Blank							
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	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
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							
Polychlorinated Biphenyls							
Aroclor-1016	mg/kg	< 0.1			0.1	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.1			0.1	Pass	
Aroclor-1242	mg/kg	< 0.1			0.1	Pass	
Aroclor-1248	mg/kg	< 0.1			0.1	Pass	
Aroclor-1254	mg/kg	< 0.1			0.1	Pass	
Aroclor-1260	mg/kg	< 0.1			0.1	Pass	
Total PCB*	mg/kg	< 0.1			0.1	Pass	
Method Blank							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
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							
Heavy Metals							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
LCS - % Recovery							
TRH C6-C9	%	126			70-130	Pass	
LCS - % Recovery							
BTEX							
Benzene	%	116			70-130	Pass	
Toluene	%	113			70-130	Pass	
Ethylbenzene	%	111			70-130	Pass	
m&p-Xylenes	%	107			70-130	Pass	
Xylenes - Total	%	108			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
Naphthalene	%	127			70-130	Pass	
TRH C6-C10	%	117			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions							
TRH C10-C14	%	97			70-130	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	97			70-130	Pass	
Acenaphthylene	%	108			70-130	Pass	
Anthracene	%	119			70-130	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benz(a)anthracene	%	112			70-130	Pass	
Benzo(a)pyrene	%	96			70-130	Pass	
Benzo(b&j)fluoranthene	%	91			70-130	Pass	
Benzo(g.h.i)perylene	%	101			70-130	Pass	
Benzo(k)fluoranthene	%	114			70-130	Pass	
Chrysene	%	95			70-130	Pass	
Dibenz(a.h)anthracene	%	121			70-130	Pass	
Fluoranthene	%	93			70-130	Pass	
Fluorene	%	108			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	112			70-130	Pass	
Naphthalene	%	98			70-130	Pass	
Phenanthrene	%	112			70-130	Pass	
Pyrene	%	87			70-130	Pass	
LCS - % Recovery							
Organochlorine Pesticides							
4.4'-DDD	%	118			70-130	Pass	
4.4'-DDE	%	106			70-130	Pass	
4.4'-DDT	%	117			70-130	Pass	
a-BHC	%	111			70-130	Pass	
Aldrin	%	113			70-130	Pass	
b-BHC	%	111			70-130	Pass	
d-BHC	%	128			70-130	Pass	
Dieldrin	%	106			70-130	Pass	
Endosulfan I	%	97			70-130	Pass	
Endosulfan II	%	109			70-130	Pass	
Endosulfan sulphate	%	113			70-130	Pass	
Endrin	%	93			70-130	Pass	
Endrin aldehyde	%	90			70-130	Pass	
Endrin ketone	%	107			70-130	Pass	
g-BHC (Lindane)	%	115			70-130	Pass	
Heptachlor	%	94			70-130	Pass	
Heptachlor epoxide	%	104			70-130	Pass	
Hexachlorobenzene	%	99			70-130	Pass	
Methoxychlor	%	122			70-130	Pass	
LCS - % Recovery							
Polychlorinated Biphenyls							
Aroclor-1260	%	93			70-130	Pass	
LCS - % Recovery							
Total Recoverable Hydrocarbons - 2013 NEPM Fractions							
TRH >C10-C16	%	98			70-130	Pass	
LCS - % Recovery							
Heavy Metals							
Arsenic	%	108			80-120	Pass	
Cadmium	%	96			80-120	Pass	
Chromium	%	101			80-120	Pass	
Copper	%	103			80-120	Pass	
Lead	%	101			80-120	Pass	
Mercury	%	112			75-125	Pass	
Nickel	%	101			80-120	Pass	
Zinc	%	102			80-120	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
				Result 1					
TRH C6-C9	M16-Se15782	NCP	%	89			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	M16-Se15782	NCP	%	97			70-130	Pass	
Toluene	M16-Se15782	NCP	%	90			70-130	Pass	
Ethylbenzene	M16-Se15782	NCP	%	90			70-130	Pass	
m&p-Xylenes	M16-Se15782	NCP	%	88			70-130	Pass	
o-Xylene	M16-Se15782	NCP	%	90			70-130	Pass	
Xylenes - Total	M16-Se15782	NCP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	M16-Se15782	NCP	%	119			70-130	Pass	
TRH C6-C10	M16-Se15782	NCP	%	84			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	M16-Se13963	NCP	%	91			70-130	Pass	
Acenaphthylene	M16-Se13963	NCP	%	102			70-130	Pass	
Anthracene	M16-Se13963	NCP	%	110			70-130	Pass	
Benz(a)anthracene	M16-Se13963	NCP	%	109			70-130	Pass	
Benzo(a)pyrene	M16-Se13963	NCP	%	94			70-130	Pass	
Benzo(b&j)fluoranthene	M16-Se13963	NCP	%	93			70-130	Pass	
Benzo(g.h.i)perylene	M16-Se13963	NCP	%	95			70-130	Pass	
Benzo(k)fluoranthene	M16-Se13963	NCP	%	113			70-130	Pass	
Chrysene	M16-Se13963	NCP	%	92			70-130	Pass	
Dibenz(a.h)anthracene	M16-Se13963	NCP	%	116			70-130	Pass	
Fluoranthene	M16-Se13963	NCP	%	90			70-130	Pass	
Fluorene	M16-Se13963	NCP	%	102			70-130	Pass	
Indeno(1.2.3-cd)pyrene	M16-Se13963	NCP	%	105			70-130	Pass	
Naphthalene	M16-Se13963	NCP	%	94			70-130	Pass	
Phenanthrene	M16-Se13963	NCP	%	96			70-130	Pass	
Pyrene	M16-Se13963	NCP	%	74			70-130	Pass	
Spike - % Recovery									
Organochlorine Pesticides				Result 1					
4.4'-DDD	M16-Se15391	NCP	%	127			70-130	Pass	
4.4'-DDE	M16-Se15391	NCP	%	84			70-130	Pass	
4.4'-DDT	M16-Se15391	NCP	%	102			70-130	Pass	
a-BHC	M16-Se15391	NCP	%	85			70-130	Pass	
b-BHC	M16-Se15391	NCP	%	82			70-130	Pass	
d-BHC	M16-Se15391	NCP	%	89			70-130	Pass	
Endosulfan I	M16-Se15391	NCP	%	103			70-130	Pass	
Endosulfan II	M16-Se15391	NCP	%	78			70-130	Pass	
Endosulfan sulphate	M16-Se15391	NCP	%	70			70-130	Pass	
Endrin	M16-Se15391	NCP	%	77			70-130	Pass	
Endrin aldehyde	M16-Se15391	NCP	%	84			70-130	Pass	
Endrin ketone	M16-Se15391	NCP	%	88			70-130	Pass	
g-BHC (Lindane)	M16-Se15391	NCP	%	82			70-130	Pass	
Heptachlor	M16-Se15391	NCP	%	71			70-130	Pass	
Heptachlor epoxide	M16-Se15391	NCP	%	77			70-130	Pass	
Hexachlorobenzene	M16-Se15391	NCP	%	74			70-130	Pass	
Methoxychlor	M16-Se15391	NCP	%	75			70-130	Pass	
Spike - % Recovery									
Polychlorinated Biphenyls				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Aroclor-1260	M16-Se16718	NCP	%	76			70-130	Pass	
Spike - % Recovery									
Heavy Metals				Result 1					
Arsenic	B16-Se15402	NCP	%	95			75-125	Pass	
Cadmium	B16-Se15402	NCP	%	86			75-125	Pass	
Chromium	B16-Se15402	NCP	%	87			75-125	Pass	
Copper	B16-Se15402	NCP	%	97			75-125	Pass	
Lead	B16-Se15402	NCP	%	84			75-125	Pass	
Mercury	M16-Se15122	NCP	%	88			70-130	Pass	
Nickel	B16-Se15402	NCP	%	85			75-125	Pass	
Zinc	B16-Se15402	NCP	%	91			75-125	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
				Result 1	Result 2	RPD			
TRH C6-C9	M16-Se15008	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
% Moisture	M16-Se15161	CP	%	17	17	<1	30%	Pass	
Duplicate									
BTEX				Result 1	Result 2	RPD			
Benzene	M16-Se15008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	M16-Se15008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	M16-Se15008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
m&p-Xylenes	M16-Se15008	NCP	mg/kg	< 0.2	< 0.2	<1	30%	Pass	
o-Xylene	M16-Se15008	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Xylenes - Total	M16-Se15008	NCP	mg/kg	< 0.3	< 0.3	<1	30%	Pass	
Duplicate									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD			
Naphthalene	M16-Se15008	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	M16-Se15008	NCP	mg/kg	< 20	< 20	<1	30%	Pass	
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	M16-Se14742	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
Chlordanes - Total	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
4.4'-DDD	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDE	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
4.4'-DDT	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
a-BHC	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Aldrin	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	

Duplicate									
Organochlorine Pesticides				Result 1	Result 2	RPD			
b-BHC	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
d-BHC	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Dieldrin	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan I	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan II	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endosulfan sulphate	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin aldehyde	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Endrin ketone	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
g-BHC (Lindane)	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Heptachlor epoxide	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Hexachlorobenzene	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Methoxychlor	M16-Se17284	NCP	mg/kg	< 0.05	< 0.05	<1	30%	Pass	
Toxaphene	M16-Se17284	NCP	mg/kg	< 1	< 1	<1	30%	Pass	
Duplicate									
Polychlorinated Biphenyls				Result 1	Result 2	RPD			
Aroclor-1016	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1221	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1232	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1242	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1248	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1254	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Aroclor-1260	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Total PCB*	M16-Se17284	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Duplicate									
Heavy Metals				Result 1	Result 2	RPD			
Arsenic	M16-Se15120	NCP	mg/kg	< 2	< 2	<1	30%	Pass	
Cadmium	M16-Se15120	NCP	mg/kg	< 0.4	< 0.4	<1	30%	Pass	
Chromium	M16-Se15120	NCP	mg/kg	56	57	<1	30%	Pass	
Copper	M16-Se15120	NCP	mg/kg	65	63	4.0	30%	Pass	
Lead	M16-Se15120	NCP	mg/kg	< 5	5.9	25	30%	Pass	
Mercury	M16-Se15120	NCP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Nickel	M16-Se15120	NCP	mg/kg	120	120	<1	30%	Pass	
Zinc	M16-Se15120	NCP	mg/kg	71	65	8.0	30%	Pass	

Comments

This report has been revised to amend Sample Information.

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Nibha Vaidya	Analytical Services Manager
Alex Petridis	Senior Analyst-Metal (VIC)
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.

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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:	Ted Lilly
Project name:	MACQUARIE UNIVERSITY
Project ID:	1601086
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 16, 2016 8:10 AM
Eurofins | mgt reference:	515980

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 : 14.2 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.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

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

Results will be delivered electronically via e.mail to Ted Lilly - tlilly@geo-logix.com.au.

Geo-Logix Pty Ltd

Building Q2, Level 3

2309/4 Daydream St

Warriewood, NSW 2102

ABN: 86 116 892 936

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

CHAIN OF CUSTODY

Project Manager: Ted Lilly

Contact email: tlilly@geo-logix.com.au

CC email: amckenzie@geo-logix.com.au

Project Name: Macquarie University

Project Number: 1601086

Purchase Order No: PO1510

Quote Reference:

Send Invoice to: accounts@geo-logix.com.au

Date Submitted: 14/9/16

TAT required: 5 d

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	water	air	paint, filters	other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TS1	14/9/16	X					Please send to Melbourne																									B7, B13
	TS2	↓	X																														B7, B13
	TP7/0.1-0.3	13/9	X					Bag																X									
	TP9/0.1-0.3	13/9	X					Bag																X									
	TP16/0.1-0.3	14/9	X					Bag																X									

Eurofins MGT Suite Codes

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 14/9/16 Signature: A. McK

Rec'd Ellen WA Eff. Mgt. 140916 1720

Received by: Pedro Date/Time: 14/09/16 Signature: PS

DANIEL WRIGHT RG #515900 16/09/2016

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Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 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: **Ted Lilly**

Report **517185-S**
Project name ADDITIONAL: MACQUARIE UNIVERSITY
Project ID 1601086
Received Date Sep 26, 2016

Client Sample ID			**TP11/0.3**
Sample Matrix			**Soil**
Eurofins | mgt Sample No.			**S16-Se23737**
Date Sampled			**Sep 13, 2016**
Test/Reference	LOR	Unit	
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)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	0.6
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	%	118
p-Terphenyl-d14 (surr.)	1	%	134
% Moisture	1	%	22

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
Polycyclic Aromatic Hydrocarbons	Sydney	Sep 26, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
% Moisture	Sydney	Sep 26, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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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.:**		**Received:**	Sep 26, 2016 12:13 PM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	517185	**Due:**	Sep 27, 2016
		Phone:	02 9979 1722	**Priority:**	1 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	ADDITIONAL: MACQUARIE UNIVERSITY				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						Polycyclic Aromatic Hydrocarbons	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
External Laboratory							
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**		
1	TP11/0.3	Sep 13, 2016		Soil	S16-Se23737	X	X
Test Counts						1	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

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	106			70-130	Pass	
Acenaphthylene	%	94			70-130	Pass	
Anthracene	%	109			70-130	Pass	
Benz(a)anthracene	%	94			70-130	Pass	
Benzo(a)pyrene	%	93			70-130	Pass	
Benzo(b&j)fluoranthene	%	76			70-130	Pass	
Benzo(g.h.i)perylene	%	97			70-130	Pass	
Benzo(k)fluoranthene	%	119			70-130	Pass	
Chrysene	%	116			70-130	Pass	
Dibenz(a.h)anthracene	%	80			70-130	Pass	
Fluoranthene	%	115			70-130	Pass	
Fluorene	%	98			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	83			70-130	Pass	
Naphthalene	%	111			70-130	Pass	
Phenanthrene	%	112			70-130	Pass	
Pyrene	%	113			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Se23737	CP	%	113			70-130	Pass	
Acenaphthylene	S16-Se23737	CP	%	98			70-130	Pass	
Anthracene	S16-Se23737	CP	%	112			70-130	Pass	
Benz(a)anthracene	S16-Se23737	CP	%	94			70-130	Pass	
Benzo(a)pyrene	S16-Se23737	CP	%	89			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Se23737	CP	%	84			70-130	Pass	
Benzo(g.h.i)perylene	S16-Se23737	CP	%	95			70-130	Pass	
Benzo(k)fluoranthene	S16-Se23737	CP	%	117			70-130	Pass	
Chrysene	S16-Se23737	CP	%	110			70-130	Pass	
Dibenz(a.h)anthracene	S16-Se23737	CP	%	87			70-130	Pass	
Fluoranthene	S16-Se23737	CP	%	101			70-130	Pass	
Fluorene	S16-Se23737	CP	%	104			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	S16-Se23737	CP	%	86			70-130	Pass	
Naphthalene	S16-Se23737	CP	%	113			70-130	Pass	
Phenanthrene	S16-Se23737	CP	%	111			70-130	Pass	
Pyrene	S16-Se23737	CP	%	102			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Se18995	NCP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Se23737	CP	%	22	22	2.0	30%	Pass	

Quality Control Analyte Summary Compliance

The table below is the actual occurrence of QC performed on the batch of samples within this report and as defined below

Analysis	Samples Analysed	Laboratory Duplicates Reported	Laboratory Matrix Spikes Reported	Method Blanks Reported	Laboratory Control Samples Reported
Polycyclic Aromatic Hydrocarbons	1	1	1	1	1
% Moisture	1	1	NA	NA	NA

Quality Control Parameter Frequency Compliance follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure April 2011, Schedule B3, Guideline on Laboratory Analysis of Potentially Contaminated Soils and US EPA SW-846 Chapter 1: 'Quality Control'.

It comprises the following when a laboratory process batch is deemed to consist of up to 20 samples that are similar in terms of matrix and test procedure, and are processed as one unit for QC purposes. If more than 20 samples are being processed, they are considered as more than one batch.

Method blank

One method blank per process batch.

Laboratory duplicate

There should be at least one duplicate per process batch, or two duplicates if the process batch exceeds 10 samples.

Laboratory control sample (LCS)

There should be at least one LCS per process batch.

Matrix spikes

There should be one matrix spike per matrix type per process batch.

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Nibha Vaidya	Analytical Services Manager
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Inorganic (NSW)
Ryan Hamilton	Senior Analyst-Organic (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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Site # 1254 & 14271

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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:	Ted Lilly
Project name:	ADDITIONAL: MACQUARIE UNIVERSITY
Project ID:	1601086
COC number:	Not provided
Turn around time:	1 Day
Date/Time received:	Sep 26, 2016 12:13 PM
Eurofins | mgt reference:	517185

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 : 3 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.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Additional from report 517185

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 Ted Lilly - tlilly@geo-logix.com.au.

Siamak 26.9.16

#S17185

Siamak Sobhanei

From: Nibha Vaidya
Sent: Monday, 26 September 2016 12:13 PM
To: Esther Yew
Subject: FW: Eurofins | mgt Test Results, Invoice - Report 515897 : Site MACQUARIE UNIVERSITY (1601086)

Additional analysis on 1 day TAT please

Kind Regards,

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

-----Original Message-----
From: Ted Lilly [mailto:tlilly@geo-logix.com.au]
Sent: Monday, 26 September 2016 12:02 PM
To: Nibha Vaidya
Cc: Ben Pearce; Aidan McKenzie
Subject: RE: Eurofins | mgt Test Results, Invoice - Report 515897 : Site MACQUARIE UNIVERSITY (1601086)

Nibha,

Please run sample TP11/0.3 (Lab ID S16-Se14701) for PAHs, note that extraction needs to happen today/tomorrow to be within 14 day holding time.

Cheers,

Ted Lilly | Senior Geotechnical Engineer Unit 2309/4 Daydream St, Warriewood NSW 2102
T: 02 9979 1722 | M: 0412 708 868 | W: www.geo-logix.com.au

-----Original Message-----
From: NibhaVaidya@eurofins.com [mailto:NibhaVaidya@eurofins.com]
Sent: Thursday, 22 September 2016 6:51 PM
To: Ted Lilly <tlilly@geo-logix.com.au>
Cc: Ben Pearce <bpearce@geo-logix.com.au>; Aidan McKenzie <amckenzie@geo-logix.com.au>
Subject: Eurofins | mgt Test Results, Invoice - Report 515897 : Site MACQUARIE UNIVERSITY (1601086)

eurofins | mgt

Certificate of Analysis

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

NATA Accredited
Accreditation Number 1261
Site Number 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: **Ted Lilly**

Report **517594-S**
Project name MACQUARIE PARK
Project ID 1601086
Received Date Sep 28, 2016

Client Sample ID			**TP11/N/0.1**	**TP11/S/0.1**	**TP11/E/0.1**	**TP11/W/0.2**
Sample Matrix			**Soil**	**Soil**	**Soil**	**Soil**
Eurofins | mgt Sample No.			**S16-Se26335**	**S16-Se26336**	**S16-Se26337**	**S16-Se26338**
Date Sampled			**Sep 27, 2016**	**Sep 27, 2016**	**Sep 27, 2016**	**Sep 27, 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	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene[N07]	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g.h.i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a.h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	122	118	107	109
p-Terphenyl-d14 (surr.)	1	%	131	118	117	119
% Moisture	1	%	19	20	34	19

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
Polycyclic Aromatic Hydrocarbons	Sydney	Oct 05, 2016	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
% Moisture	Sydney	Sep 28, 2016	14 Day
- Method: LTM-GEN-7080 Moisture			

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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.:**	PO1531	**Received:**	Sep 28, 2016 12:10 PM
Address:	Bld Q2 Level 3, 2309/4 Daydream St Warriewood NSW 2102	**Report #:**	517594	**Due:**	Oct 6, 2016
		Phone:	02 9979 1722	**Priority:**	5 Day
		Fax:	02 9979 1222	**Contact Name:**	Ted Lilly
Project Name:	MACQUARIE PARK				
Project ID:	1601086				

Eurofins | mgt Analytical Services Manager : Nibha Vaidya

Sample Detail						HOLD	Polycyclic Aromatic Hydrocarbons	Moisture Set
Melbourne Laboratory - NATA Site # 1254 & 14271								
Sydney Laboratory - NATA Site # 18217						X	X	X
Brisbane Laboratory - NATA Site # 20794								
External Laboratory								
No	**Sample ID**	**Sample Date**	**Sampling Time**	**Matrix**	**LAB ID**			
1	TP11/N/0.1	Sep 27, 2016		Soil	S16-Se26335		X	X
2	TP11/S/0.1	Sep 27, 2016		Soil	S16-Se26336		X	X
3	TP11/E/0.1	Sep 27, 2016		Soil	S16-Se26337		X	X
4	TP11/W/0.2	Sep 27, 2016		Soil	S16-Se26338		X	X
5	TP11/N/0.4	Sep 27, 2016		Soil	S16-Se26339	X		
6	TP11/S/0.4	Sep 27, 2016		Soil	S16-Se26340	X		
7	TP11/E/0.4	Sep 27, 2016		Soil	S16-Se26341	X		
8	TP11/W/0.4	Sep 27, 2016		Soil	S16-Se26342	X		
Test Counts						4	4	4

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

ug/l: micrograms per litre

ppb: Parts per billion

org/100ml: Organisms per 100 millilitres

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/l: milligrams per litre

ppm: Parts per million

%: Percentage

NTU: Nephelometric Turbidity Units

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.
5. Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
6. pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling.Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
7. Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
8. Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
9. For Matrix Spikes and LCS results a dash " -" in the report means that the specific analyte was not added to the QC sample.
10. Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

Quality Control Results

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g.h.i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a.h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1.2.3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
LCS - % Recovery							
Polycyclic Aromatic Hydrocarbons							
Acenaphthene	%	121			70-130	Pass	
Acenaphthylene	%	113			70-130	Pass	
Anthracene	%	118			70-130	Pass	
Benz(a)anthracene	%	111			70-130	Pass	
Benzo(a)pyrene	%	86			70-130	Pass	
Benzo(b&j)fluoranthene	%	85			70-130	Pass	
Benzo(g.h.i)perylene	%	100			70-130	Pass	
Benzo(k)fluoranthene	%	125			70-130	Pass	
Chrysene	%	125			70-130	Pass	
Dibenz(a.h)anthracene	%	93			70-130	Pass	
Fluoranthene	%	117			70-130	Pass	
Fluorene	%	121			70-130	Pass	
Indeno(1.2.3-cd)pyrene	%	98			70-130	Pass	
Naphthalene	%	121			70-130	Pass	
Phenanthrene	%	113			70-130	Pass	
Pyrene	%	114			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S16-Se26336	CP	%	91			70-130	Pass	
Acenaphthylene	S16-Se26336	CP	%	93			70-130	Pass	
Anthracene	S16-Se26336	CP	%	90			70-130	Pass	
Benz(a)anthracene	S16-Se26336	CP	%	89			70-130	Pass	
Benzo(a)pyrene	S16-Se26336	CP	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	S16-Se26336	CP	%	82			70-130	Pass	
Benzo(g.h.i)perylene	S16-Se26336	CP	%	91			70-130	Pass	
Benzo(k)fluoranthene	S16-Se26336	CP	%	111			70-130	Pass	
Chrysene	S16-Se26336	CP	%	101			70-130	Pass	
Dibenz(a.h)anthracene	S16-Se26336	CP	%	77			70-130	Pass	
Fluoranthene	S16-Se26336	CP	%	93			70-130	Pass	
Fluorene	S16-Se26336	CP	%	95			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Indeno(1.2.3-cd)pyrene	S16-Se26336	CP	%	82			70-130	Pass	
Naphthalene	S16-Se26336	CP	%	93			70-130	Pass	
Phenanthrene	S16-Se26336	CP	%	91			70-130	Pass	
Pyrene	S16-Se26336	CP	%	84			70-130	Pass	
Test	**Lab Sample ID**	**QA Source**	**Units**	**Result 1**			**Acceptance Limits**	**Pass Limits**	**Qualifying Code**
Duplicate									
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD			
Acenaphthene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benz(a)anthracene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(a)pyrene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(b&j)fluoranthene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(g.h.i)perylene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Benzo(k)fluoranthene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Chrysene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Dibenz(a.h)anthracene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluorene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1.2.3-cd)pyrene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Naphthalene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Pyrene	S16-Se26335	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Duplicate									
				Result 1	Result 2	RPD			
% Moisture	S16-Se25666	NCP	%	11	9.7	9.0	30%	Pass	

Comments

Sample Integrity

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

Qualifier Codes/Comments

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

Authorised By

Nibha Vaidya	Analytical Services Manager
Ivan Taylor	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Inorganic (NSW)
Ryan Hamilton	Senior Analyst-Organic (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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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:	Ted Lilly
Project name:	MACQUARIE PARK
Project ID:	1601086
COC number:	Not provided
Turn around time:	5 Day
Date/Time received:	Sep 28, 2016 12:10 PM
Eurofins | mgt reference:	517594

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 : 2.2 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.

☒ Some samples have been subcontracted.

N/A Custody Seals intact (if used).

Contact notes

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

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

Results will be delivered electronically via e.mail to Ted Lilly - tlilly@geo-logix.com.au.

CHAIN OF CUSTODY

Geo-Logix Pty Ltd

Building Q2, Level 3

2309/4 Daydream St

Warriewood NSW 2102

ABN: 86 116 892 936

P: (02) 9979 1722

F: (02) 9979 1222

Project Manager: Ted Lilly

Contact email: tlilly@geo-logix.com.au

CC email: amckenzie@geo-logix.com.au

Project Name: Macquarie Park

Project Number: 1601086

Purchase Order No: PO1531

Quote Reference:

Send Invoice to: accounts@geo-logix.com.au

Date Submitted: 28/09/2016

TAT required: Standard

517504

ANALYSIS REQUIRED

Lab ID	Sample ID	Date	Matrix: soil	Matrix: water	Matrix: air	Matrix: paint, filters	Matrix: other	Comments	COMPOSITE	TPH - C6 - C9	TPH - C10 - C36	VOCs	BTEXN	PAHs	PCBs	OCPs	OPPs	Phenols	Metals - M8	Metals - Lead	Metals - Specify **	TCLP	Asbestos (ID only)	Asbestos (WA DOH)	Foreign Materials	Conductivity (EC)	pH ($CaCl_2$)	% Clay Content	Cat Exc Cap (CEC)			Hold	SUITE(S)
	TP11/N/0.1	27/09/2016	X											X																			
	TP11/N/0.4	27/09/2016	X																													X	
	TP11/S/0.1	27/09/2016	X											X																			
	TP11/S/0.4	27/09/2016	X																													X	
	TP11/E/0.1	27/09/2016	X											X																			
	TP11/E/0.4	27/09/2016	X																													X	
	TP11/W/0.2	27/09/2016	X											X																			
	TP11/W/0.4	27/09/2016	X																													X	

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

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

Chain of Custody

Relinquished by: Aidan McKenzie Date/Time: 28/9/16 Signature:

Received by: Sean Date/Time: 28/9 12:10 Signature:

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