



Phase 2 Environmental Site Assessment, Parcel 4

Prepared for:
Hydro Aluminium Kurri Kurri Pty Ltd

On behalf of:

Prepared by:
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Date:
April 2015

Project Number:
AS130348

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Specific assumptions and limitations identified by ENVIRON as being relevant are set out in the report. The methodology adopted and sources of information used by ENVIRON are outlined in our scope of work. ENVIRON has made no independent verification of this information beyond the agreed scope of works.

This report should be read in full.

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VERSION CONTROL RECORD

Document File Name	Date Issued	Version	Author	Reviewer
AS130348 Parcel4_Phase 2_D1	May 2014	Draft 1	S Cadman	F Robinson
AS130348 Parcel4_Phase 2_V1	April 2015	Final	S Cadman	F Robinson

Contents

	Page
1 Introduction	6
1.1 Background	6
1.2 Objectives and Scope of Work	6
2 Site Description	8
2.1 Site Location	8
2.2 Site Setting	9
2.2.1 Topography	9
2.2.2 Regional Geology	9
2.2.3 Site Hydrology	9
2.2.4 Regional Hydrogeology	9
2.3 Site Sensitivity	10
3 Site History	11
4 Sampling and Analytical Quality Plan	11
4.1 Potential Areas and Contaminants of Concern	11
4.2 Data Quality Objectives and Data Quality Indicators	12
4.3 Sampling Design	12
4.3.1 Fluoride	12
4.3.2 Asbestos	12
4.3.3 Potential Fill	13
4.3.1 Surface Water	13
5 Basis for Assessment Criteria	14
5.1 Soil	14
5.2 Surface Water	17
5.2.1 Potential Beneficial Uses	17
5.2.2 Appropriate Criteria for Surface Water	18
6 Results	20
6.1 Site Walkover	20
6.1.1 Lot 422 DP755231	20
6.1.2 Lot 421 DP755231	20
6.1.3 Lot 420 DP755231	21
6.1.4 Lot 427 DP755231	21
6.1.5 Lot 428 DP755231	21
6.1.6 Lot 444 DP755231	22
6.1.7 Lot 18 DP1082569 and Lot 429 DP 755231	22
6.1.8 Lot 1 DP589169	22
6.1.9 Lot 16 DP1082569	23
6.1.10 Lot 14 DP1082569 and Lot 809 DP728982	24
6.2 Soil Investigations	25
6.2.1 Fluoride and Asbestos	25
6.2.1 Potential Fill	25

6.3	Surface Water Investigations	25
6.4	Soil Results	27
6.5	Surface Water Results	28
6.6	Quality Assurance/ Quality Control	28
7	Site Characterisation	29
7.1	Conceptual Site Model	29
7.2	Waste Characterisation and Disposal	30
8	Conclusions and Recommendations	31
9	References	33
10	Limitations	34
10.1	User Reliance	34

List of Figures

Figure 1:	Site Location Plan
Figure 2:	Site Layout and Surface Soil Sampling Locations
Figure 3	Test Pit Locations Lots 420 and 422
Figure 4	Test Pit Locations Lot 16

List of Tables

Table 1:	Lot and Development Plans for Parcel 4.
Table 2:	Soil Assessment Criteria (mg/kg) – Health and Ecological Investigation Levels
Table 3:	Soil Assessment Criteria for Vapour Intrusion – HSL D – Sand
Table 4:	ESLs and Management Limits for Petroleum Hydrocarbons in Soil
Table 5:	Health Screening Level for Asbestos Contamination in Soil (w/w)
Table 6:	Site Specific Soil Assessment Criteria for Fluoride
Table 7:	Summary of Intrusive Investigations
Table 8:	Summary of Soil Results

List of Appendices

Appendix A:	Surrounding Groundwater Bores
Appendix B:	Site Photographs
Appendix C:	Field Information Sheets
Appendix D:	Results Tables
Appendix E:	Laboratory Reports
Appendix F:	QA/QC Assessment
Appendix G:	VENM Assessment (Lots 429 and 18 – Scales Avenue)
Appendix H:	Hazardous Materials Audit

Acronyms and Abbreviations

ACM	Asbestos Containing Materials
AHD	Australian Height Datum
ALS	Australian Laboratory Services
ANZECC	Australian and New Zealand Environment and Conservation Council
B(a)P	Benzo(a)pyrene
BGL	Below Ground Level
BTEX	Benzene, Toluene, Ethylbenzene & Xylenes (Monocyclic aromatic Hydrocarbons)
CT	Certificate of Title
DEC	NSW Department of Environment and Conservation, now EPA
DP	Deposited Plan
DQI	Data Quality Indicator
DQO	Data Quality Objective
EIL	Ecological Investigation Level
EPA	NSW Environment Protection Authority
ESA	Environmental Site Assessment
F	Fluoride
GMU	Groundwater Management Unit
GPS	Global Positioning System
Ha	Hectare
HIL	Health Investigation Level
HSL	Health Screening Level
HRA	Health Risk Assessment
km	Kilometres
LOR	Limit of Reporting
m	Metres
Mercury	Inorganic mercury unless noted otherwise
Metals	As: Arsenic, Cd: Cadmium, Cr: Chromium, Cu: Copper, Fe: Iron, Ni: Nickel, Pb: Lead, Zn: Zinc, Hg: Mercury, Se: Selenium
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
m AHD	Metres relative to the Australian Height Datum
m BGL	Metres below ground level
m TOC	Metres below top of casing
ML	Megalitre, one million litres
µg/L	Micrograms per Litre
NATA	National Association of Testing Authorities
NC	Not Calculated
ND	Not Detected
NEHF	National Environmental Health Forum
NEPC	National Environment Protection Council
NEPM	National Environment Protection Measure
NHMRC	National Health and Medical Research Council
NSW	New South Wales
n	Number of Samples
OH&S	Occupational Health & Safety
PAH	Polycyclic Aromatic Hydrocarbons
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
TRH	Total Recoverable Hydrocarbons
UCL	Upper Confidence Limit
US EPA	United States Environment Protection Authority
µg/L	Micrograms per Litre
VENM	virgin excavated natural material
-	On tables is "not calculated", "no criteria" or "not applicable"

Executive Summary

ENVIRON completed a Phase 2 Environmental Site Assessment at Parcel 4, located in the southern area of the Buffer Zone of the Hydro Aluminium Kurri Kurri Smelter.

The objectives of the assessment were to assess the potential for contamination at Parcel 4 based on historical and current land use and to assess the suitability of Parcel 4 for the purposes of general industrial (IN1) and environmental conservation (E2) land use.

Parcel 4 is owned by Hydro Aluminium and currently comprises lots with partial residential use, (Lots 1, 16 and part 444), former residential/rural use (Lot 422), unused bushland (Lots 421, 420, 14 and 808). The northern half of Lot 420 is occupied by the currently unused smelter overflow carpark and Lot 16 is currently leased to an operating landscaping business. Lots 18 and 429 (formerly rural/residential) are now covered with placed/compacted VENM fill from the construction of the new Hunter Expressway.

Assessment comprised an initial site walkover and subsequent intrusive investigation addressing identified fill in targeted areas (Lots 422, Lot 420 and Lot 16).

The assessment identified:

- ACM was identified within the fill on Lot 422, (including asbestos fines in one sample), rendering the lot currently unsuitable for the proposed commercial industrial use. No asbestos was found on the surface of Lot 422 (around former residential footprints). The Lot is currently unoccupied and fenced and not currently considered a risk to human health;
- Lot 16 had marginal exceedences in fill material benzo-a-pyrene (two samples) for ecological screening levels. Average concentrations for fill samples from Lot 16 were below the guideline criteria for benzo-a-pyrene and these exceedences are not considered to represent a significant constraint for commercial industrial use on Lot 16.
- ACM fragments over the surface on Lot 16; (likely the results of historical demolition of structures on the lot), renders the Lot unsuitable for the proposed commercial industrial use and for the current use.

No other soil contamination issues were identified at Parcel 4 and the remainder of the parcel is considered suitable for the proposed industrial landuse following the removal of the small waste stockpiles on Lot 420 and 427.

The majority of Parcel 4, excluding Lot 422 and Lot 16, is suitable for the purpose of rural residential landuse. The remainder of Parcel 4 will be suitable for the proposed general industrial and environmental conservation land use subject to the completion of the following remedial actions:

- Follow the recommendations for the handling and management of ACM, synthetic mineral fibre material, PCBs and potentially, lead based paints within the building materials as outlined in the Hazardous Materials Audit;

- The ACM fragments observed on Lot 16 classify as Asbestos Waste and should be collected by an appropriately licenced contractor and appropriately managed or disposed of.
- Remediation options for the fill material at the rear of Lot 422, impacted by ACM, should be considered including excavation and combined encapsulation at another location within Hydro-owned land; and
- Minor waste stockpiles and debris on the surface in Lots 420 and 427 should also be removed.

ENVIRON consider Parcel 4 can be made suitable for the proposed general industrial and environmental conservation landuse following remediation. A Remedial Action Plan will be completed to assess the remedial options and outlined the requirements for remediation and validation.

Hydro has separately engaged a NSW EPA-accredited Site Auditor to review the investigations completed and the Remedial Action Plan and to complete an interim opinion letter, indicating that the site can be made suitable for the proposed landuse.

1 Introduction

1.1 Background

This report presents the findings of a Phase 2 Environmental Site Assessment undertaken on part of the Hydro Aluminium Kurri Kurri Pty Limited (Hydro) owned land known as Parcel 4. Parcel 4 is located off Dickson Road and Hart Road, Loxford, New South Wales (2326). Parcel 4 location is shown in **Figure 1**.

The work has been performed at the request of Hydro Aluminium Kurri Kurri Pty Limited (the "Client").

Hydro is currently evaluating options for the divestment of land parcels for a range of land uses following the closure of the site in May 2014. A Rezoning Masterplan has been developed that identifies Parcel 4 to comprise land suitable for general industrial (IN1) and environmental conservation (E2) landuse.

A Phase 1 Environmental Site Assessment has previously been prepared for all Hydro owned lands and evaluated the potential for contamination. On Parcel 4, these investigations identified the presence of former and current dwellings and sheds potentially containing asbestos and an overflow car park for the smelter.

It is noted that at the time of the fieldwork, this land parcel was named Employment Land Subarea 4 and as such the soil samples reference this name. The parcel was renamed Parcel 4 during the rezoning process.

The location of Parcel 4 in the context of the Rezoning Masterplan is shown in **Figure 2**.

1.2 Objectives and Scope of Work

The objectives of the assessment were to assess the potential for contamination at Parcel 4 based on historical and current land use and to assess the suitability of Parcel 4 for the purposes of general industrial (IN1) and environmental conservation (E2) land use.

The scope of work performed to meet the objectives comprised:

- A review of available information relating to land use to assess the potential for soil, groundwater or surface water contamination arising from historic and current activities;
- A review of published geological, hydrogeological and hydrological data to establish the environmental setting and sensitivity;
- Field work comprising:
 - Collection of surface soil samples to provide a coarse grid assessment of potential dust deposition from the smelter operations;
 - A site walkover to evaluate other potential locations of buried waste or illegal dumping;
 - Collection of a water sample from a pond (Lot 1 DP589169); and
 - Use of a back hoe to excavate test pits to investigate areas of fill.

- Data interpretation including comparison against relevant guidelines and a discussion of the findings in terms of human health and environment risk under the current and future land use scenarios.
- Review of options available for remediation or management to render Parcel 4 suitable for the proposed land use.

2 Site Description

2.1 Site Location

Parcel 4 is owned by Hydro Aluminium Kurri Kurri Pty Limited and is located approximately 35km north west of the city of Newcastle and 150km north of Sydney, in New South Wales, Australia. The address of Parcel 4 is Dickson Road, Loxford, New South Wales, Australia. The location of Parcel 4 is shown in **Figure 1**.

Parcel 4 is located within the Buffer Zone of the Hydro Aluminium Kurri Kurri Smelter, immediately south east of the smelter. Parcel 4 is predominantly undeveloped bushland, with cleared areas around current and former dwellings and also includes an overflow car park immediately south of the smelter site (Lot 420, DP755231). The Buffer Zone is an area of land surrounding the smelter that provides a buffer between the smelter and surrounding communities.

Parcel 4 generally drains to Swamp Creek, located on the eastern boundary of the site.

Parcel 4 is located within the Cessnock Local Government Area and is zoned RU2 – Rural Landscape under the Cessnock Local Environment Plan.

Parcel 4 is approximately 25 hectares (ha) and comprises the lot numbers and development plans listed in **Table 1**:

Table 1: Lot and Development Plans for Parcel 4.			
Subarea	Lot/ DP	Area (ha)	Total Area (ha)
Parcel 4	Lot 420 DP755231	3.1	25.1
	Lot 421 DP755231	2.7	
	Lot 422 DP755231	3.0	
	Lot 427 DP755231	4.3	
	Lot 428 DP755231	2.4	
	Lot 429 DP755231	2.4	
	Lot 444 DP755231	2.9	
	Lot 16 DP1082569	1.2	
	Lot 18 DP1082569	1.0	
	Lot 1 DP589169	1.2	
	Lot 14	0.7	
	Lot 809	0.2	

Land uses surrounding Parcel 4 are as follows:

- North: Dickson Road, the smelter then bushland;
- South: Rural residential land;
- East: Hart Road then bushland;
- West: Swamp Creek then rural residential land.

Parcel 4 is located immediately to the south east of the smelter site boundary.

2.2 Site Setting

2.2.1 Topography

Parcel 4 is located in a low lying area of the Buffer Zone at approximately 14 mAHD. Hart Road extends along the western site boundary to Parcel 4 and Dickson Road extends along its northern boundary and are the highest point on Parcel 4. The natural topography slopes to the east and south towards Swamp Creek, which extends parallel to the eastern and southern site boundary. The southern-most Lots in the Parcel (Lot 18 and Lot 16), are located immediately adjacent to the new Hunter Expressway road reserve.

2.2.2 Regional Geology

According to the review of the regional geology described on the Sydney Basin Geological Sheet, Parcel 4 is underlain by siltstone, marl and minor sandstone from the Permian aged Rutherford Formation (Dalwood Group) in the Sydney Basin.

Undifferentiated Quaternary alluvium occurs on the surface of Parcel 4 associated with surface water bodies. Quaternary sediments which are associated with Swamp Creek (located on the eastern and southern boundaries of Parcel 4) and the Hunter River consist of gravel, sand, silt and clay.

2.2.3 Site Hydrology

Surface water from Parcel 4 discharges primarily via infiltration and overland flow to Swamp Creek, located on the eastern and southern site boundary. Swamp Creek ultimately discharges into Wentworth Swamp, which in turn discharges to the Hunter River approximately 11km northeast of Parcel 4 near Maitland.

The Wentworth Swamp system is within the Fishery Creek Catchment, where declining stream water quality and a reduction in diversity of native plants and animals has occurred due to population growth and development pressures in the last ten years (Hunter-Central Rivers Catchment Management Authority).

2.2.4 Regional Hydrogeology

Regional groundwater is expected to follow topography and flow northeast towards the surface water bodies that discharge to the Hunter River. Locally, groundwater beneath Parcel 4 is expected to flow south east towards Swamp Creek, located on the eastern and southern site boundary.

According to the NSW Office of Environment and Heritage (Natural Resource Atlas), there are 21 licensed groundwater abstractions (bores) located within 2km of Parcel 4. The majority of the groundwater bores are located within the aluminium smelter and buffer zone.

Information for 11 bores located in a 1km radius from Parcel 4 has been included in **Appendix A**. The bores are used for monitoring purposes. No further information, such as depth to water or logging information was provided.

The Hunter River Alluvium Groundwater Management Unit (GMU) is an important groundwater resource to the region. Groundwater extraction for irrigation, urban supply, drought supply, stock, domestic and commercial/ industrial use occurs, with volumes in excess of 10,000ML per annum extracted from the Hunter River Alluvium GMU. Aquifer

storage and recovery is also an important use of this GMU. It is noted that the Hunter River GMU is not the primary drinking water supply in the region, although the protection of drinking water is a water quality objective for the Hunter River (NSW Water Quality and River Flow Objectives), (www.environment.nsw.gov.au/ieo/Hunter/index.htm).

2.3 Site Sensitivity

The sensitivity of Parcel 4 with respect to surface water and groundwater is considered to be moderate based on the following:

- Surface water and groundwater discharge into Swamp Creek, located on the eastern and southern boundary of Parcel 4, which discharges to the Hunter River via Wentworth Swamp within the Fishery Creek Catchment, approximately 11km northeast of Parcel 4 near Maitland.
- Declining stream water quality and a reduction in diversity of native plants and animals has occurred within the Fishery Creek Catchment and water quality down gradient of Parcel 4 has been impacted by historical coal mining;
- The Hunter River GMU is used for irrigation, urban supply, drought supply, stock, domestic and commercial/ industrial use but it is not the main drinking water supply in the region.

3 Site History

Site history investigations included in the Phase 1 ESA for the Hydro Aluminium Kurri Kurri Smelter, dated 26 August 2013 provided the following historical information about Parcel 4:

- Earliest records (aerial photograph in 1951) showed Parcel 4 predominantly comprises bushland with some open areas. In the southern portion of Parcel 4 there is a development that includes a dwelling and at least 6 long, narrow sheds likely used for housing livestock. It is understood the dwelling and sheds were demolished and a new dwelling constructed in the late 1980s;
- Lots 1, 16, 420, 422 and 429 were developed for residential landuse with a dwelling between the 1950s and 1970s. Historical aerial photographs indicate some of the dwellings were demolished in the 1980s;
- Landfilling has been identified on Lot 16 and Lot 420, with a large stockpile of unknown material located on Lot 16 and odd stockpiles or vegetation located on Lot 420. Lot 420 was developed as an overflow car park for the smelter in the late 1980s;
- Parcel 4 is located immediately south east of the smelter boundary and may be impacted from smelter dust deposition.

The locations of the former and current dwellings are included in **Figure 2**.

4 Sampling and Analytical Quality Plan

4.1 Potential Areas and Contaminants of Concern

Based on Parcel 4 historical information as discussed in **Section 3**, the following areas of concern were identified as follows.

- Former dwellings on Lots 1, 16, 420, 422 and dwelling and sheds on Lot 429 that have been demolished.
- Stockpiling of unknown materials on Lot 16 and potential landfilling on Lot 420 prior to its development as an overflow car park.
- Smelter dust deposition.
- Illegal dumping.

Contaminants of concern associated with the range of previous site activities are:

- asbestos;
- fluoride;
- Polycyclic Aromatic Hydrocarbons (PAHs);
- heavy metals;
- petroleum hydrocarbons.

4.2 Data Quality Objectives and Data Quality Indicators

Data quality objectives (DQOs) and Data Quality Indicators (DQIs) were developed by ENVIRON using the US EPA seven-step DQO process. Completing the seven-step process helps to define the purpose of the assessment and the type, quality and quantity of data needed to inform decisions relating to the assessment of site contamination.

The seven-step DQO process and DQIs are included in **Appendix F**.

4.3 Sampling Design

The sampling design was optimised following the development of DQOs and DQIs. The sampling design is outlined below. ENVIRON notes that the historical site activities indicate potential contamination to surface soils and subsurface soils only. No potential contamination sources to surface water or groundwater have been identified.

4.3.1 Fluoride

To assess the potential for fluoride in soil from dust deposition from the Hydro Aluminium Kurri Kurri Smelter, surface soil samples were collected at a rate of one sample per 5Ha.

The sample density is lower than that suggested in Table A of NSW EPA (1995) Contaminated Sites: Sampling Design Guidelines. The density is considered adequate for the purposes of this investigation for the following reasons:

- aerial dust deposition is likely to be relatively consistent over the surface of the parcel and therefore sampling on a low density will allow for identification of whether or not dust deposition is an issue; and
- in the event that elevated or variable fluoride concentrations are identified, additional sampling will be completed.

Samples were collected by trowel from surface soils on an approximate grid across open areas of Parcel 4. Sample locations were logged by GPS.

Soil samples were placed into laboratory-supplied paper bags and stored in an ice-filled cooler for transportation to the laboratory. Soil samples were transported to the laboratory under chain of custody conditions. Intra-laboratory duplicate soil samples were collected at a rate of 10%.

Soil samples were analysed for soluble fluoride, as this is the portion of total fluoride that is available for uptake in receptors including biota, flora, fauna and humans. The laboratory was NATA accredited for the analysis.

4.3.2 Asbestos

To assess the potential for asbestos and other illegally dumped wastes to be present at Parcel 4, a site walkover of accessible areas was completed.

The location and type of dumped wastes were detailed on Field Information Sheets and logged by GPS. Where asbestos was confidently identified by the field personnel, no sampling was completed. If not, a sample of potential asbestos containing material (ACM)

was collected for laboratory analysis. ACM fragments were collected into a zip-lock bag using dedicated disposable gloves.

ACM fragments were analysed for asbestos identification by a laboratory NATA accredited for the analysis.

4.3.3 Potential Fill

The site walkover identified the potential for fill material at Parcel 4. As such, a second round of fieldwork was completed (in March 2014), to assess the potential fill and its potential for contamination.

A back hoe was used to excavate test pits into areas of potential fill identified at Parcel 4.

The number of test pits completed across Parcel 4 is as follows:

- Lot 420: 4 test pits;
- Lot 422: 7 test pits;
- Lot 16: 7 test pits;

The test pits were logged by an ENVIRON environmental scientist and soil samples were collected for analysis.

Soil samples were collected into laboratory-supplied acid-rinsed glass jars using dedicated disposable gloves. The soil samples were stored in an ice-filled cooler for transportation to the laboratory. Soil samples were transported to the laboratory under chain of custody conditions. Intra-laboratory duplicate soil samples were collected at a rate of 10%.

Soil samples were analysed for a range of potential contaminants, including heavy metals, total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs), organophosphorous pesticides (OPPs) and asbestos. The laboratory was NATA accredited for the analysis.

4.3.1 Surface Water

A sample of surface water was collected from a small dam at the rear of Lot 1

The water sample was analysed for a range of potential contaminants, including heavy metals, total recoverable hydrocarbons (TRH), polycyclic aromatic hydrocarbons (PAHs), organochlorine pesticides (OCPs) and organophosphorous pesticides (OPPs).. The laboratory was NATA accredited for the analyses.

5 Basis for Assessment Criteria

5.1 Soil

The criteria proposed for the assessment of soil contamination were sourced from the following references:

- NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).

The variation to the National Environmental Protection (Assessment of Site Contamination) Measure (NEPM 2013) was approved on 19 June 2013 by the NSW EPA under the *Contaminated Land Management Act 1997*. NEPM (2013) provide revised health-based soil investigation levels (HILs) and ecological-based investigation levels (EILs) for various land uses. The NEPM 2013 also introduces health-based and ecological screening levels and management limits for petroleum hydrocarbons (HSLs and ESLs). The levels have been derived from recent assessments that more accurately define the exposure mechanisms and risks from sites contaminated with petroleum hydrocarbons.

The guidelines adopted for the site from the NEPM are as follows:

- HIL D – Health investigation level for commercial/industrial such as shops, offices, factories and industrial sites. The HILs are applicable for assessing human health risk via all relevant pathways of exposure. The HILs are generic to all soil types and apply generally to a depth of 3 m below the surface for industrial use.
- HSLs for commercial/industrial use - Health screening levels for soil vapour intrusion from petroleum hydrocarbons are guidelines that prevent accumulation of vapours at concentrations that may represent a health risk. The HSLs are derived for various depths and are for the same generic land uses as for the HILs. The guidelines are relevant where soils are beneath building or structures such as confined spaces;
- EIL for commercial/ industrial use – ecological investigations levels applicable for assessing risk to terrestrial ecosystems. EILs depend on specific soil physicochemical properties and generally apply to the top 2 m of soil.
- ESLs for commercial/ industrial use – ecological screening levels developed for selected petroleum hydrocarbon compounds and fractions and are applicable for assessing risk to terrestrial ecosystems. These are also generally applicable to the top 2m of soil.
- Management Limits where concentrations above these limits may indicate poor aesthetics, high odour and potentially explosive vapour. Management limits are to be applied after consideration of relevant ESLs and HSLs.

The applicable assessment criteria for heavy metals and PAHs in soil are presented in **Table 2:**

Table 2: Soil Assessment Criteria (mg/kg) – Health and Ecological Investigation Levels		
	HIL D	EIL
Arsenic	3000	160

Table 2: Soil Assessment Criteria (mg/kg) – Health and Ecological Investigation Levels		
	HIL D	EIL
Cadmium	900	-
Chromium (VI)	3600	530 (CR III, 1% clay)
Copper	240 000	250
Lead	1500	1800
Nickel	6000	180
Zinc	400 000	610
Mercury (inorganic)	730	-
Fluoride	Ref Table 5	Ref Table 5
Carcinogenic PAHs (as BaP TEQ)	40	-
Total PAHs	4000	-
DDT+DDE+DDD	3600	
Aldrin +dieldrin	45	
Chlordane	530	
Endosulfan	2000	
Endrin	100	
Heptachlor	50	
Methoxychlor	2500	
Chlorpyrifos	2000	

1 EILs represent the most conservative value possible as the lowest value for added contaminant limit (ACL) was used and the ambient background concentration (ABC) was not added, with the exception of zinc and copper, where the EIL was calculated by adding the ACL with the estimated ABC using the NEPM (2013) EIL Calculation Spreadsheet .

The applicable assessment criteria for petroleum hydrocarbons in soil are presented in **Table 3** and **Table 4**:

Table 3: Soil Assessment Criteria for Vapour Intrusion - HSL D (mg/kg) - Sand				
	0 to <1m	1m to <2m	2m to <4m	4m+
Toluene	NL	NL	NL	NL
Ethylbenzene	NL	NL	NL	NL
Xylenes	230	NL	NL	NL
Naphthalene	NL	NL	NL	NL
Benzene	3	3	3	3
F1(4)	260	370	630	NL
F2(5)	NL	NL	NL	NL

1 The soil saturation concentration (C_{sat}) is defined as the soil concentration at which the porewater phase cannot dissolve any more of an individual chemical. The soil vapour that is in equilibrium with the porewater will be at its maximum. If the derived soil HSL exceeds C_{sat}, a soil vapour source concentration for a petroleum mixture could not exceed a level that would result in the maximum allowable vapour risk for the given scenario. For these scenarios, no HSL is presented for these chemicals and the HSL is shown as 'not limiting' or 'NL'.

2 (For soil texture classification undertaken in accord with AS 1726, the classifications of sand, silt and clay may be applied as coarse, fine with liquid limit <50% and fine with liquid limit >50% respectively, as the underlying properties to develop the HSLs may reasonably be selected to be similar. Where there is uncertainty, either a conservative approach may be adopted or laboratory analysis should be carried out.

3 To obtain F1 subtract the sum of BTEX concentrations from the C6-C10 fraction.

Table 4: ESLs and Management Limits for Petroleum Hydrocarbons in Soil

TPH fraction	Soil texture	ESLs (mg/kg dry soil)	Management Limits ¹ (mg/kg dry soil)
		Commercial and Industrial	Commercial and Industrial
F1 C6- C10	Fine	215*	800
F2 >C10-C16	Fine	170*	1000
F3 >C16-C34	Fine	2500	5000
F4 >C34-C40	Fine	6600	10 000
Benzene	Fine	95	-
Toluene	Fine	135	-
Ethylbenzene	Fine	185	-
Xylenes	Fine	95	-
Benzo(a)pyrene	Fine	0.7	-

¹ Management limits are applied after consideration of relevant ESLs and HSLs.

² Separate management limits for BTEX and naphthalene are not available hence these should not be subtracted from the relevant fractions to obtain F1 and F2.

³ ESLs are of low reliability except where indicated by * which indicates that the ESL is of moderate reliability.

⁴ To obtain F1, subtract the sum of BTEX from C6-C10 fraction and subtract naphthalene from >C10-C16 to obtain F2.

The HSLs for asbestos are applicable for assessing human health risk via the exposure pathway of inhalation of airborne asbestos and are presented in **Table 5**. The HSLs are generic to all soil types.

Table 5. Health screening levels for asbestos contamination in soil Health Screening Level (w/w)

Form of asbestos	Residential A ¹	Residential B ²	Recreational C ³	Commercial/ Industrial D ⁴
Bonded ACM	0.01%	0.04%	0.02%	0.05%
FA and AF ¹ (friable asbestos)	0.001%			
All forms of asbestos	No visible asbestos for surface soil			

1. The 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.

NEPM (2013) do not provide criteria for fluoride in soils in Australia. Therefore, ENVIRON (2013) conducted a preliminary level Human Health Risk Assessment (HRA) specific to fluoride in order to derive a specific preliminary screening level for fluoride for the Hydro Aluminium Kurri Kurri Smelter. The screening levels are protective of the range of human receptors and are provided in **Table 6**:

Table 6: Site Specific Soil Assessment Guidelines (mg/kg) for Fluoride	
Preliminary screening levels	
Land Use	Preliminary screening level
Commercial/ industrial - soil	F 17000mg/kg

Consistent with the guidance provided in the NEPM, the data was assessed against the above adopted site guidelines by:

- Comparing individual concentrations against the relevant guidelines and if discrete samples are in excess of the relevant guideline then;
- Comparing the 95% upper confidence limit of mean against the relevant guideline also ensuring that:
 - o the standard deviation of the results is less than 50% of the relevant investigation or screening level, and
 - o no single value exceed 250% of the relevant investigation or screening level.

5.2 Surface Water

The criteria for the assessment of surface were sourced from the following references:

- NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) (NEPM).
- ANZECC & ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality.
- ENVIRON (2013) Preliminary Screening Level, Health Risk Assessment for Fluoride and Aluminium, Part of the Kurri Kurri Aluminium Smelter, Hart Road, Loxford.

5.2.1 Potential Beneficial Uses

Potential beneficial uses of water down gradient of Parcel 4 include:

- Discharge of groundwater into Swamp Creek,
- Discharge into Wentworth Swamp (from Swamp Creek), which supports aquatic ecosystems, and potentially flows into the Hunter River;
- Extraction of water from Wentworth Swamp may also be used for stock watering and/or irrigation.
- Discharge into groundwater, which is used by local communities for domestic, recreation, monitoring, irrigation and stock watering purposes.

It is noted that drinking water has not been included as a potential beneficial use of water from Wentworth Swamp, for the following reasons:

- Drinking water supply to the local communities is reticulated and originates from Chichester Dam located on the Chichester River.

5.2.2 Appropriate Criteria for Surface Water

Based on the review of potential beneficial uses of surface water, the criteria for protection of aquatic ecosystems, irrigation and stock watering will be used. Additionally, site specific preliminary screening levels for fluoride and aluminium in surface water have been developed for the Hydro Aluminium Kurri Kurri Smelter (ENVIRON 2013). These are protective of human health and are as follows:

- Surface water (recreational use): Fluoride – 1.5mg/L,

The investigation levels presented in ANZECC and ARMCANZ (2000) Australian and New Zealand Guidelines for Fresh and Marine Water Quality are considered applicable for the protection of aquatic ecosystems of receiving waters. ANZECC (2000) advocates a site-specific approach to developing guideline trigger values based on such factors as local biological affects data and the current levels of disturbance of the ecosystem. The guidelines present 'low risk trigger values' which are defined as concentrations of key performance parameters below which there is a low risk of adverse biological effects. If these trigger values are exceeded, then further action is required which may include further site-specific investigations to assess potential contamination or management/ remedial action.

Low risk trigger values are presented in Table 3.4.1 of ANZECC (2000) for the protection of 80-99% of species in fresh and marine waters, with trigger values depending on the health of the receiving waters.

Surface water results will be compared against trigger values for the protection of 95% of freshwater species. A 95% protection of fresh water species was selected due to the indication from the Hunter-Central Rivers Catchment Management Authority that declining stream water quality and a reduction in diversity of native plants and animals has occurred in the last ten years.

ANZECC (2000) indicates there is currently insufficient data to derive a high reliability trigger value for TRH but propose a low reliability trigger value of 7µg/L. This guideline is considered by industry to be overly conservative and is below the TRH detection limit that most laboratories can achieve. Therefore the limit of reporting (LOR) will be adopted as a screening trigger for TRH.

Trigger values for cadmium, copper, nickel, lead and zinc can be modified for hardness, as the bioavailability of these heavy metals decreases with increasing hardness. Total hardness was calculated for the receiving waters of Swamp Creek using calcium and magnesium concentrations, with results indicating hard water (134mg/L CaCO₃). Trigger values modified for hard waters have been used, as per Table 3.4.3 of ANZECC (2000).

Surface water results will also be compared against trigger values for irrigation and stock watering. Section 4.3.4 of ANZECC (2000) indicates that stock watering trigger values for heavy metals and metalloids are for total concentrations, irrespective of whether the constituent is dissolved, complexed with an organic compound or bound to suspended solids. Fluoride is included in this section.

Investigation levels for livestock drinking water are not available for organic contaminants, such as TRH and PAHs. In the absence of available investigation levels, the limit of reporting (LOR) will be adopted as a screening trigger for TRH and PAHs.

The long term trigger value has been used for irrigation guidelines. Section 9.2.5.11 of ANZECC (2000) indicates that the long term trigger value for fluoride is based on the assumption that the irrigation water could potentially be phytotoxic to sensitive plant species or could contaminate stock drinking water. As stock watering guidelines are for total metal and metalloid concentrations, total fluoride concentrations will be used.

6 Results

6.1 Site Walkover

A site walkover was completed to assist with planning the field investigations and assess Parcel 4 for additional areas of imported fill.

Parcel 4 comprises ten Lots to the east and southeast of Hart Road, from the corner of Dixon and Hart Road and either side of Scales Avenue.

The following is a summary of site observations from each lot starting from the north-eastern most Lot, (Lot 422 DP755231), mid-way along Dickson Road.

Photographs from the walkover are included in **Appendix B**. Field Information Sheets are included in **Appendix C**.

6.1.1 Lot 422 DP755231

Lot 422 is a 3 ha area located to the south of Dickson Road, opposite the smelter open park areas and large sheds.

The front (on Dickson Road) of Lot 422 is a flat open grassed area with a few trees. An access track curves from the Dickson road frontage towards the west and southwest of the lot. Another track runs east west across the southern boundary, above Swamp Creek.

At the rear (southern) section of the lot, the ground slopes down towards Swamp Creek, which forms the southern boundary. The southern section of the lot was bush-covered.

No structures were present on the site, however review of site history has indicated that a house previously occupied an area near the gate. Some minor evidence of broken construction materials was evident in that area (See **Figure 3**).

In the southern (sloped) area of the lot, a break in slope indicated the presence of a layer of fill material, containing demolition rubble in a soil matrix. This area is shown in **Figure 3**.

Advice from Hydro personnel indicated that this fill material originated from across the road (directly opposite) and comprised excess concrete and fill used during smelter construction activities in 1967-69.

This area of the Lot was targeted in an additional investigation, conducted in March 2014.

6.1.2 Lot 421 DP755231

Lot 421 is located to the south of Dickson Road, opposite the smelter open park areas and large sheds, immediately to the west of Lot 422, (above).

The site is a largely bush-covered, 2.7ha rectangular area with the northern boundary Dickson Road and Swamp Creek to the south. The site is relatively flat in the northern section and slopes towards Swamp Creek in the south.

A sand-covered track is runs across the southern boundary. No structures were observed on the Lot.

There was no evidence of fill on the Lot and site history indicates that the Lot has never been built on.

6.1.3 Lot 420 DP755231

Lot 420 is a 3.1 ha property located on the corner of Hart and Dickson Roads. The northern 60% of the site comprises the smelter overflow carpark, a flat, fenced, paved area with some minor landscaping, located to the west of Lot 421. The level of the carpark area (above surrounding natural levels), indicates that the site has been filled during construction.

Enquiries to Hydro, indicated the carpark was constructed from existing soil and imported hard stand material of unknown origin.

The southern part of the site is a bush/scrub-covered with a cleared area immediately south of the carpark with access tracks from Hart Road and from north to south. The eastern boundary of the lot slopes down to Swamp Creek. A tree-lined landscaped mound runs along the southern carpark boundary.

Some dumped steel and timber debris (old car chassis) was observed in the bush-covered areas of the southern lot area, however no significant fill was observed (other than the carpark foundation as mentioned above). No other structures were observed on the site.

The fill used to construct the carpark was targeted in an investigation conducted in March 2014.

6.1.4 Lot 427 DP755231

Lot 427 is a 4.3 ha area located immediately south of Lot 420 and is bounded on the west by Hart Road and the east by Swamp Creek. Lots 444 and 428 are located to the south of Lot 420.

Lot 427 is heavily vegetated over 90% of its area with a central track running from north to south through the centre. The southern and south-western lot boundaries encompass more open areas where a power line easement crosses from Hart Road towards the south-east. There were no structures on the site.

No fill was observed on the site. A small amount of dumped construction waste was noted in the cleared south-west area of the lot, comprising broken concrete and asphalt (**Figure 2**). .

6.1.5 Lot 428 DP755231

Located immediately south-west of Lot 427 the 2.4 ha, Lot 428 comprises a 2.4 ha rectangular area comprised of 50% heavily vegetated (south-west) and 50% cleared for an Ausgrid powerline easement. Hart Road and Scales Avenue form the north-west and south-west borders of the lot, respectively. The land slopes towards the south-east towards Swamp Creek. An ephemeral water course (tributary of Swamp Creek) runs across the lot south to north, near the south-east lot boundary. The water course was dry at the time of inspection.

The lot is traversed by a double row of wooden pylons carrying Ausgrid high-tension power cables (north-west to south east). The ground around the pylon bases has been disturbed and some waste concrete is also visible.

There were no other structures on Lot 428 and no indication of fill materials.

6.1.6 Lot 444 DP755231

Lot 444 is a 2.9 ha area located to the south-east of Lot 428. Approximately triangular-shaped, Swamp Creek forms the eastern boundary, Scales Avenue the south-west boundary and Lots 428 and 427 the North-western boundary. Approximately 80% of the Lot area is covered in dense bush, the exceptions being the Ausgrid easement and the residential property located on Scales Avenue.

No fill material was observed on the lot. The only structures comprised the Ausgrid power-line pylons and the existing brick one-story residence and associated outbuildings.

The residential property has been separately assessed as a hazardous materials audit of the buildings and structures associated with the residence which identified the presence of ACM, synthetic mineral fibre materials, polychlorinated biphenyls (PCBs) in light fittings and the potential for lead based paint. The Hazardous Material Audit report is included as **Appendix H**.

6.1.7 Lot 18 DP1082569 and Lot 429 DP 755231

These adjacent lots are located on the south-eastern side of Hart Road between Scales Avenue and the new Hunter Expressway. The land slopes gently to the south-east.

At the time of the investigation, these properties were being filled with material excavated from the construction of the new Expressway and placed and compacted as large pads covering most of the lots.

ENVIRON subsequently reviewed an assessment (RCA 2014) of the soil materials placed on these Parcel 4 lots and concurs that the placed soil is virgin excavated natural material (VENM). It is considered that this material does not comprise the environmental condition of the land. This material covers all previous house/shed footprints that were present on the land.

The VENM assessment report (RCA 2014) is attached as **Appendix G**

6.1.8 Lot 1 DP589169

Lot 1 is an approximately 1.2 ha property, located on the corner of Scales Avenue and Horton Road (north-western side). The lot is occupied by a residence at the front (on Horton Road), comprising a house and several sheds with bush-covered area gently sloping to the rear (north-west) where a small pond is located. The pond is the result of damming of a small water course running west to east (continuing in a drain under Scales Avenue).

The residence and out-buildings have been assessed separately in a hazardous materials audit, which identified the presence of ACM, synthetic mineral fibre materials, PCBs in light fittings and the potential for lead based paint. The Hazardous Material Audit report is included as **Appendix H**.

The walkover identified a number of car and machinery parts around the residential part of the lot. There was also a small stockpile of what appeared to be gravel fill near the driveway

onto Scales Avenue. There was no indication of any filled areas on the lot and no significant rubbish/waste noted.

A walk-over was conducted on a 10x10m grid on a selected area of the lot, however no ACM was detected.

A sample of the pond water was collected and analysed for a range of contaminants, below).

6.1.9 Lot 16 DP1082569

Lot 16 is a 1.2 ha property located on Horton Road, immediately to the south-west of Lot 1.

There is a residence located in the front of the property (on Horton Road), and the remainder of the site was occupied by an operating landscaping business.

The landscaping business included a large two-storey metal shed on the south-western corner of the property (for storage of plant and equipment), and another, smaller storage shed/informal workshop, on the other side of the entranceway, (north-eastern side).

At the time of inspection, over 100 empty 20L plastic pesticide containers ("Round-Up"), were stacked inside and outside a small portable, "demountable" building, located immediately behind (north-west) of the large shed. In subsequent investigations conducted in March 2014, these containers had all been removed from the property.

On the north-western corner of the large shed, and in-between the shed and small demountable, a number of empty 20L and 200L drums of lubricating oil were noted. Some minor spillage/leakage from the drums was noted which had locally stained the surrounding exposed ground.

A number of vehicles (trucks/trailers/tractors) were also parked along the mid-north-eastern boundary, including a number of disused water tanks.

A stack, (two or three pallets), of unused refractory bricks were stored mid-way down the south-western boundary.

In the centre of the property was located a large stack of broken wooden pallets, stockpiled mulch and green waste (mostly tree branches).

The property sloped down towards the north-west boundary towards a small watercourse.

Generally the front (south-eastern) half of Lot 16 was flat and covered with exposed soil and compacted hardstand. The rear (north-west) sloped gently to the watercourse and was partially covered in scrub and small trees

At the north-western end of the lot, an abrupt change in slope was noted which may indicate the potential presence of fill material.

A total of three 10 x 10 m walkover grids were conducted across the property: at the front near the entrance, half-way down the lot next to the large shed, and on the exposed soil track at the north-western end.

Potential ACM was identified in all three grids. Samples of the ACM (and top 100mm of soil) were collected and analysed for asbestos. The analysis confirmed the presence of asbestos in the material (although no asbestos fines were detected in the soil).

Additional investigations were conducted in March 2014, targeting the potential fill profiles at the rear of the Lot.

6.1.10 Lot 14 DP1082569 and Lot 809 DP728982

Lots 14 and 809, 0.7 and 0.2 ha respectively, are located on the south-eastern side of Horton Road, between the road and Swamp Creek.

The Lots are densely bush-covered and have had no history of structures on them.

No indications of waste or fill were observed in an inspection of the lots.

6.2 Soil Investigations

6.2.1 Fluoride and Asbestos

12 surface soil samples were collected from across Parcel 4 as per the sampling design to assess the potential for fluoride in soil from dust deposition from the Hydro Aluminium Kurri Kurri Smelter as shown in **Figure 2**. A generalised lithology of the surface soils encountered at Parcel 4 is as follows:

- Topsoil: Silt and silty sand brown and dark brown, slightly moist.

In addition, 10m by 10m walkover grids were completed on Parcel 4 Lots as follows: one on former house location Lot 422; one on Lot 420, one on Lot 1 and three on Lot 16.

The walkover screening survey conducted over those areas comprised two passes with a 90° directional change between them, as per NEPM (2013). ACM fragments Three ACM fragments were collected from representative areas of Lot 16 and one was submitted for laboratory analysis. Soil from Lot 16 was also submitted for analysis for asbestos fines.

6.2.1 Potential Fill

A total of 18 test pits were excavated in areas of potential fill across three of the ten lots, as shown in **Figures 4 and 5**. The findings from the test pits on each lot are outlined in **Table 7**.

6.3 Surface Water Investigations

A sample of the small pond at the rear of Lot 1 was collected and submitted for analysis for a range of contaminants.

draft

Table 7: Summary of Intrusive Investigations

Lot	No. of Test Pits	Fill	Depth of Fill	Natural Ground	Depth of Natural Ground
Lot 422	8	Fill between 0.5 and 1.2m deep identified at rear (south) of Lot. At each location, fill included wastes such as glass, broken concrete, wood, plastic refractory and some ACM fragments (TP4 and 5) in a silty sand matrix.	0.5 to 1.4m	Alluvial SAND, orange/brown, fine to medium grained, no odour.	Generally from 0.4 to 1m in areas of fill
Lot 420	4	Between 0.25 to 0.85m depth under 25mm of asphalt paving in the carpark. Fill was a sandy gravel road base underlain by a silty clay. No wastes were identified in the four test pits. . No ACM was observed.	Surficial fill: 0.25 to 0.85 fill	Alluvial CLAY, cream/grey and brown, medium plasticity moist, no odour	Generally from 0.4m up to 0.85m in carpark area
Lot 16	7	Generally, fill material is disturbed natural silty sandy soils between 0.25 and 0.90m deep, containing vegetative matter and minor glass and plastic and timber. No ACM observed.	0.25 to 0.85m fill.	Silty SAND grey and brown with CLAY, red-brown and grey in the north-eastern area of the lot	Generally from 0 to 0.8m in areas of fill.

A total of 16 fill samples were analysed from test pits, from the intrusive investigation including:

- five samples from Lot 422;
- four samples from Lot 420;
- seven samples from Lot 16. and
- two suspected ACM fragments were also analysed from test pits on Lot 422

6.4 Soil Results

A summary of the soil results is presented in **Table 8**. Laboratory tables are included in **Appendix D** and laboratory reports are included in **Appendix E**.

Table 8: Summary of Soil Results				
Analyte	No. of Samples	Maximum Concentration (mg/kg)	No. exceeding Site Criteria	Criteria Exceeded (mg/kg)
Fluoride	12	30	0	-
Arsenic	16	18	0	-
Cadmium	16	1	0	-
Chromium	16	66	0	-
Copper	16	52	0	-
Lead	16	57	0	-
Nickel	16	31	0	-
Zinc	16	400	1	-
Mercury	16	0.1	0	-
BaP TEQ	16	2.2	0	-
BaP ESL	16	1.2	2	1.4
Total PAHs	16	27.8	0	-
Benzene	16	<0.2	0	-
Toluene	16	<0.5	0	-
Ethyl benzene	16	<0.5	0	-
Xylene	16	<0.5	0	-
TRH C6-C10	16	<10	0	-
TRH >C10-C16	16	<50	1	-
TRH >C16-C34	16	410	0	-
TRH >C34-C40	16	410	0	-
OCPs excluding DDE + DDD + DDT	16	<LOR	0	-
Sum of DDE + DDD+ DDT	16	<LOR	0	-
OPPs	16	<LOR	0	-
Asbestos (ID)	16	Chrysotile, crocidolite and amosite	6	Presence
Asbestos (fines – AF and FA <7mm)	2	0.004%	1	0.001%

The results of surface soil sampling for fluoride demonstrate that surface soils at Parcel 4 have not been impacted by stack particulate fallout from the Hydro Aluminium Smelter.

Asbestos was identified in the surficial soils in soils on Lot 16 as suspected ACM fragments and in soil sampled during the October 2013 investigation. ACM fragments were noted at walkover locations Q1, Q2 and Q3 (**Figure 2**).

The results of fill sampling from the March 2014 investigation, indicate that fill had benzo-a-pyrene at concentrations marginally exceeding the commercial/industrial ESL guideline in two samples on Lot 16.

Chrysotile, crocidolite and amosite asbestos were identified in the suspected ACM fragments collected from fill in test pits TP4 and TP5 on Lot 422. Asbestos was also identified in TP2 and asbestos fines exceeding the criteria were found in TP5.

Asbestos was identified at one location in fill in TP2, (in a duplicate sample), from Lot 16.

No ACM was identified and analysis indicated all contaminants below detection limits or below guideline criteria in the fill beneath the carpark area (Lot 420).

6.5 Surface Water Results

One surface water sample was collected from the pond at the rear (north) of Lot 1.

All analytes were either below detection limits or below the adopted guideline criteria.

A summary table of the analytical results is presented in **Appendix D** and the laboratory report is presented in **Appendix E**.

6.6 Quality Assurance/ Quality Control

A quality assurance assessment for this report is presented in **Appendix F**. An assessment was made of data completeness, comparability, representativeness, precision and accuracy based on field and laboratory considerations, as outlined in NSW DEC (2006) and NSW EPA (2007) guidelines. Overall it is considered that the completed investigation works and the data are of suitable quality to meet the project objectives.

7 Site Characterisation

7.1 Conceptual Site Model

Parcel 4 comprises a series of lots bounded by Hart Road, Dickson Road, Swamp Creek and the new Hunter Expressway. The lots along Dickson Road have been partially historically developed as rural/residential land (Lot 422); or are predominantly bush-covered (Lot 421). Lot 420 was partially developed as part of the smelter infrastructure, (overflow carpark).

Of the remaining Lots, Lot 1 and Lot 16 currently have residences. Lots 427, 444 and 428 are predominantly bush-covered with a cleared Ausgrid easement, (Lot 444, has a small house block on Scales Avenue). Hart Road Lots, 18 and 429 are now covered with VENM fill from the Hunter Expressway construction.

Small lots 808 and 14 are bush-covered remnants between Swamp Creek, Horton Road and the new Expressway.

Lot 422

Historically, fill has been placed on Lot 422 (from smelter construction), from across Dickson Road), and includes construction wastes including concrete, bricks, (including refractory), steel glass and plastic.

Asbestos containing materials were identified within the fill on Lot 422, (including asbestos fines in one sample), rendering the lot currently unsuitable for the proposed commercial industrial use. No asbestos was found on the surface of Lot 422 (around former residential footprints). The Lot is currently unoccupied and fenced and not currently considered a risk to human health.

Lot 16

The fill on Lot 16 had marginal exceedences of benzo-a-pyrene (two samples) for ecological screening levels. Average concentrations for fill samples from Lot 16 were below the guideline criteria for benzo-a-pyrene and these exceedences are not considered to represent a significant constraint for commercial industrial use on Lot 16.

However the identified presence of ACM on the surface at several locations on Lot 16 (likely the results of historical demolition of structures on the lot), is considered to render the Lot unsuitable for the proposed commercial industrial use and for the current use.

Lot 16 is currently leased to a tenant who is operating a landscaping business involving storage and maintenance of plant, storage of pesticides and oils/fuels. During the site inspection, minor oil stains and the presence of pesticides containers was noted. However these are considered tenant issues and will be resolved as part of the lease negotiations.

The remainder of Parcel 4 (Lots 420, 421, 427, 428, 429, 18, 14, 808 and 444), are considered suitable for commercial industrial use, dependent on removal of dumped construction waste identified on Lot 420 and 427 (**Figure 2**).

7.2 Waste Characterisation and Disposal

The ACM fragments observed on Lot 16 classify as Asbestos Waste and should be collected by an appropriately licenced contractor and appropriately managed or disposed of.

The fill material at the rear of Lot 422, impacted by ACM, should be considered for emplacement in the containment cell proposed for Hydro.

Minor waste stockpiles and debris on the surface in Lots 420 and 427 should also be removed.

8 Conclusions and Recommendations

This report presents the findings of a Phase 2 Environmental Site Assessment undertaken on part of the Hydro Aluminium Kurri Kurri (Hydro) owned land known as Parcel 4. Parcel 4 is a rural property comprising approximately 25ha and is accessed from Dickson Road, Kurri Kurri and located within the buffer zone and immediately south of the Hydro Aluminium Kurri Kurri Smelter. Parcel 4 comprises predominantly undeveloped bushland, with cleared areas around current and former dwellings. An overflow car park for the smelter exists in the north western corner of the parcel.

In 2012, Hydro suspended operations at the Kurri Kurri Smelter and implemented care and maintenance until permanent site closure was announced in May 2014. Environmental investigations commenced at the time of suspension to assess site remediation requirements and the potential for land divestment. This work was undertaken in conjunction with the development of a Preliminary Masterplan (dated December 2013) which identified possible end land use scenarios.

The objectives of the assessment were to assess the potential for contamination at Parcel 4 based on historical and current landuse and to assess the suitability of Parcel 4 for general industrial (IN1) and environmental conservation (E2) land use.

A Phase 1 Environmental Site Assessment has previously been completed for the Hydro owned lands including Parcel 4 (ENVIRON (22 October 2013) Phase 1 ESA, Hydro Kurri Kurri Aluminium Smelter). The Phase 1 identified that contamination of Parcel 4 may have occurred from dust deposition due to the proximity of the Hydro smelter and localised soil contamination from the presence of former structures on Lots 1, 16, 420, 422 and dwelling and sheds on Lot 429 that have been demolished. In addition stockpiling of unknown materials on Lot 16 and potential landfilling on Lot 420 prior to its development as an overflow car park were identified during the site history assessment.

To assess the potential for waste and the potential for soil contamination a site walkover was completed and surface soil samples were collected from across the parcel. Surface soil samples from across Parcel 4 were analysed for soluble fluoride and were below the preliminary screening level for commercial/ industrial landuse.

Small stockpiles of construction waste were identified on Lot 420 (southern area) and Lot 427. Lot 429 and the adjacent Lot 18 were covered with placed/compacted VENM fill from the construction of the new Hunter Expressway.

Asbestos containing material (ACM) fragments were identified on the surface on Lot 16 and were confirmed by laboratory analysis to contain asbestos.

Profiles of fill were identified on Lots 422 (as a wedge of material sourced from the construction of the smelter at the rear of the Lot), Lot 420 (as a compacted base for the construction of the overflow carpark), and at the rear of Lot 16 which is leased to a landscaping business.

The following conclusions were drawn from additional, targeted sampling and analysis of the fill material on these lots:

- ACM was identified within the fill on Lot 422, (including asbestos fines in one sample), rendering the lot currently unsuitable for the proposed commercial/industrial land use. No ACM was identified on the surface of Lot 422 (around former residential footprints). The Lot is currently unoccupied and fenced and not currently considered a risk to human health;
- Lot 16 had marginal exceedences of benzo-a-pyrene in fill material (two samples) for ecological screening levels. Average concentrations for fill samples from Lot 16 were however, below the guideline criteria for benzo-a-pyrene and these exceedences are not considered to represent a significant constraint for commercial/industrial land use on Lot 16.
- The ACM fragments over the surface on Lot 16; (likely the results of historical demolition of structures on the lot), renders the Lot unsuitable for the proposed commercial/industrial land use and for the current use without remediation.

The majority of Parcel 4, excluding Lot 422 and Lot 16, is suitable for the purpose of rural residential landuse. The remainder of Parcel 4 will be suitable for the proposed general industrial and environmental conservation land use subject to the completion of the following remedial actions:

- Follow the recommendations for the handling and management of ACM, synthetic mineral fibre material, PCBs and potentially, lead based paints within the building materials as outlined in the Hazardous Materials Audit.
- The ACM fragments observed on Lot 16 classify as Asbestos Waste and should be collected by an appropriately licenced contractor and appropriately managed or disposed of.
- Remediation options for the fill material at the rear of Lot 422, impacted by ACM, should be considered including excavation and combined encapsulation at another location within Hydro-owned land; and
- Minor waste stockpiles and debris on the surface in Lots 420 and 427 should also be removed.

A Remedial Action Plan will be completed to assess the remedial options and outlined the requirements for remediation and validation.

Hydro has separately engaged a NSW EPA-accredited Site Auditor to review the investigations completed and the Remedial Action Plan and to complete an interim opinion letter, indicating that the site can be made suitable for the proposed landuse.

9 References

ANZECC & NHMRC (1992) Australian and New Zealand Guidelines for the Assessment and Management of Contaminated Sites;

ENVIRON (2013) Preliminary Screening Level, Health Risk Assessment for Fluoride and Aluminium, Part of the Kurri Kurri Aluminium Smelter, Hart Road, Loxford;

ENVIRON (2013) Phase 1 ESA, Hydro Kurri Kurri Aluminium Smelter;

Hunter Catchment Management Trust (2000) Wallis and Fishery Creeks Total Catchment Management Strategy;

NEPC (2013) National Environmental Protection (Assessment of Site Contamination) Amendment Measure (NEPM);

NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme (Second Edition);

NSW DEC (2007) Guidelines for the Assessment and Management of Groundwater Contamination;

NSW DECC (2008) Waste Classification Guidelines.

RCA Australia Pty Ltd (2014), VENM Assessment, Scales Paddock, Loxford, 10th January 2014.

10 Limitations

ENVIRON Australia prepared this report in accordance with the scope of work as outlined in our proposal to Hydro Aluminium Kurri Kurri Pty Ltd dated 25 June 2012 and in accordance with our understanding and interpretation of current regulatory standards.

A representative program of sampling and laboratory analyses was undertaken as part of this investigation, based on past and present known uses of Parcel 4. While every care has been taken, concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. We cannot therefore preclude the presence of materials that may be hazardous.

Site conditions may change over time. This report is based on conditions encountered at Parcel 4 at the time of the report and ENVIRON disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent ENVIRON's professional judgment based on information made available during the course of this assignment and are true and correct to the best of ENVIRON's knowledge as at the date of the assessment.

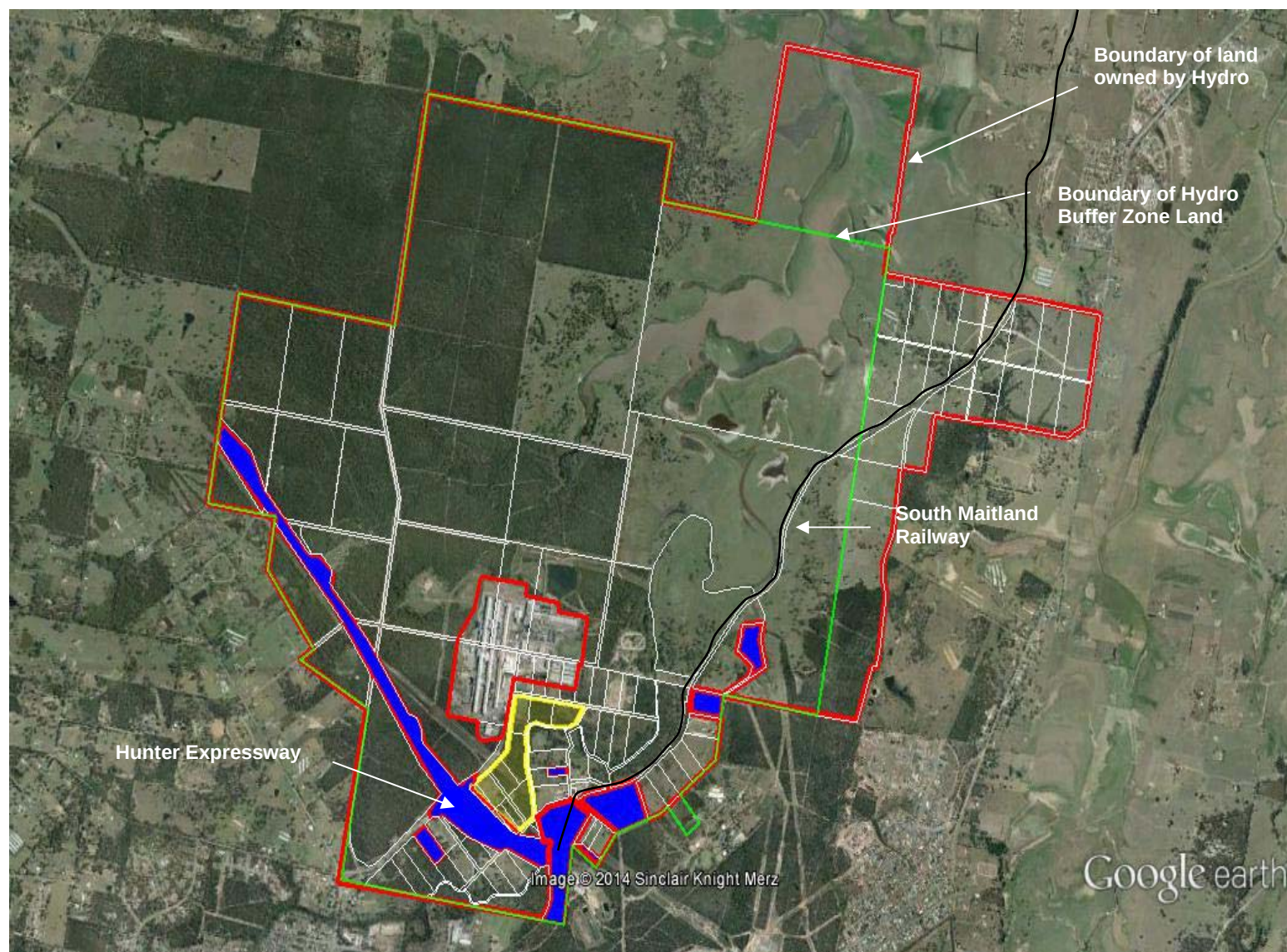
ENVIRON did not independently verify all of the written or oral information provided to ENVIRON during the course of this investigation. While ENVIRON has no reason to doubt the accuracy of the information provided to it, the report is complete and accurate only to the extent that the information provided to ENVIRON was itself complete and accurate.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

10.1 User Reliance

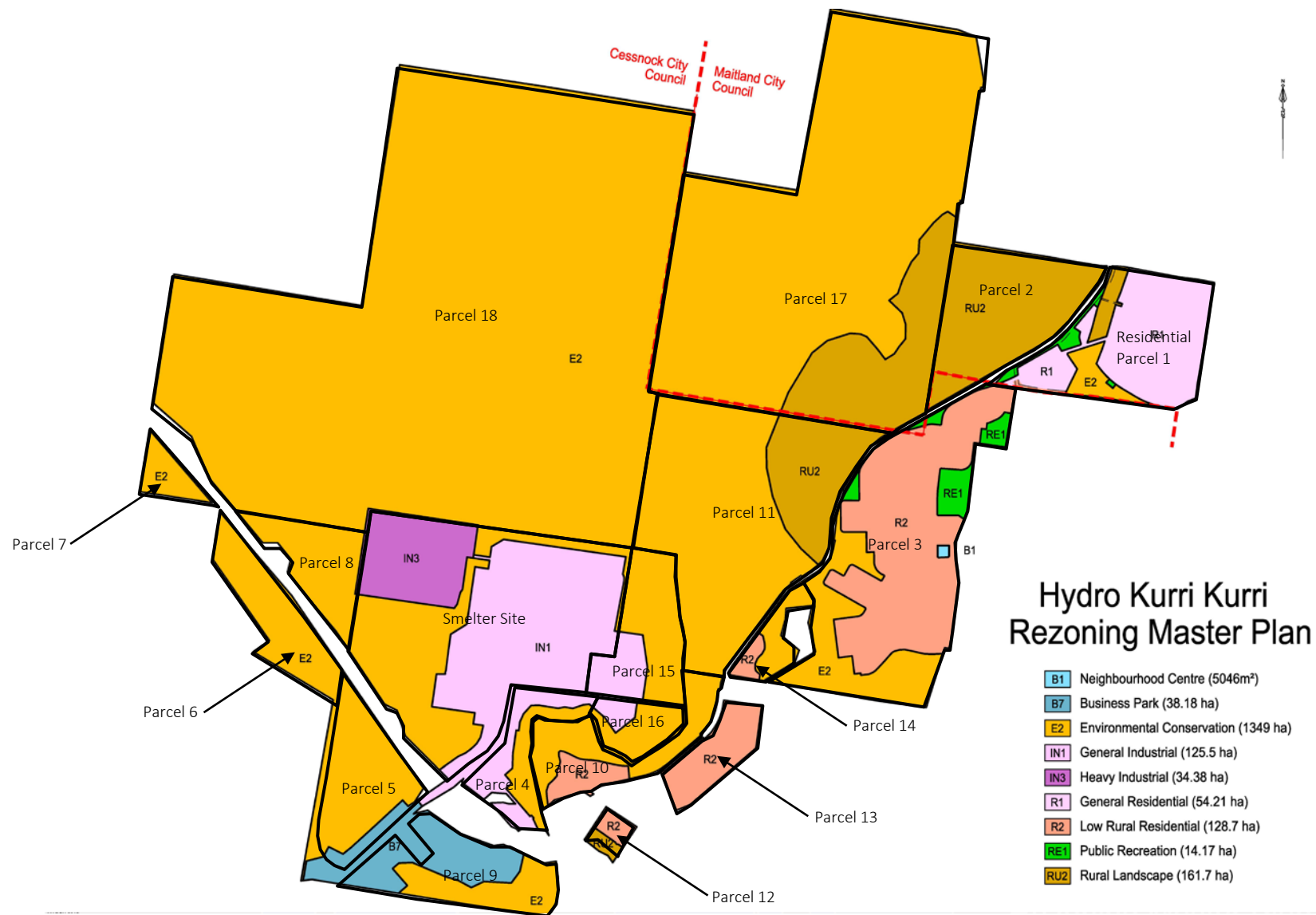
This report has been prepared exclusively for Hydro Aluminium Kurri Kurri Pty Ltd and may not be relied upon by any other person or entity without ENVIRON's express written permission.

Figures



- Approximate Location of Smelter
- Approximate Location of Buffer
- Land not owned by Hydro
- Parcel 4





Proposed Land Zonings taken from
Hydro Kurri Kurri Preliminary Masterplan dated 26/3/15



Google Earth Pro: Licenced til 5/2/15

Hydro Aluminium Kurri Kurri – Phase 2 Environmental Site Assessment

Parcel 4– Test Pit Locations Lots 420 and 422



JOB NO: AS130348

DATE: May 2014

FIGURE 3



Google Earth Pro: Licenced til 5/2/15

Hydro Aluminium Kurri Kurri – Phase 2 Environmental Site Assessment

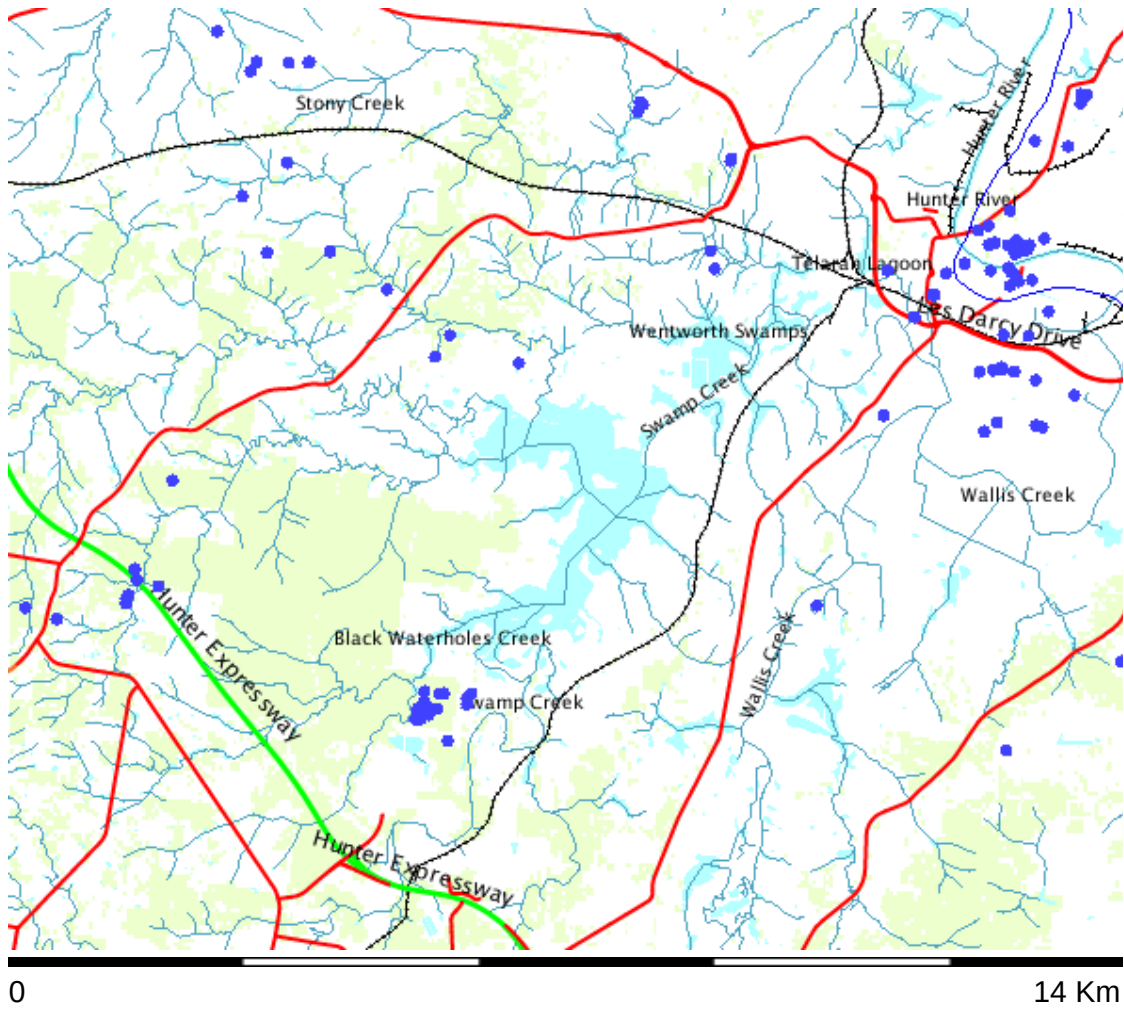
Parcel 4– Test Pit Locations Lot 16

Appendix A

Surrounding Groundwater Bores

Groundwater Bores near Parcel 4

Map created with NSW Natural Resource Atlas - <http://www.nratlas.nsw.gov.au>
Tuesday, January 07, 2014



Legend

Symbol	Layer	Custodian
	Cities and large towns	renderImage: Cannot build image from features
	Populated places	renderImage: Cannot build image from features
	Towns	
	Groundwater Bores	
	Catchment Management Authority boundaries	
	Major rivers	



Topographic base map

Copyright © 2014 New South Wales Government. Map has been compiled from various sources and may contain errors or omissions. No representation is made as to its accuracy or suitability.

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079088

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079088

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES MONITORING BORE

WORK-TYPE Bore

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE (Unknown)

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres)

DRILLED-DEPTH (metres)

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER

RIVER-BASIN

AREA-DISTRICT

CMA-MAP

GRID-ZONE

SCALE

ELEVATION

ELEVATION-SOURCE

NORTHING 6371306.00

EASTING 358054.00

LATITUDE 32 47' 13"

LONGITUDE 151 29' 3"

GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Work Requested -- GW079090

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079090
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371368.00
EASTING 358105.00
LATITUDE 32 47' 11"
LONGITUDE 151 29' 5"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079092

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079092
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371429.00
EASTING 358078.00
LATITUDE 32 47' 9"
LONGITUDE 151 29' 4"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Work Requested -- GW079093

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079093
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371460.00
EASTING 358078.00
LATITUDE 32 47' 8"
LONGITUDE 151 29' 4"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Print Report

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Work Requested -- GW079094

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079094
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371462.00
EASTING 358234.00
LATITUDE 32 47' 8"
LONGITUDE 151 29' 10"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Print Report

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Work Requested -- GW079096

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079096
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371707.00
EASTING 358152.00
LATITUDE 32 47' 0"
LONGITUDE 151 29' 7"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079097

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079097

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES MONITORING BORE

WORK-TYPE Bore

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE (Unknown)

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres)

DRILLED-DEPTH (metres)

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER

RIVER-BASIN

AREA-DISTRICT

CMA-MAP

GRID-ZONE

SCALE

ELEVATION

ELEVATION-SOURCE

NORTHING 6371679.00

EASTING 358335.00

LATITUDE 32 47' 1"

LONGITUDE 151 29' 14"

GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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For information on the meaning of fields please see [Glossary](#)
Document Generated on Monday, January 6, 2014

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079099

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079099
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371003.00
EASTING 358448.00
LATITUDE 32 47' 23"
LONGITUDE 151 29' 18"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079101

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079101
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371680.00
EASTING 358387.00
LATITUDE 32 47' 1"
LONGITUDE 151 29' 16"
GS-MAP

Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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Work Requested -- GW079102

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079102
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371685.00
EASTING 358725.00
LATITUDE 32 47' 1"
LONGITUDE 151 29' 29"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Print Report

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Work Requested -- GW079103

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079103
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371530.00
EASTING 358675.00
LATITUDE 32 47' 6"
LONGITUDE 151 29' 27"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079088

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079088

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES MONITORING BORE

WORK-TYPE Bore

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE (Unknown)

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres)

DRILLED-DEPTH (metres)

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER

RIVER-BASIN

AREA-DISTRICT

CMA-MAP

GRID-ZONE

SCALE

ELEVATION

ELEVATION-SOURCE

NORTHING 6371306.00

EASTING 358054.00

LATITUDE 32 47' 13"

LONGITUDE 151 29' 3"

GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079090

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079090
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371368.00
EASTING 358105.00
LATITUDE 32 47' 11"
LONGITUDE 151 29' 5"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079092

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079092
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371429.00
EASTING 358078.00
LATITUDE 32 47' 9"
LONGITUDE 151 29' 4"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
Document Generated on Monday, January 6, 2014

Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079093

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079093
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371460.00
EASTING 358078.00
LATITUDE 32 47' 8"
LONGITUDE 151 29' 4"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079094

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079094
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371462.00
EASTING 358234.00
LATITUDE 32 47' 8"
LONGITUDE 151 29' 10"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Work Requested -- GW079096

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079096
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES MONITORING BORE
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371707.00
EASTING 358152.00
LATITUDE 32 47' 0"
LONGITUDE 151 29' 7"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079097

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079097

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES MONITORING BORE

WORK-TYPE Bore

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE (Unknown)

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres)

DRILLED-DEPTH (metres)

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER

RIVER-BASIN

AREA-DISTRICT

CMA-MAP

GRID-ZONE

SCALE

ELEVATION

ELEVATION-SOURCE

NORTHING 6371679.00

EASTING 358335.00

LATITUDE 32 47' 1"

LONGITUDE 151 29' 14"

GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079099

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079099
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371003.00
EASTING 358448.00
LATITUDE 32 47' 23"
LONGITUDE 151 29' 18"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

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Work Requested -- GW079101

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079101
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371680.00
EASTING 358387.00
LATITUDE 32 47' 1"
LONGITUDE 151 29' 16"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)

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[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079102

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079102

LIC-NUM

AUTHORISED-PURPOSES

INTENDED-PURPOSES

WORK-TYPE Bore

WORK-STATUS (Unknown)

CONSTRUCTION-METHOD (Unknown)

OWNER-TYPE (Unknown)

COMMENCE-DATE

COMPLETION-DATE

FINAL-DEPTH (metres)

DRILLED-DEPTH (metres)

CONTRACTOR-NAME

DRILLER-NAME

PROPERTY

GWMA

GW-ZONE

STANDING-WATER-LEVEL

SALINITY

YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER

RIVER-BASIN

AREA-DISTRICT

CMA-MAP

GRID-ZONE

SCALE

ELEVATION

ELEVATION-SOURCE

NORTHING 6371685.00

EASTING 358725.00

LATITUDE 32 47' 1"

LONGITUDE 151 29' 29"

GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Groundwater Works Summary

For information on the meaning of fields please see [Glossary](#)
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Print Report

[Works Details](#) [Site Details](#) [Form A](#) [Licensed](#) [Construction](#) [Water Bearing Zones](#) [Drillers Log](#)

Work Requested -- GW079103

Works Details [\(top\)](#)

GROUNDWATER NUMBER GW079103
LIC-NUM
AUTHORISED-PURPOSES
INTENDED-PURPOSES
WORK-TYPE Bore
WORK-STATUS (Unknown)
CONSTRUCTION-METHOD (Unknown)
OWNER-TYPE (Unknown)
COMMENCE-DATE
COMPLETION-DATE
FINAL-DEPTH (metres)
DRILLED-DEPTH (metres)
CONTRACTOR-NAME
DRILLER-NAME
PROPERTY
GWMA
GW-ZONE
STANDING-WATER-LEVEL
SALINITY
YIELD

Site Details [\(top\)](#)

REGION 20 - HUNTER
RIVER-BASIN
AREA-DISTRICT
CMA-MAP
GRID-ZONE
SCALE
ELEVATION
ELEVATION-SOURCE
NORTHING 6371530.00
EASTING 358675.00
LATITUDE 32 47' 6"
LONGITUDE 151 29' 27"
GS-MAP

AMG-ZONE 56
COORD-SOURCE
REMARK

Form-A [\(top\)](#)

no details

Licensed [\(top\)](#)

no details

Water Bearing Zones [\(top\)](#)

no details

Drillers Log [\(top\)](#)

no details

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Appendix B

Site Photographs



Photo 1: Photograph showing edge of fill profile at rear of Lot 422 with exposed metal wastes.



Photo 2: Photograph of exposed waste at rear of Lot 422

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 3: Photograph showing Fill profile in TP2 on Lot 422 with refractory brick in sandy matrix.



Photo 4: Photograph of ACM fragment in TP4 , Lot 422.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 5: Photograph of former location of house Lot 422.



Photo 6: Photograph of Lot 420 cap park from south-east corner.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 7: Photograph of clayey fill profile under carpark on Lot 420 .



Photo 8: Photograph of metal/concrete waste pile south of carpark, Lot 420.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 9: Photograph of construction debris on Lot 427.



Photo 10: Photograph of the small dam at the rear of Lot 1.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 11: Photograph of VENM placement on lot 429, from the north-east corner.



Photo 12: Photograph of front of Lot 16 looking north-west from Horton Road – ACM fragments found on exposed soil area in foreground.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			



Photo 13: Photograph of empty pesticide containers (since removed) Lot 16.



Photo 14: Photograph empty/partially empty oil drums rear of large shed – Lot 16.

Title:	Phase 2 ESA	Approved:	Project-Nr.:	Date:
Site:	Parcel 4	SC	AS130348	May 2014
Client:	Hydro Aluminium Kurri Kurri			



Photo 15: Photograph fill at rear of Lot 16.



Photo 16: Photograph of fill profile (TP2) at rear of Lot 16.

Title:	Phase 2 ESA	Approved: SC	Project-Nr.: AS130348	Date: May 2014
Site:	Parcel 4			
Client:	Hydro Aluminium Kurri Kurri			

Appendix C

Field Investigation Sheets

Site Walkover Checklist

Project No.: AS180348	Date and Time: 23/20/10/13
Land Parcel: EMP4	Weather: Fine Hot/mild
Lot and DP: Lot 428 DP 755231	Environ Personnel: SC

Site Description	
Topography	Flat near NE Boundary, then slopes to east ~5-6%
Surface Geology	Alluvial?
Fill evident?	
Hummocky ground?	Double line of HT Towers.
Structures on site?	↘
Location of structures	-
Building materials used in structures	-
Asbestos debris on site?	-
Location of asbestos debris?	-
Volume of asbestos debris?	✓

GPS Locations of Interest		
Point of Interest	Easting	Northing

Description of Photographs Taken
797-801 Pan from E. End - WSE Hwt
802 - from NE cor looking W towards Road.

Miscellaneous Field Comments
N half of site - open area - assessment for Augrid HT Lines.
S " heavy bush.
E boundary - ephemeral stream. S → N.

Site Walkover Checklist

Project No.: AS130348	Date and Time: 25/10/13
Land Parcel: EMP4-	Weather: Fine, mild
Lot and DP: Lot 1 - DP589169	Environ Personnel: SC

Site Description	
Topography	Flat at front, (on Horton/scales) Slopes to West at rear. Towards Dam.
Surface Geology	
Fill evident?	Surface soil stockpiles < 1m ³ each
Hummocky ground?	-
Structures on site?	house/sheds - Timber/iron (ACM in eaves?).
Location of structures	Front of Lot - on Horton Rd.
Building materials used in structures	Shed on SW cor of house - ACM const?
Asbestos debris on site?	?
Location of asbestos debris?	?
Volume of asbestos debris?	?

GPS Locations of Interest		
Point of Interest	Easting	Northing
Spill pile - back yard.	151.49068	32.79971
Q1	151.49097	32.79957

Description of Photographs taken
894 - small spill pile
895 - EP - Pan from anthr of site S - EN.
900-902 - Dam E - S

Miscellaneous Field Comments
- Clear around house/shed area - rear of site heavily vegetated (Bush)
- Small soil/fill stock pile near drive (NE cor).
- Dam at rear.
- Small spill pile in back yard ~ 2x2m. & other small soil mounds around vrs. property.
- Vehicles/timber etc.
- Kar area (w) overgrown - bracken/ferns scrubby bush

Q1 - 10x10. at front of property / No ACM.
 SW1 taken in dam on W. border of Lot - No ACM,

Site Walkover Checklist

Project No.: AS130348		Date and Time: 24/10/13	
Land Parcel: EMP4		Weather: Fine, Mild.	
Lot and DP: LOT 429 DP 755231		Environ Personnel: SC.	
Site Description			
Topography	Flat near Dickson Rd (North) then slope → South (creek).		
Surface Geology	Sand (Alluvials).		
Fill evident?	No		
Hummocky ground?	No		
Structures on site?	No		
Location of structures	No		
Building materials used in structures	-		
Asbestos debris on site?	-		
Location of asbestos debris?	-		
Volume of asbestos debris?	-		
GPS Locations of Interest			
Point of Interest	Easting	Northing	
Description of Photographs Taken			
Miscellaneous Field Comments			
Heavily bushed with track E → W thru centre.			

Site Walkover Checklist

Project No.: AS130348		Date and Time: 24/10/13	
Land Parcel: EMP4		Weather: Fine mild	
Lot and DP: Lot 422 DP 755231		Environ Personnel: SC	

Site Description	
Topography	Flat on N (Dickson Rd) - slopes at back of sit + woods ck.
Surface Geology	Alluvials?
Fill evident?	On E fence line / Hummock
Hummocky ground?	At centre of site - Hummocky ground at break in slope - Soil pushed out from flat area to south - contains demo waste - bricks, concrete, tiles
Structures on site?	-
Location of structures	-
Building materials used in structures	-
Asbestos debris on site?	-
Location of asbestos debris?	-
Volume of asbestos debris?	-

GPS Locations of Interest		
Point of Interest	Easting	Northing
10x10 grid over former house site (No AKM)	151.48437.	32.79223
Hummocky area mid-site -	151.48458.	32.79268

Description of Photographic Interest	
826-828 Fill mound on E fence (Pan W → S).	151.48541
829, 830 ~ 30m long (N-S). bits of coll. iron	32.79268
- mounded topsoil w/ old shed debris.?	
831-832 - Hummocky area looking North.	
833-835 " " south of flat area. Coll. iron & concrete	
836-837 " "	
838-842 From Mid W. (at gate) Pan W-S-E	

Miscellaneous Field Comments	
Open grassed site N-side on Dickson Rd.	
S - onto Creek	
on E boundary - fire maind parallel to fence.	
hummocky ground - mid-site - material pushed out over slope - steel pipe in sand	
- actually all spread flat and to E & South	
- demolition waste. (bricks/tiles etc. NO ACM.	

Site Walkover Checklist

Project No.: A5130348		Date and Time: 23/24 October 2013.	
Land Parcel: EMP4		Weather: Fine Hot/Mild	
Lot and DP: Lot 427 DP 755231		Environ Personnel: SC	
Site Description			
Topography	Flat intrest, Slopes to East down to stream in East boundary.		
Surface Geology	No outcrop - alluvial terraces?		
Fill evident?	Yes - dumped material.		
Hummocky ground?	Some dumped Fill/waste area.		
Structures on site?	No		
Location of structures	-		
Building materials used in structures	-		
Asbestos debris on site?	-		
Location of asbestos debris?	-		
Volume of asbestos debris?	-		
GPS Locations of Interest			
Point of Interest	Easting	Northing	
Dumped Bitumen/concrete	151.47997	32.79514	
Corrugated iron in dry w/course	151.48061	32.79552	
Description of Photographs Taken			
812-815 From SE car (on Augrid pavement) Pan E → NW			
816-818- Dumped Bitumen/concrete			
819-823 - From mid-E site - on stream Pan - S → N			
824-825 - Cor. iron (old shed) in dry watercourse.			
Miscellaneous Field Comments			
Heavily ~~Eng~~ vegetated trees/scrub with tracks.			
Dumped concrete/Bitumen in W. corner			

Site Walkover Checklist

Project No.: AS130348		Date and Time: 25/10/12	
Land Parcel: EMP4		Weather: Fine, Mild.	
Lot and DP: Lot 429. / 18		Environ Personnel: SC	

Site Description	
Topography	Flat, cleared, Filled area (from Hwy works) on W half.
Surface Geology	Eastern half slopes towards East.
Fill evident?	- Fill being placed from HEx works.
Hummocky ground?	-
Structures on site?	-
Location of structures	-
Building materials used in structures	-
Asbestos debris on site?	-
Location of asbestos debris?	-
Volume of asbestos debris?	-

GPS Locations of Interest		
Point of Interest	Easting	Northing
Small Topsoil(?) mound	151.47969	32.79740

Description of Photographs Taken
843-846 - From NW Cnr Pan - S → E.
847-850 - From SW " " E → N (includes Lot 18)
851-854 - From mid N (Scales Rd) Pan E → S → W
855-858 - " NE Cnr Pan W → S
859-863 - From Mid E boundary, Pan N → W → S
864 - Small mound in NE Cnr.

Miscellaneous Field Comments
- Current Fill placement from HEx works across western part of site.
- Small Topsoil mound in NE Cnr - no visible debris etc ~ 3m x 1m.



Site Walkover Checklist

Project No.: AS130348		Date and Time: 24/10/13	
Land Parcel: EMP 4		Weather: Fine, mild.	
Lot and DP: LOT 444 DP 755231		Environ Personnel: SC.	
Site Description			
Topography	Approx. Flat. slope W & E towards Streams in Tributaries.		
Surface Geology	Alluvials?		
Fill evident?			
Hummocky ground?			
Structures on site?	House on W. cnr (off Scales Ave).		
Location of structures	" " " " " " "		
Building materials used in structures			
Asbestos debris on site?			
Location of asbestos debris?			
Volume of asbestos debris?			
GP Locations of Interest			
Point of Interest	Easting	Northing	
Description of Photographs Taken			
803-806 from N end S → E pan.			
Miscellaneous Field comments			
N. area (~25%) on Ausgrid easement - cleared ground (Bush covered area in N end)			
Southern 75% - heavy bush (with house block in west on road).			

Lot 14

Photos - 807, 8, 9 - from car Horton & Seales.
S → E Pan.

SF5

Ti tree / sand covered.
Slopes towards E

N - Ausgrid Easement (creek)

S - H'way "

E - Stream / creek

W - Horton Rd.

Lot 80^{er}

810-811 from C^{nr} Horton & Seales.

Heavy bush.

SF6

Site Walkover Checklist

Project No.: AS130348		Date and Time: 25/10/13	
Land Parcel: EMP4		Weather: Fine, mild.	
Lot and DP: Lot 15 DP1082569		Environ Personnel: JC	
Site Description			
Topography	Flat, sl. slope at rear (w) to E.		
Surface Geology			
Fill evident?			
Hummocky ground?			
Structures on site?			
Location of structures			
Building materials used in structures			
Asbestos debris on site?			
Location of asbestos debris?			
Volume of asbestos debris?			
GPS Locations of Interest			
Point of Interest	Easting	Northing	
Q1 (10x10m)	151.48037	32.79935	
AST	151.48034	32.79977	
Trans. Hut (Roundup container)	151.47994	32.79897	
Oil Drums	151.47995	32.79909	
Description of Photographs Taken			
865 - 868 Site from front gate - Pan N-W-S.			
869 - Q1 (looking E → W).			
870 - Shed / workshop to rear of house.			
871 - 872 - Rear (w) of site.			
873 - 874 - AST 2 rear of site.			
From middle of site 875 - 877 - vehicle Park. 878 - large shed / small donga - empty Roundup cont.			
879 - 880 - Pan to forest, 881 - Roundup shed.			
Miscellaneous Field Comments			
Under trees in SE cor - Found ACM x 2 = Q1 grid done + samples - F + asbestos. (SF11 & 513)			
11515 (empty) on slab behind shed. - Plastic - no colours/staining. Water?			
Shed - Tyres / car batteries.			
Small transp. hut behind Pig shed - ~ 50-60 empty Roundup 20L containers			
Photos 882, 883, 884 - Empty Oil Drums at NW corner Pig shed.			
Empty & Full. - + open containers of oil.			
Staining on sand.			

See also detailed photo (google earth).

- Large Filled area at rear of site soil / timber / steel.
(w of Mulch mound).

Q2 (10x10) at SW corner

32.79841
151.47938

Samples Q2 - ACM frags

S14 - soil.

Q3 (10x10) at driveway between sheds at rear of house.

32.79894
151.48024

ACM Fragments.

X
(SF11)
(0A13)

Oil Drums

Remediation

soil
fill

DICKS
Pavers

(938-89)
(882)

no. 315
Bulldozer
(882)

(882)

valley

material
pushed
down slope
(882)

Ball's Timber waste

51 m

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Imagery Date: 12/19/2009 lat -32.798669° lon 151.479805°

PROJECT SAMPLE REGISTER

Project No	AS130348	Project Name	HYDRO Buffer Zone Investigation	Date commenced	23/10/13
Location	EMPL4	Refer to Daily log for weather details		Date completed	28/10/13.

#	Sample Name	Sampled by	Easting	Northing	Depth	Description (soil type, moisture, colour, foreign content, signs of contamination) or 'refer to log'	Quality Assurance	Comments (eg lab analyse)
1	EMPL4-SF1	SC	151.48069	32.79308	S	Exposed soil - fine, silty SAND; 11 gms dry, compacted.	QAR	Lot 420 DP 755231
2	" - SF2	SC	151.48056	32.79452	S	" " " " "	-	Lot 427 DP 755231
3	" SF3	SC	151.47918	32.79574	S	" " " " "	-	Lot 428 DP 755231
4	" SF4	SC	151.48163	32.79705	S	fine sandy SILT; 116m, under grass cover.	-	Lot 444 DP 755231
5	" SF5	SC	151.48096	32.79948	S	fine 11 gms SAND Drg. exposed under 11 trees.	-	Lot 14
6	" SF6	SC	151.48192	32.79884	S	lt brown SILT; dry, grassed trees overhead cover	-	809
7	" SF7	SC	151.48652	32.79236	S	" " " dry grass cover	-	Lot 422
8	" SF8	SC	151.48262	32.79281	S	fine SAND; cream, exposed on track	-	Lot 423
9	" SF9	SC	151.47695	32.79681	S	SILT; 116m, dry, under tree litter.	-	Lot 18
10	" SF10	SC	151.47939	32.79735	S	SILT " " "	-	Lot 429

Appendix D

Results Tables

TABLE A: Soil Analytical Results - Grid Sampling

Sample Depth: 0.01m - 0.02m

Sampling Date: 23/10/13

Laboratory PQL: 0.5 mg/kg

Site Specific HIL - Fluoride: 17000mg/kg

Sample Identification	Soluble Fluoride mg/kg (1:5 soil:water)
EMP4 - SF1	30
EMP4 - SF2	5
EMP4 - SF3	2
EMP4 - SF4	2
EMP4 - SF5	2
EMP4 - SF6	3
EMP4 - SF7	9
EMP4 - SF8	1
EMP4 - SF9	1
EMP4 - SF10	1
EMP4 - SF11	5
EMP4 - SF12	9

cell shaded grey where investigation criteria exceeded

TABLE B: Soil Analytical Results Asbestos

Sample Identification	PQL	Guideline	EMP4 - S15	EMP4 - SQ3
Sample Depth (m)		HIL 'D' ^A		
Date			25/10/2013	25/10/2013
Sample Profile			FILL	FILL
Sample collected by			SC	SC
Identification of Asbestos in bulk samples				
Asbestos Detected			Yes	Yes
Asbestos Type			Ch+Cr	Ch+Am+Cr
Sample weight (dry)			2130	67.4
Asbestos Quantification				
Weight Used for % Calculation kg			2.13	-
Asbestos Containing Material - g			0.7	-
Fibrous Asbestos - g			<0.002	-
Asbestos Containing Material (as 15% Asbestos in ACM >7mm) - %		0.05%	<0.01	-
Asbestos Fines and Fibrous Asbestos (<7mm) - %		0.001%	<0.001	-
Trace Asbestos Detected - %			No	-

^A HIL D - commercial/industrial

Results shaded grey are in excess of the investigation criteria.

TABLE C: Soil Analytical Results - Fill Areas

Sample Identification		PQL	Guideline				P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3	P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P4 LOT16-TP1 0.2-0.35	P4 LOT16 TP2 0.1-0.2
Sample Depth (m)			HIL 'D' ^	HSL 'D' ^ Silt 0m to 1m	EL Urban Commercial/Industrial (lowest ACL)^	ESL Industrial (Coarse Soil)	Mgt Limits Industrial	17/03/2014	17/03/2014	17/03/2014	17/03/2014	17/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014
Date																	
Sample Profile																	
Sample collected by																	
Asbestos																	
Asbestos Detected		1332-21-4						No	No	No	Yes	Yes	No	No	No	No	No
Asbestos Type		1332-21-4						-	-	-	Ch	Ch + Am	-	-	-	-	-
Sample weight (dry)								44.4	43.8	37.9	47.4	38.1	42.9	47.5	47.4	48.8	63.8
Asbestos Quantification																	
Weight Used for % Calculation kg								-	-	-	0.0474	0.0381	-	-	-	-	-
Asbestos Containing Material - g								-	-	-	<0.1	<0.1	-	-	-	-	-
Fibrous Asbestos - g								-	-	-	<0.002	0.002	-	-	-	-	-
Asbestos Containing Material (as 15% Asbestos in ACM >7mm) - %			0.05%					-	-	-	<0.03	<0.04	-	-	-	-	-
Asbestos Fines and Fibrous Asbestos (<7mm) - %			0.001%					-	-	-	<0.004	0.005	-	-	-	-	-
Trace Asbestos Detected - %								-	-	-	No	No	-	-	-	-	-
Heavy Metals																	
Arsenic		5	3000		160			<5	<5	<5	<5	<5	<5	6	<5	6	<5
Cadmium		1	900					<1	<1	<1	<1	2	<1	<1	<1	<1	<1
Chromium		1	3600		530			5	6	5	8	7	8	9	7	8	22
Copper		5	240,000		250			12	11	10	54	17	5	6	<5	8	27
Lead		5	1500		1800			8	12	51	156	73	8	8	9	10	46
Nickel		2	6000		180			12	7	8	12	6	8	11	8	7	15
Zinc		2	400,000		610			192	121	190	199	218	19	25	29	45	243
Mercury		0.1	730					<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Polycyclic Aromatic Hydrocarbons (PAH)																	
Naphthalene		0.1			370			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.8	1
Anthracene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	2.3
Pyrene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	3.3	2.2
Benz(a)anthracene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	<0.5	2.1
Chrysene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	9.9	1.2
Benzo(b)k(k)fluoranthene		0.2						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.4	2.8
Benzo(a) pyrene		0.05			1.4			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	1.1
Indeno(1,2,3-c,d)pyrene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7
Dibenz(a,h)anthracene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene		0.1						<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	<0.5	0.9
Benzo(a)pyrene TEQ		0.5	40					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	2.1
Total +ve		--	4000					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	5.1	<0.5	27.8
Total Recoverable Hydrocarbons (TRH) - NEPM (2013)																	
TRH C6 - C10		25		250		215	700	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
VTPH C6 - C10 less BTEX		25	NL		-	-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
TRH >C10-C16		50	NL		170	1000		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
TRH >C16-C34		100	NL		1700	3500		<100	<100	<100	<100	<100	<100	<100	<100	<100	120
TRH >C34-C40		100	NL		3300	10000		<100	<100	<100	<100	<100	<100	<100	<100	<100	200
BTEX																	
Benzene		0.2		4		75		<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene		0.5		NL		135		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene		1		NL		165		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
m+p-xylene		2		NL		180		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
o-Xylene		1		NL		180		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
OCI OP Pesticides																	
Sum of Aldrin + Dieldrin		0.05	45				<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Sum of DDD + DDT + DDE		0.05	3600				1.13	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Remainder of OCPs		0.05						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
OPPs		0.05						<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
pH (Soils)																	
pH Value		0.1						-	-	6.1	-	-	-	-	8	-	6.8
Exchangeable Cations (as meq/100g)																	
Exchangeable Calcium		0.1						-	-	3.5	-	-	-	-	2	-	12.7
Exchangeable Magnesium		0.1						-	-	1.2	-	-	-	-	2.4	-	1.3
Exchangeable Potassium		0.1						-	-	0.3	-	-	-	-	<0.1	-	0.2
Exchangeable Sodium		0.1						-	-	<0.1	-	-	-	-	0.7	-	0.1
Cation Exchange Capacity		0.1						-	-	5	-	-	-	-	5.1	-	14.4
Organic Matter																	
Total Organic Carbon (%)		0.5						-	-	1.8	-	-	-	-	<0.5	-	2.6

All results are in mg/kg unless otherwise indicated.

^ HIL, D - Commercial/ Industrial landuse

^ ELs represent value based on average site soil properties.

Results shaded grey are in excess of the investigation criteria.

Benzo(a)pyrene TEQ is indicative of carcinogenic PAHs: the HIL is based on the 8 carcinogenic PAHs and their TEQs (potency relative to B(a)P) adopted by CCME 2008. The B(a)P TEQ is calculated by multiplying the concentration of each carcinogenic PAH in the sample by its B(a)P TEQ and summing these products.

TABLE C: Soil Analytical Results - Fill Areas

Sample Identification		Guideline				P4 LOT16 TP3 0.1-0.3	P4 LOT16 TP4 0.1-0.3	P4 LOT16 TP5 0.1-0.2	P4 LOT16 TP6 0.3-0.5	P4 LOT16 TP7 0.2-0.4	ID1	ID2	QA01	QA02
Sample Depth (m)	PQL	HIL 'D' ^A	HSL 'D' ^A Silt 0m to 1m	EL Urban Commercial/Industr ial (lowest ACL) ^B	ESL Industrial (Coarse Soil)									
Date						18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014	18/03/2014
Sample Profile						FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL	FILL
Sample collected by						SC	SC	SC	SC	SC	SC	SC	SC	SC
Asbestos														
Asbestos Detected	1332-21-4					No	No	No	No	No	Yes	Yes	Yes	Yes
Asbestos Type	1332-21-4										Ch + Cr	Ch + Cr	Am	Ch
Sample weight (dry)						34.6	47.4	35	41.2	48.6	27.3	111	38.7	40.6
Asbestos Quantification														
Weight Used for % Calculation kg						-	-	-	-	-	-	-	-	-
Asbestos Containing Material - g						-	-	-	-	-	-	-	-	-
Fibrous Asbestos - g						-	-	-	-	-	-	-	-	-
Asbestos Containing Material (as 15% Asbestos in ACM >7mm) - %		0.05%				-	-	-	-	-	-	-	-	-
Asbestos Fines and Fibrous Asbestos (<7mm) - %		0.001%				-	-	-	-	-	-	-	-	-
Trace Asbestos Detected - %						-	-	-	-	-	-	-	-	-
Heavy Metals														
Arsenic	5	3000		160		16	<5	<5	7	6	-	-	33	6
Cadmium	1	900				<1	<1	<1	<1	<1	-	-	<1	<1
Chromium	1	3600		530		24	3	19	11	17	-	-	4	19
Copper	5	240,000		250		47	<5	24	36	14	-	-	23	30
Lead	5	1500		1800		36	<5	44	41	23	-	-	10	56
Nickel	2	6000		180		7	<2	28	14	21	-	-	7	25
Zinc	2	400,000		610		232	6	304	122	192	-	-	81	400
Mercury	0.1	730				<0.1	<0.1	<0.1	<0.1	<0.1	-	-	<0.1	<0.1
Polycyclic Aromatic Hydrocarbons (PAH)														
Naphthalene	0.1			370		<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Acenaphthylene	0.1					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Acenaphthene	0.1					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Fluorene	0.1					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Phenanthrene	0.1					<0.5	<0.5	1.1	0.8	1.9	-	-	<0.5	1
Anthracene	0.1					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Fluoranthene	0.1					<0.5	<0.5	3	2.9	3.9	-	-	<0.5	2.7
Pyrene	0.1					0.5	<0.5	3	2.7	3.5	-	-	<0.5	2.4
Benz(a)anthracene	0.1					0.5	<0.5	1.1	1.4	1.3	-	-	<0.5	0.8
Chrysene	0.1					0.8	<0.5	1.2	1.6	1.4	-	-	<0.5	0.9
Benzo(b,k)fluoranthene	0.2					<0.5	<0.6	2.5	3.3	2.7	-	-	<0.5	<0.5
Benzo(a) pyrene	0.05			1.4		0.6	<0.5	1.3	1.6	1.6	-	-	<0.5	1
Indeno(1,2,3-c,d)pyrene	0.1					<0.5	<0.5	1	1.2	1	-	-	<0.5	0.7
Dibenz(a,h)anthracene	0.1					<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Benzo(g,h,i)perylene	0.1					0.6	<0.5	1.5	1.4	1.3	-	-	<0.5	0.9
Benzo(a)pyrene TEQ	0.5	40				0.8	<0.5	1.8	2.2	2.1	-	-	<0.5	1.3
Total +ve	--	4000				5	<0.5	16	16.9	18.6	-	-	<0.5	11.9
Total Recoverable Hydrocarbons (TRH) - NEPM (2013)														
TRH C6 - C10	25		250		215	<10	<10	<10	<10	<10	-	-	<10	<10
vTPH C6 - C10 less BTEX	25	NL			-	<10	<10	<10	<10	<10	-	-	<10	<10
TRH >C10-C16	50	NL			170	<50	<50	<50	<50	<50	-	-	<50	<50
TRH >C16-C34	100	NL			1700	<100	<100	<100	<100	<100	-	-	<100	<100
TRH >C34-C40	100	NL			3300	<100	<100	<100	<100	<100	-	-	<100	<100
BTEX														
Benzene	0.2		4		75	<0.2	<0.2	<0.2	<0.2	<0.2	-	-	<0.2	<0.2
Toluene	0.5		NL		135	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
Ethylbenzene	1		NL		165	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
m+p-xylene	2		NL		180	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
o-xylene	1		NL		180	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5
OC/OP Pesticides														
Sum of Aldrin + Dieldrin	0.05	45				<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05
Sum of DDD + DDT + DDE	0.05	3600				<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05
Remainder of OCPs	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05
OPPs	0.05					<0.05	<0.05	<0.05	<0.05	<0.05	-	-	<0.05	<0.05
pH (Soils)														
pH Value	0.1					-	-	-	-	-	-	-	-	-
Exchangeable Cations (as meq/100g)														
Exchangeable Calcium	0.1					-	-	-	-	-	-	-	-	-
Exchangeable Magnesium	0.1					-	-	-	-	-	-	-	-	-
Exchangeable Potassium	0.1					-	-	-	-	-	-	-	-	-
Exchangeable Sodium	0.1					-	-	-	-	-	-	-	-	-
Cation Exchange Capacity	0.1					-	-	-	-	-	-	-	-	-
Organic Matter														
Total Organic Carbon (%)	0.5					-	-	-	-	-	-	-	-	-

All results are in mg/kg unless otherwise indicated.

^A HIL, D - Commercial/ Industrial landuse

^B ELs represent value based on average site soil properties.

Results shaded grey are in excess of the investigation criteria.

Benzo(a)pyrene TEQ is indicative of carcinogenic PAHs: the HIL is based on the 8 carcinogenic PAHs and their TEFs (potency relative to B[a]P)

TABLE D Surface Water Analytical Results

Sample Identification Date	PQL	Guideline			EMP4-SW16 28/10/13
		95% Fresh ^A	Irrigation	Stock	
Sample Appearance					clear, sl. turbid
Sample collected by					SC
Field Parameters					
pH	0.01				7.69
Electrical Conductivity (µS/cm)	1				700
Redox Potential (mV)	0.1				205
Dissolved Oxygen (mg/L)	0.1				9.4
Total Recoverable Hydrocarbons (TRH)					
TRH C6-C9	10				<10
TRH C10-C14	50				<50
TRH C15-C28	100				<100
TRH C29-C36	100				<100
TRH C10-C36	250				<250
Total Recoverable Hydrocarbons (TRH) NEPM (2013)					
TRH C6 - C10	10				<20
VTPH C6 - C10 less BTEX (F1)	10				<20
TRH >C10-C16	50				<100
TRH >C16-C34	100				<100
TRH >C34-C40	100				<100
C10 - C16 Fraction minus Naphthalene (F2)	100				<100
BTEX					
Benzene	1	950			<1
Toluene	1				<2
Ethylbenzene	1				<2
m+p-xylene	2	200			<2
o-xylene	1	350			<2
Polycyclic Aromatic Hydrocarbons					
Naphthalene	1	16			<1.0
Acenaphthylene	1				<1.0
Acenaphthene	1				<1.0
Fluorene	1				<1.0
Phenanthrene	1	0.6			<1.0
Anthracene	1	0.01			<1.0
Fluoranthene	1	1			<1.0
Pyrene	1				<1.0
Benz(a)anthracene	1				<1.0
Chrysene	1				<1.0
Benzo(b)fluoranthene	1				<1.0
Benzo(k)fluoranthene	1				<1.0
Benz(a)pyrene	0.5	0.1			<0.5
Indeno(1,2,3-cd)pyrene	1				<1.0
Dibenz(a,h)anthracene	1				<1.0
Benzo(g,h)perylene	1				<1.0
Sum of polycyclic aromatic hydrocarbons	0.5				<0.5
Benz(a)pyrene TEQ (zero)	0.5				<0.5
Dissolved Metals (mg/L)					
Arsenic	0.001	0.013	0.1	0.2	<0.001
Cadmium	0.001	0.004*	0.01	0.01	<0.001
Chromium	0.001	0.001	0.1	1	<0.001
Copper	0.001	0.00546*	1	0.5	<0.001
Mercury	0.0001	0.0006	0.002	0.002	<0.0001
Nickel	0.001	0.0429*	0.2	1	0.004
Lead	0.001	0.02584*	2	0.1	<0.001
Zinc	0.005	0.0312*	0.2	20	<0.005
Organochlorine Pesticides (OC)					
alpha-BHC	0.5				<0.5
Hexachlorobenzene (HCB)	0.5				<0.5
beta-BHC	0.5				<0.5
gamma-BHC	0.5				<0.5
delta-BHC	0.5				<0.5
Heptachlor	0.5				<0.5
Aldrin	0.5	0.001			<0.5
Heptachlor epoxide	0.5	0.090			<0.5
trans-Chlordane	0.5				<0.5
alpha-Endosulfan	0.5				<0.5
cis-Chlordane	0.5				<0.5
Dieldrin	0.5	0.010			<0.5
4,4'-DDE	0.5	0.030			<0.5
Endrin	0.5	0.020			<0.5
beta-Endosulfan	0.5				<0.5
4,4'-DDD	0.5				<0.5
Endrin aldehyde	0.5				<0.5
Endosulfan sulfate	0.5	0.200			<0.5
4,4'-DDT	2	0.010			<2.0
Endrin ketone	0.5				<0.5
Methoxychlor	2				<2.0
Total Chlordane (sum)	0.5	0.08			<0.5
Sum of DDD + DDE + DDT	0.5				<0.5
Sum of Aldrin + Dieldrin	0.5				<0.5
Organophosphorus Pesticides (OP)					
Dichlorvos	0.5				<0.5
Demeton-S-methyl	0.5				<0.5
Monocrotophos	2				<2.0
Dimethoate	0.5	0.150			<0.5
Diazinon	0.5	0.010			<0.5
Chlorpyrifos-methyl	0.5				<0.5
Parathion-methyl	2				<2.0
Malathion	0.5	0.050			<0.5
Fenthion	0.5	0.200			<0.5
Chlorpyrifos	0.5	0.010			<0.5
Parathion	2				<2.0
Pirimphos-ethyl	0.5				<0.5
Chlorfenvinphos	0.5				<0.5
Bromophos-ethyl	0.5				<0.5
Fenamiphos	0.5				<0.5
Prothiofos	0.5				<0.5
Ethion	0.5				<0.5
Carbophenothion	0.5				<0.5
Azinphos Methyl	0.5				<0.5
Inorganic/Non-metallic (mg/l)					
Fluoride	0.1	1.5 ^B	1	2	0.6
Cations & Anions (mg/L)					
Calcium	1				36
Magnesium	1				17
Sodium	1				72
Potassium	1				5
Hydroxide Alkalinity as CaCO3	1				<1
Carbonate Alkalinity as CaCO3	1				<1
Bicarbonate Alkalinity as CaCO3	1				62
Total Alkalinity as CaCO3	1				62
Sulphate, SO4	1				163
Chloride, Cl	1				57
Water Hardness as CaCO3 (Calculation)*	-				110

All values are in µg/L, unless otherwise indicated

PQL = Practical Quantitation Limit.

^A ANZECC 2000 95% Protection Level for Receiving Water Type^B Preliminary Site Specific Screening Level protective of Human Health (ENVIRON 2013).^{*} Hardness Modified Trigger Values for Cd, Cu, Ni, Pb, Zn based on hardness of Swamp Creek (from previous investigations)

ANZECC arsenic guideline based on As (V) for fresh water, the lowest of presented guidelines.

ANZECC guidelines for chromium are based on Cr (VI)

ANZECC guidelines for mercury are based on inorganic mercury.

Results shaded grey are in excess of the primary acceptance criteria; ANZECC 95%

ND not determined due to insufficient background data

NST not sufficiently toxic

Guidelines in *italics* are indicative interim working levels (low reliability trigger values)

TABLE E: Soil Quality Assurance/ Quality Control Results			RPD %	SF17		RPD %	P4 LOT 422 TP2 0-0.4		RPD %	P4 LOT16 TP2 0.1-0.2		RPD %		
Sample Identification	SF1	QA2		0.01-0.02			QA01			0.01-0.02			QA02	
Sample Depth (m)	0.01-0.02			Intralaboratory			Intralaboratory			Intralaboratory				
Duplicate Type	Intralaboratory			Topsoil			Fill			Fill				
Sample Profile	Fill soil matrix			SC			SC			SC				
Sample collected by	SC			SC			SC			SC				
Fluoride														
Soluble Fluoride	30	26	15.4	2	2	0.0	-	-	-	-	-			
Heavy Metals														
Arsenic	-	-	-	-	-	-	2.5	33	92.4	13	6	116.7		
Cadmium	-	-	-	-	-	-	<1	<1	0.0	<1	<1	0.0		
Chromium	-	-	-	-	-	-	6	4	50.0	22	19	15.8		
Copper	-	-	-	-	-	-	11	23	52.2	39	30	30.0		
Lead	-	-	-	-	-	-	12	10	20.0	43	56	23.2		
Nickel	-	-	-	-	-	-	7	7	0.0	15	25	40.0		
Zinc	-	-	-	-	-	-	121	81	49.4	238	400	40.5		
Mercury	-	-	-	-	-	-	<0.1	<0.1	0.0	<0.1	<0.1	0.0		
Polycyclic Aromatic Hydrocarbons (PAH)														
Naphthalene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Acenaphthylene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Acenaphthene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Fluorene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Phenanthrene	-	-	-	-	-	-	<0.5	<0.5	0.0	1	1	0.0		
Anthracene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Fluoranthene	-	-	-	-	-	-	<0.5	<0.5	0.0	2.3	2.7	14.8		
Pyrene	-	-	-	-	-	-	<0.5	<0.5	0.0	2.2	2.4	8.3		
Benz(a)anthracene	-	-	-	-	-	-	<0.5	<0.5	0.0	1	0.8	25.0		
Chrysene	-	-	-	-	-	-	<0.5	<0.5	0.0	1.2	0.9	33.3		
Benzo(b)&(k)fluoranthene	-	-	-	-	-	-	<0.5	<0.5	0.0	2.8	<0.5	0.0		
Benzo(a) pyrene	-	-	-	-	-	-	<0.5	<0.5	0.0	1.1	1	10.0		
Indeno(1,2,3-c,d)pyrene	-	-	-	-	-	-	<0.5	<0.5	0.0	0.9	0.7	28.6		
Dibenz(a,h)anthracene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Benzo(g,h,i)perylene	-	-	-	-	-	-	<0.5	<0.5	0.0	1.2	0.9	33.3		
Benzo(a)pyrene TEQ	-	-	-	-	-	-	<0.5	<0.5	0.0	1.6	1.3	23.1		
Total +ve	-	-	-	-	-	-	<0.5	<0.5	0.0	13.7	11.9	15.1		
Total Recoverable Hydrocarbons (TRH) - NEPM (2013)														
TRH C6 - C10	-	-	-	-	-	-	<10	<10	0.0	<10	<10	0.0		
VTPH C6 - C10 less BTEX	-	-	-	-	-	-	<10	<10	0.0	<10	<10	0.0		
TRH >C10-C16	-	-	-	-	-	-	<50	<50	0.0	<50	<50	0.0		
TRH >C16-C34	-	-	-	-	-	-	<100	<100	0.0	130	410	68.3		
TRH >C34-C40	-	-	-	-	-	-	<100	<100	0.0	200	410	51.2		
BTEX														
Benzene	-	-	-	-	-	-	<0.2	<0.2	0.0	<0.2	<0.2	0.0		
Toluene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
Ethylbenzene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
m+p-xylene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
o-Xylene	-	-	-	-	-	-	<0.5	<0.5	0.0	<0.5	<0.5	0.0		
OC/ OP Pesticides														
Sum of Aldrin + Dieldrin	-	-	-	-	-	-	<0.05	<0.05	0.0	<0.05	<0.05	0.0		
Sum of DDD + DDT + DDE	-	-	-	-	-	-	<0.05	<0.05	0.0	<0.05	<0.05	0.0		
Remainder of OCPs	-	-	-	-	-	-	<0.05	<0.05	0.0	<0.05	<0.05	0.0		
OPPs	-	-	-	-	-	-	<0.05	<0.05	0.0	<0.05	<0.05	0.0		

Note all units in mg/kg

BOLD identifies where RPD results exceed criteria

intralaboratory	interlaboratory	
>50	>60	where both sample results exceed ten x PQL
>75	>85	where both sample results are within 5 to 10 x PQL
>100	>100	where both sample results are within 2 to 5 x PQL
AD>2.5 * PQL		where one or both sample results are <2 x PQL

BOLD identified where blanks >0

Where results are within two of the above ranges the most conservative criteria have been used to assess duplicate performance

Appendix E

Laboratory Reports

CERTIFICATE OF ANALYSIS

Work Order	: ES1323112	Page	: 1 of 12
Amendment	: 1		
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR STEVE CADMAN	Contact	: Client Services
Address	: PO BOX 560 NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: scadman@environcorp.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 99548114	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: HYDRO BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: A5130348		
C-O-C number	: 155065,155066,155067	Date Samples Received	: 28-OCT-2013
Sampler	: SC	Issue Date	: 18-FEB-2014
Site	: ----		
Quote number	: SY/285/10	No. of samples received	: 21
		No. of samples analysed	: 17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EA200 Legend**
- **EA200 'Am'** Amosite (brown asbestos)
- **EA200 'Ch'** Chrysotile (white asbestos)
- **EA200 'Cr'** Crocidolite (blue asbestos)
- **EA200 'Trace'** - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- **EA200: 'UMF'** Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- **EA200:** Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- **EA200:** Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- **EA200Q:** ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- **EA200Q:** Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
 Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present).
 Percentages for Asbestos content in ACM are based on the 2013 NEPM default values. All numerical results under this method are approximate and should be used as a guide only.



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	EMP4 - SF1	EMP4 - SF2	EMP4 - SF3	EMP4 - SF4	EMP4 - SF5
				Client sampling date / time	23-OCT-2013 15:00	23-OCT-2013 15:00	23-OCT-2013 15:00	24-OCT-2013 15:00	24-OCT-2013 15:00
Compound	CAS Number	LOR	Unit		ES1323112-001	ES1323112-002	ES1323112-003	ES1323112-004	ES1323112-005
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		<1.0	<1.0	<1.0	<1.0	1.1
EK040S: Fluoride Soluble									
Fluoride	16984-48-8	1	mg/kg		30	5	2	2	2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				EMP4 - SF6	EMP4 - SF7	EMP4 - SF8	EMP4 - SF9	EMP4 - SF10
Client sampling date / time				24-OCT-2013 15:00	24-OCT-2013 15:00	24-OCT-2013 15:00	24-OCT-2013 15:00	25-OCT-2013 15:00
Compound	CAS Number	LOR	Unit	ES1323112-006	ES1323112-007	ES1323112-008	ES1323112-009	ES1323112-010
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	4.3	1.1	<1.0	<1.0	<1.0
EK040S: Fluoride Soluble								
Fluoride	16984-48-8	1	mg/kg	3	9	1	1	1



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				EMP4 - SF11	EMP4 - SF12	EMP4 - SF15	EMP4 - SQ3	EMP4 - QA1
				25-OCT-2013 15:00	25-OCT-2013 15:00	25-OCT-2013 15:00	25-OCT-2013 15:00	23-OCT-2013 15:00
Compound	CAS Number	LOR	Unit	ES1323112-011	ES1323112-012	ES1323112-013	ES1323112-014	ES1323112-015
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	3.1	1.6	----	----	3.4
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	----	----	Yes	Yes	----
Asbestos Type	1332-21-4	0.1	--	----	----	----	Ch+Am+Cr	----
Asbestos Type	1332-21-4	1	--	----	----	Ch+Cr	----	----
Sample weight (dry)	----	0.01	g	----	----	----	67.4	----
Sample weight (dry)	----	0.01	g	----	----	2130	----	----
APPROVED IDENTIFIER:	----	-	--	----	----	----	P.RENNIE	----
APPROVED IDENTIFIER:	----	1	--	----	----	P.RENNIE	----	----
EA200Q: Asbestos Quantification (non-NATA)								
Weight Used for % Calculation	----	0.0001	kg	----	----	2.13	----	----
Asbestos Containing Material	1332-21-4	0.1	g	----	----	0.7	----	----
Fibrous Asbestos	----	0.002	g	----	----	<0.002	----	----
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	%	----	----	<0.01	----	----
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%	----	----	<0.001	----	----
Trace Asbestos Detected	----	5	Fibres	----	----	No	----	----
EK040S: Fluoride Soluble								
Fluoride	16984-48-8	1	mg/kg	5	9	----	----	5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	EMP4 - QA2	----	----	----	----
				Client sampling date / time	25-OCT-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit		ES1323112-016	----	----	----	----
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%		<1.0	----	----	----	----
EK040S: Fluoride Soluble									
Fluoride	16984-48-8	1	mg/kg		26	----	----	----	----

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	EMP4-SW16	----	----	----	----
Client sampling date / time				28-OCT-2013 15:00	----	----	----	----	
Compound	CAS Number	LOR	Unit	ES1323112-017	----	----	----	----	
EA005: pH									
pH Value	----	0.01	pH Unit	7.69	----	----	----	----	
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm	700	----	----	----	----	
EA075: Redox Potential									
Redox Potential	----	0.1	mV	205	----	----	----	----	
pH Redox	----	0.01	pH Unit	7.0	----	----	----	----	
ED037P: Alkalinity by PC Titrator									
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	----	----	----	----	
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	----	----	----	----	
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	62	----	----	----	----	
Total Alkalinity as CaCO3	----	1	mg/L	62	----	----	----	----	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	163	----	----	----	----	
ED045G: Chloride Discrete analyser									
Chloride	16887-00-6	1	mg/L	57	----	----	----	----	
ED093F: Dissolved Major Cations									
Calcium	7440-70-2	1	mg/L	36	----	----	----	----	
Magnesium	7439-95-4	1	mg/L	17	----	----	----	----	
Sodium	7440-23-5	1	mg/L	72	----	----	----	----	
Potassium	7440-09-7	1	mg/L	5	----	----	----	----	
EG020T: Total Metals by ICP-MS									
Arsenic	7440-38-2	0.001	mg/L	<0.001	----	----	----	----	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	----	----	----	----	
Chromium	7440-47-3	0.001	mg/L	<0.001	----	----	----	----	
Copper	7440-50-8	0.001	mg/L	<0.001	----	----	----	----	
Nickel	7440-02-0	0.001	mg/L	0.004	----	----	----	----	
Lead	7439-92-1	0.001	mg/L	<0.001	----	----	----	----	
Zinc	7440-66-6	0.005	mg/L	<0.005	----	----	----	----	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.0001	mg/L	<0.0001	----	----	----	----	
EK040P: Fluoride by PC Titrator									
Fluoride	16984-48-8	0.1	mg/L	0.6	----	----	----	----	
EN055: Ionic Balance									

Sub-Matrix: WATER (Matrix: WATER)

Client sample ID

EMP4-SW16

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■■■■

1000

—

Client sampling date / time

28-OCT-2013 15:00

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1000

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Compound	CAS Number	LOR	Unit	ES1323112-017	----	----	----	----
EN055: Ionic Balance - Continued								
Total Anions	----	0.01	meq/L	6.24	----	----	----	----
Total Cations	----	0.01	meq/L	6.46	----	----	----	----
Ionic Balance	----	0.01	%	1.68	----	----	----	----
EP025: Oxygen - Dissolved (DO)								
Dissolved Oxygen	----	0.1	mg/L	9.4	----	----	----	----
EP066: Polychlorinated Biphenyls (PCB)								
Total Polychlorinated biphenyls	----	1	µg/L	<1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.5	µg/L	<0.5	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	----	----	----	----
beta-BHC	319-85-7	0.5	µg/L	<0.5	----	----	----	----
gamma-BHC	58-89-9	0.5	µg/L	<0.5	----	----	----	----
delta-BHC	319-86-8	0.5	µg/L	<0.5	----	----	----	----
Heptachlor	76-44-8	0.5	µg/L	<0.5	----	----	----	----
Aldrin	309-00-2	0.5	µg/L	<0.5	----	----	----	----
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	----	----	----	----
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	----	----	----	----
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	----	----	----	----
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	----	----	----	----
Dieldrin	60-57-1	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDE	72-55-9	0.5	µg/L	<0.5	----	----	----	----
Endrin	72-20-8	0.5	µg/L	<0.5	----	----	----	----
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDD	72-54-8	0.5	µg/L	<0.5	----	----	----	----
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	----	----	----	----
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	----	----	----	----
4,4'-DDT	50-29-3	2.0	µg/L	<2.0	----	----	----	----
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	----	----	----	----
Methoxychlor	72-43-5	2.0	µg/L	<2.0	----	----	----	----
^ Total Chlordane (sum)	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.5	µg/L	<0.5	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

				EMP4-SW16	----	----	----	----
				28-OCT-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1323112-017	----	----	----	----
EP068B: Organophosphorus Pesticides (OP) - Continued								
Dichlorvos	62-73-7	0.5	µg/L	<0.5	----	----	----	----
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	----	----	----	----
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	----	----	----	----
Dimethoate	60-51-5	0.5	µg/L	<0.5	----	----	----	----
Diazinon	333-41-5	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	----	----	----	----
Parathion-methyl	298-00-0	2.0	µg/L	<2.0	----	----	----	----
Malathion	121-75-5	0.5	µg/L	<0.5	----	----	----	----
Fenthion	55-38-9	0.5	µg/L	<0.5	----	----	----	----
Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	----	----	----	----
Parathion	56-38-2	2.0	µg/L	<2.0	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	----	----	----	----
Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	----	----	----	----
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	----	----	----	----
Fenamiphos	22224-92-6	0.5	µg/L	<0.5	----	----	----	----
Prothiofos	34643-46-4	0.5	µg/L	<0.5	----	----	----	----
Ethion	563-12-2	0.5	µg/L	<0.5	----	----	----	----
Carbophenothion	786-19-6	0.5	µg/L	<0.5	----	----	----	----
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	1.0	µg/L	<1.0	----	----	----	----
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	----	----	----	----
Acenaphthene	83-32-9	1.0	µg/L	<1.0	----	----	----	----
Fluorene	86-73-7	1.0	µg/L	<1.0	----	----	----	----
Phenanthrene	85-01-8	1.0	µg/L	<1.0	----	----	----	----
Anthracene	120-12-7	1.0	µg/L	<1.0	----	----	----	----
Fluoranthene	206-44-0	1.0	µg/L	<1.0	----	----	----	----
Pyrene	129-00-0	1.0	µg/L	<1.0	----	----	----	----
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	----	----	----	----
Chrysene	218-01-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	----	----	----	----
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	----	----	----	----



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

				EMP4-SW16	----	----	----	----
Client sampling date / time				28-OCT-2013 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1323112-017	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Dibenz(a,h)anthracene	53-70-3	1.0	µg/L	<1.0	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	1.0	µg/L	<1.0	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	µg/L	<0.5	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	µg/L	<0.5	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	20	µg/L	<20	----	----	----	----
C10 - C14 Fraction	----	50	µg/L	<50	----	----	----	----
C15 - C28 Fraction	----	100	µg/L	<100	----	----	----	----
C29 - C36 Fraction	----	50	µg/L	<50	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	µg/L	<50	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	20	µg/L	<20	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	20	µg/L	<20	----	----	----	----
>C10 - C16 Fraction	>C10_C16	100	µg/L	<100	----	----	----	----
>C16 - C34 Fraction	----	100	µg/L	<100	----	----	----	----
>C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	100	µg/L	<100	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	100	µg/L	<100	----	----	----	----
EP080: BTEXN								
Benzene	71-43-2	1	µg/L	<1	----	----	----	----
Toluene	108-88-3	2	µg/L	<2	----	----	----	----
Ethylbenzene	100-41-4	2	µg/L	<2	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	----	----	----	----
ortho-Xylene	95-47-6	2	µg/L	<2	----	----	----	----
^ Total Xylenes	1330-20-7	2	µg/L	<2	----	----	----	----
^ Sum of BTEX	----	1	µg/L	<1	----	----	----	----
Naphthalene	91-20-3	5	µg/L	<5	----	----	----	----
EP066S: PCB Surrogate								
Decachlorobiphenyl	2051-24-3	0.1	%	73.1	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	95.0	----	----	----	----



Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)

Client sample ID

				EMP4-SW16	----	----	----	----
				28-OCT-2013 15:00	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	ES1323112-017	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	74.8	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	34.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	68.8	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	62.0	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	61.0	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	75.7	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	72.1	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	82.4	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	86.2	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	86.7	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

<i>Method: Compound</i>	<i>Client sample ID - Client sampling date / time</i>	<i>Analytical Results</i>
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	EMP4 - SQ3 - 25-OCT-2013 15:00	Several pieces of bonded asbestos cement sheeting approx 35 x 30 x 5mm
EA200: Description	EMP4 - SF15 - 25-OCT-2013 15:00	Grey sandy soil with large quantity vegetation and small grey and brown rocks and coal pieces and one piece of bonded asbestos fibreboard 20 x 10 x 3mm



Surrogate Control Limits

Sub-Matrix: WATER		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP066S: PCB Surrogate			
Decachlorobiphenyl	2051-24-3	28.5	129
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	30	120
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	26.8	129
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	10.0	44
2-Chlorophenol-D4	93951-73-6	14	94
2,4,6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20	104
Anthracene-d10	1719-06-8	27.4	113
4-Terphenyl-d14	1718-51-0	32	112
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	71	137
Toluene-D8	2037-26-5	79	131
4-Bromofluorobenzene	460-00-4	70	128

QUALITY CONTROL REPORT

Work Order	: ES1323112	Page	: 1 of 11
Amendment	: 1		
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: MR STEVE CADMAN	Contact	: Client Services
Address	: PO BOX 560 NORTH SYDNEY NSW, AUSTRALIA 2060	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: scadman@environcorp.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 99548114	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: HYDRO BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: 155065,155066,155067	Date Samples Received	: 28-OCT-2013
Sampler	: SC	Issue Date	: 18-FEB-2014
Order number	: A5130348		
Quote number	: SY/285/10	No. of samples received	: 21
		No. of samples analysed	: 17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics
Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Peter Rennie	Asbestos Identifier	Newcastle - Asbestos
Wisam Marassa	Inorganics Coordinator	Sydney Inorganics



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Content (QC Lot: 3132134)									
ES1323112-002	EMP4 - SF2	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	<1.0	1.0	0.0	No Limit
ES1323112-015	EMP4 - QA1	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	3.4	2.5	30.0	No Limit
EK040S: Fluoride Soluble (QC Lot: 3131984)									
ES1323112-001	EMP4 - SF1	EK040S: Fluoride	16984-48-8	1	mg/kg	30	30	0.0	0% - 20%
ES1323112-010	EMP4 - SF10	EK040S: Fluoride	16984-48-8	1	mg/kg	1	<2	63.2	No Limit
Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA005: pH (QC Lot: 3132403)									
ES1323108-001	Anonymous	EA005: pH Value	----	0.01	pH Unit	5.22	5.25	0.6	0% - 20%
ES1323253-004	Anonymous	EA005: pH Value	----	0.01	pH Unit	6.13	6.13	0.0	0% - 20%
EA010P: Conductivity by PC Titrator (QC Lot: 3130813)									
ES1323108-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	175	178	1.9	0% - 20%
ES1323250-001	Anonymous	EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	248	248	0.0	0% - 20%
EA075: Redox Potential (QC Lot: 3130769)									
ES1323112-017	EMP4-SW16	EA075: Redox Potential	----	0.1	mV	205	207	0.9	0% - 20%
		EA075: pH Redox	----	0.01	pH Unit	7.0	7.0	0.0	0% - 20%
ED037P: Alkalinity by PC Titrator (QC Lot: 3130814)									
ES1323112-017	EMP4-SW16	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	62	63	0.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	62	63	0.0	0% - 20%
ES1323250-001	Anonymous	ED037-P: Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1	0.0	No Limit
		ED037-P: Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	2	1	0.0	No Limit
		ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	2	1	0.0	No Limit
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QC Lot: 3131175)									
ES1323112-017	EMP4-SW16	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	163	163	0.0	0% - 20%
ES1323194-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	95	96	1.1	0% - 20%
ED045G: Chloride Discrete analyser (QC Lot: 3131176)									
ES1323112-017	EMP4-SW16	ED045G: Chloride	16887-00-6	1	mg/L	57	64	11.9	0% - 20%
ES1323297-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	12	12	0.0	0% - 50%
ED093F: Dissolved Major Cations (QC Lot: 3131174)									
ES1323107-010	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	304	305	0.0	0% - 20%
		ED093F: Magnesium	7439-95-4	1	mg/L	354	354	0.0	0% - 20%



Sub-Matrix: WATER				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
ED093F: Dissolved Major Cations (QC Lot: 3131174) - continued									
ES1323107-010	Anonymous	ED093F: Sodium	7440-23-5	1	mg/L	810	813	0.3	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	32	32	0.0	0% - 20%
ES1323224-002	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	2	2	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	9	8	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.0	No Limit
EG020T: Total Metals by ICP-MS (QC Lot: 3131271)									
ES1323102-006	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.006	0.007	0.0	No Limit
ES1323235-001	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	0.0001	<0.0001	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	0.005	<0.001	132	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.041	0.038	6.8	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.002	84.8	No Limit
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.006	0.002	96.6	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.259	0.246	5.1	0% - 20%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3130434)									
ES1323108-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
ES1323253-009	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EK040P: Fluoride by PC Titrator (QC Lot: 3130815)									
ES1323112-017	EMP4-SW16	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.6	0.6	0.0	No Limit
ES1323253-008	Anonymous	EK040P: Fluoride	16984-48-8	0.1	mg/L	0.2	0.2	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3132578)									
ES1323162-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
ES1323328-001	Anonymous	EP080: C6 - C9 Fraction	----	20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3132578)									
ES1323162-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
ES1323328-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC Lot: 3132578)									
ES1323162-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	0.0	No Limit

Page : 5 of 11
 Work Order : ES1323112 Amendment 1
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE



Sub-Matrix: **WATER**

				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3132578) - continued									
ES1323162-001	Anonymous	EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	25	23	6.1	No Limit
ES1323328-001	Anonymous	EP080: Benzene	71-43-2	1	µg/L	<1	<1	0.0	No Limit
		EP080: Toluene	108-88-3	2	µg/L	<2	<2	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	2	µg/L	<2	<2	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	<2	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	2	µg/L	<2	<2	0.0	No Limit
		EP080: Naphthalene	91-20-3	5	µg/L	<5	<5	0.0	No Limit



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

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

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EK040S: Fluoride Soluble (QCLot: 3131984)								
EK040S: Fluoride	16984-48-8	1.0	mg/kg	<1	25.0 mg/kg	108	69	117
Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
Method: Compound	CAS Number	LOR	Unit	Result				
EA010P: Conductivity by PC Titrator (QCLot: 3130813)								
EA010-P: Electrical Conductivity @ 25°C	----	1	µS/cm	<1	2000 µS/cm	109	95	113
EA075: Redox Potential (QCLot: 3130769)								
EA075: Redox Potential	----	0.1	mV	----	86 mV	110	95	112
ED037P: Alkalinity by PC Titrator (QCLot: 3130814)								
ED037-P: Total Alkalinity as CaCO3	----	1	mg/L	----	200 mg/L	105	81	111
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3131175)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	101	86	122
ED045G: Chloride Discrete analyser (QCLot: 3131176)								
ED045G: Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	99.6	77	123
ED093F: Dissolved Major Cations (QCLot: 3131174)								
ED093F: Calcium	7440-70-2	1	mg/L	<1	50 mg/L	104	87	113
ED093F: Magnesium	7439-95-4	1	mg/L	<1	50 mg/L	101	89	113
ED093F: Sodium	7440-23-5	1	mg/L	<1	50 mg/L	108	79	113
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	104	87	115
EG020T: Total Metals by ICP-MS (QCLot: 3131271)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	95.2	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	90.4	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	103	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	101	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	101	85	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	102	83	117
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	85.0	76	118
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130434)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	97.8	77	115
EK040P: Fluoride by PC Titrator (QCLot: 3130815)								
EK040P: Fluoride	16984-48-8	0.1	mg/L	<0.1	5.0 mg/L	104	75	119
EP066: Polychlorinated Biphenyls (PCB) (QCLot: 3131140)								
EP066: Total Polychlorinated biphenyls	----	1	µg/L	<1	10 µg/L	79.0	61.6	107



Sub-Matrix: **WATER**

Method: Compound				Method Blank (MB) Report Result	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
						LCS	Low	High
CAS Number	LOR	Unit						
EP068A: Organochlorine Pesticides (OC) (QCLot: 3131139)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 µg/L	97.3	65	107
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	94.0	51	119
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	94.5	63	113
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	102	62	112
EP068: delta-BHC	319-86-8	0.5	µg/L	<0.5	5 µg/L	95.1	60	106
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	93.2	58	108
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	105	58	114
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	102	59	111
EP068: trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	5 µg/L	100	62	114
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	102	64	114
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	99.8	62	114
EP068: Dieldrin	60-57-1	0.5	µg/L	<0.5	5 µg/L	99.4	59	111
EP068: 4,4'-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	94.2	63	111
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	106	61	119
EP068: beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	5 µg/L	108	71	119
EP068: 4,4'-DDD	72-54-8	0.5	µg/L	<0.5	5 µg/L	111	70	118
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	81.5	62	112
EP068: Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	5 µg/L	103	53	113
EP068: 4,4'-DDT	50-29-3	2.0	µg/L	<2.0	5 µg/L	89.7	52	120
EP068: Endrin ketone	53494-70-5	0.5	µg/L	<0.5	5 µg/L	108	51	117
EP068: Methoxychlor	72-43-5	2.0	µg/L	<2.0	5 µg/L	99.7	53	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3131139)								
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	91.2	52	122
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	85.2	51	123
EP068: Monocrotophos	6923-22-4	0.5	µg/L	----	5 µg/L	35.8	10	89.1
		2.0	µg/L	<2.0	----	----	----	----
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	102	61	119
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	93.8	67	113
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	95.3	60	116
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2.0	5 µg/L	91.0	64	120
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	107	67	115
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	96.5	64	110
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	99.5	63	109
EP068: Parathion	56-38-2	2.0	µg/L	<2.0	5 µg/L	86.2	63	121
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	96.8	60	110
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	109	68	114
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	104	61	109
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	102	63	117
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	101	63	111



Sub-Matrix: **WATER**

				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3131139) - continued								
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	103	65	115
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	105	55	115
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 µg/L	75.8	44	124
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3131138)								
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L	----	5 µg/L	64.8	58.6	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L	----	5 µg/L	75.2	63.6	114
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L	----	5 µg/L	68.5	62.2	113
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluorene	86-73-7	0.2	µg/L	----	5 µg/L	76.8	63.9	115
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L	----	5 µg/L	74.7	62.6	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Anthracene	120-12-7	0.2	µg/L	----	5 µg/L	76.4	64.3	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Fluoranthene	206-44-0	0.2	µg/L	----	5 µg/L	77.8	63.6	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Pyrene	129-00-0	0.2	µg/L	----	5 µg/L	76.6	63.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L	----	5 µg/L	71.7	64.1	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Chrysene	218-01-9	0.2	µg/L	----	5 µg/L	74.1	62.5	116
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L	----	5 µg/L	69.6	61.7	119
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L	----	5 µg/L	85.4	61.7	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L	----	5 µg/L	74.8	63.3	117
		0.5	µg/L	<0.5	----	----	----	----
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L	----	5 µg/L	76.5	59.9	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.2	µg/L	----	5 µg/L	77.3	61.2	117
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.2	µg/L	----	5 µg/L	74.0	59.1	118
		1	µg/L	<1.0	----	----	----	----
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	1	µg/L	<1.0	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3131141)								
EP071: C10 - C14 Fraction	----	50	µg/L	<50	2000 µg/L	101	59	129
EP071: C15 - C28 Fraction	----	100	µg/L	<100	3000 µg/L	97.8	71	131

Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%)	Recovery Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result		LCS	Low	High
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3131141) - continued								
EP071: C29 - C36 Fraction	----	50	µg/L	<50	2000 µg/L	95.4	62	120
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3132578)								
EP080: C6 - C9 Fraction	----	20	µg/L	<20	260 µg/L	104	75	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3131141)								
EP071: >C10 - C16 Fraction	>C10_C16	100	µg/L	<100	2500 µg/L	98.0	58.9	131
EP071: >C16 - C34 Fraction	----	100	µg/L	<100	3500 µg/L	102	73.9	138
EP071: >C34 - C40 Fraction	----	100	µg/L	<100	----	----	----	----
		50	µg/L	----	1500 µg/L	98.3	67	127
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3132578)								
EP080: C6 - C10 Fraction	C6_C10	20	µg/L	<20	310 µg/L	107	75	127
EP080: BTEXN (QCLot: 3132578)								
EP080: Benzene	71-43-2	1	µg/L	<1	10 µg/L	96.4	70	124
EP080: Toluene	108-88-3	2	µg/L	<2	10 µg/L	103	65	129
EP080: Ethylbenzene	100-41-4	2	µg/L	<2	10 µg/L	98.0	70	120
EP080: meta- & para-Xylene	108-38-3	2	µg/L	<2	10 µg/L	106	69	121
	106-42-3							
EP080: ortho-Xylene	95-47-6	2	µg/L	<2	10 µg/L	110	72	122
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	98.2	70	124

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EK040S: Fluoride Soluble (QCLot: 3131984)							
ES1323112-001	EMP4 - SF1	EK040S: Fluoride	16984-48-8	250 mg/kg	108	70	130

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3131175)							
ES1323112-017	EMP4-SW16	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	70	130
ED045G: Chloride Discrete analyser (QCLot: 3131176)							
ES1323112-017	EMP4-SW16	ED045G: Chloride	16887-00-6	250 mg/L	102	70	130
EG020T: Total Metals by ICP-MS (QCLot: 3131271)							

Page : 10 of 11
 Work Order : ES1323112 Amendment 1
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 3131271) - continued							
ES1323104-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	70	130
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	102	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.2	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	114	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	98.5	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	108	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130434)							
ES1323112-017	EMP4-SW16	EG035T: Mercury	7439-97-6	0.010 mg/L	84.4	70	130
EK040P: Fluoride by PC Titrator (QCLot: 3130815)							
ES1323112-017	EMP4-SW16	EK040P: Fluoride	16984-48-8	5.0 mg/L	110	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3132578)							
ES1323162-003	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	116	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3132578)							
ES1323162-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	70	130
EP080: BTEXN (QCLot: 3132578)							
ES1323162-003	Anonymous	EP080: Benzene	71-43-2	25 µg/L	77.9	70	130
		EP080: Toluene	108-88-3	25 µg/L	98.9	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.5	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	106	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	25 µg/L	103	70	130
		EP080: Naphthalene	91-20-3	25 µg/L	95.9	70	130

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: **SOIL**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value Control Limit
EK040S: Fluoride Soluble (QCLot: 3131984)									
ES1323112-001	EMP4 - SF1	EK040S: Fluoride	16984-48-8	250 mg/kg	108	----	70	130	----

Sub-Matrix: **WATER**

				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report					
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value Control Limit

Page : 11 of 11
 Work Order : ES1323112 Amendment 1
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE



Sub-Matrix: **WATER**

Sub-Matrix: WATER				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3130434)										
ES1323112-017	EMP4-SW16	EG035T: Mercury	7439-97-6	0.010 mg/L	84.4	----	70	130	----	----
EK040P: Fluoride by PC Titrator (QCLot: 3130815)										
ES1323112-017	EMP4-SW16	EK040P: Fluoride	16984-48-8	5.0 mg/L	110	----	70	130	----	----
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (QCLot: 3131175)										
ES1323112-017	EMP4-SW16	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	# Not Determined	----	70	130	----	----
ED045G: Chloride Discrete analyser (QCLot: 3131176)										
ES1323112-017	EMP4-SW16	ED045G: Chloride	16887-00-6	250 mg/L	102	----	70	130	----	----
EG020T: Total Metals by ICP-MS (QCLot: 3131271)										
ES1323104-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	110	----	70	130	----	----
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	102	----	70	130	----	----
		EG020A-T: Chromium	7440-47-3	1 mg/L	93.2	----	70	130	----	----
		EG020A-T: Copper	7440-50-8	1 mg/L	114	----	70	130	----	----
		EG020A-T: Lead	7439-92-1	1 mg/L	98.5	----	70	130	----	----
		EG020A-T: Nickel	7440-02-0	1 mg/L	95.0	----	70	130	----	----
		EG020A-T: Zinc	7440-66-6	1 mg/L	108	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3132578)										
ES1323162-003	Anonymous	EP080: C6 - C9 Fraction	----	325 µg/L	116	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3132578)										
ES1323162-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	375 µg/L	116	----	70	130	----	----
EP080: BTEXN (QCLot: 3132578)										
ES1323162-003	Anonymous	EP080: Benzene	71-43-2	25 µg/L	77.9	----	70	130	----	----
		EP080: Toluene	108-88-3	25 µg/L	98.9	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	25 µg/L	98.5	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	106	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	103	----	70	130	----	----
	EP080: Naphthalene	91-20-3	25 µg/L	95.9	----	70	130	----	----	

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1323112	Page	: 1 of 9
Amendment	: 1		
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
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Project	: HYDRO BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: 155065,155066,155067	Date Samples Received	: 28-OCT-2013
Sampler	: SC	Issue Date	: 18-FEB-2014
Order number	: A5130348		
Quote number	: SY/285/10	No. of samples received	: 21
		No. of samples analysed	: 17

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content								
Pulp Bag (EA055-103) EMP4 - SF1, EMP4 - SF3,	EMP4 - SF2, EMP4 - QA1	23-OCT-2013	----	----	----	30-OCT-2013	06-NOV-2013	✓
Pulp Bag (EA055-103) EMP4 - SF4, EMP4 - SF6, EMP4 - SF8,	EMP4 - SF5, EMP4 - SF7, EMP4 - SF9	24-OCT-2013	----	----	----	30-OCT-2013	07-NOV-2013	✓
Pulp Bag (EA055-103) EMP4 - SF10, EMP4 - SF12,	EMP4 - SF11, EMP4 - QA2	25-OCT-2013	----	----	----	30-OCT-2013	08-NOV-2013	✓
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200) EMP4 - SF15,	EMP4 - SQ3	25-OCT-2013	---	23-APR-2014	----	04-NOV-2013	03-MAY-2014	✓
EK040S: Fluoride Soluble								
Pulp Bag (EK040S) EMP4 - SF1, EMP4 - SF3,	EMP4 - SF2, EMP4 - QA1	23-OCT-2013	30-OCT-2013	30-OCT-2013	✓	01-NOV-2013	27-NOV-2013	✓
Pulp Bag (EK040S) EMP4 - SF4, EMP4 - SF6, EMP4 - SF8,	EMP4 - SF5, EMP4 - SF7, EMP4 - SF9	24-OCT-2013	30-OCT-2013	31-OCT-2013	✓	01-NOV-2013	27-NOV-2013	✓
Pulp Bag (EK040S) EMP4 - SF10, EMP4 - SF12,	EMP4 - SF11, EMP4 - QA2	25-OCT-2013	30-OCT-2013	01-NOV-2013	✓	01-NOV-2013	27-NOV-2013	✓

Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA005: pH							
Clear Plastic Bottle - Natural (EA005) EMP4-SW16	28-OCT-2013	----	----	----	28-OCT-2013	28-OCT-2013	✓



Matrix: **WATER**

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

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA010P: Conductivity by PC Titrator							
Clear Plastic Bottle - Natural (EA010-P) EMP4-SW16	28-OCT-2013	---	25-NOV-2013	----	30-OCT-2013	25-NOV-2013	✓
EA075: Redox Potential							
Clear Plastic Bottle - Natural (EA075) EMP4-SW16	28-OCT-2013	----	----	----	29-OCT-2013	28-OCT-2013	✗
ED037P: Alkalinity by PC Titrator							
Clear Plastic Bottle - Natural (ED037-P) EMP4-SW16	28-OCT-2013	---	11-NOV-2013	----	30-OCT-2013	11-NOV-2013	✓
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA							
Clear Plastic Bottle - Natural (ED041G) EMP4-SW16	28-OCT-2013	---	25-NOV-2013	----	29-OCT-2013	25-NOV-2013	✓
ED045G: Chloride Discrete analyser							
Clear Plastic Bottle - Natural (ED045G) EMP4-SW16	28-OCT-2013	---	25-NOV-2013	----	29-OCT-2013	25-NOV-2013	✓
ED093F: Dissolved Major Cations							
Clear Plastic Bottle - Natural (ED093F) EMP4-SW16	28-OCT-2013	---	04-NOV-2013	----	29-OCT-2013	04-NOV-2013	✓
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG020A-T) EMP4-SW16	28-OCT-2013	29-OCT-2013	26-APR-2014	✓	30-OCT-2013	26-APR-2014	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unspecified (EG035T) EMP4-SW16	28-OCT-2013	----	----	----	29-OCT-2013	25-NOV-2013	✓
EK040P: Fluoride by PC Titrator							
Clear Plastic Bottle - Natural (EK040P) EMP4-SW16	28-OCT-2013	---	25-NOV-2013	----	30-OCT-2013	25-NOV-2013	✓
EP025: Oxygen - Dissolved (DO)							
Clear Plastic Bottle - Natural (EP025) EMP4-SW16	28-OCT-2013	----	----	----	29-OCT-2013	28-OCT-2013	✗
EP066: Polychlorinated Biphenyls (PCB)							
Amber Glass Bottle - Unpreserved (EP066) EMP4-SW16	28-OCT-2013	30-OCT-2013	04-NOV-2013	✓	30-OCT-2013	09-DEC-2013	✓
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) EMP4-SW16	28-OCT-2013	30-OCT-2013	04-NOV-2013	✓	30-OCT-2013	09-DEC-2013	✓
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) EMP4-SW16	28-OCT-2013	30-OCT-2013	04-NOV-2013	✓	30-OCT-2013	09-DEC-2013	✓
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) EMP4-SW16	28-OCT-2013	30-OCT-2013	04-NOV-2013	✓	30-OCT-2013	09-DEC-2013	✓

Page : 4 of 9
 Work Order : ES1323112 Amendment 1
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE



Matrix: **WATER**

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) EMP4-SW16	28-OCT-2013	30-OCT-2013	04-NOV-2013	✓	30-OCT-2013	09-DEC-2013	✓
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) EMP4-SW16	28-OCT-2013	31-OCT-2013	11-NOV-2013	✓	31-OCT-2013	11-NOV-2013	✓
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013							
Amber VOC Vial - Sulfuric Acid (EP080) EMP4-SW16	28-OCT-2013	31-OCT-2013	11-NOV-2013	✓	31-OCT-2013	11-NOV-2013	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Fluoride - Soluble	EK040S	2	14	14.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Fluoride - Soluble	EK040S	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Fluoride - Soluble	EK040S	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Fluoride - Soluble	EK040S	1	14	7.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Matrix: **WATER**

Evaluation: * = Quality Control frequency not within specification ; ✓ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Alkalinity by PC Titrator	ED037-P	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator	EA010-P	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	2	10	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH	EA005	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Redox Potential	EA075	1	1	100.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	11	18.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Alkalinity by PC Titrator	ED037-P	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator	EA010-P	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Redox Potential	EA075	3	1	300.0	15.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Matrix: **WATER** Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Chloride by Discrete Analyser	ED045G	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Conductivity by PC Titrator	EA010-P	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Polychlorinated Biphenyls (PCB)	EP066	1	1	100.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Chloride by Discrete Analyser	ED045G	1	16	6.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Fluoride by PC Titrator	EK040P	1	10	10.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Asbestos - Quantitative Analysis	* EA200Q	SOIL	Asbestos Materials Content with Confirmation of Identification by AS 4964 - 2004 Asbestos
Fluoride - Soluble	EK040S	SOIL	APHA 21st ed., 4500 F--C Soluble Fluoride is determined after a 1:5 soil/water extract using an ion selective electrode.
pH	EA005	WATER	APHA 21st ed. 4500 H+ B. pH of water samples is determined by ISE either manually or by automated pH meter. This method is compliant with NEPM (2013) Schedule B(3)
Conductivity by PC Titrator	EA010-P	WATER	APHA 21st ed., 2510 B This procedure determines conductivity by automated ISE. This method is compliant with NEPM (2013) Schedule B(3)
Redox Potential	EA075	WATER	In House (Ion selective electrode)
Alkalinity by PC Titrator	ED037-P	WATER	APHA 21st ed., 2320 B This procedure determines alkalinity by automated measurement (e.g. PC Titrate) using pH 4.5 for indicating the total alkalinity end-point. This method is compliant with NEPM (2013) Schedule B(3)
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	WATER	APHA 21st ed., 4500-SO4 Dissolved sulfate is determined in a 0.45um filtered sample. Sulfate ions are converted to a barium sulfate suspension in an acetic acid medium with barium chloride. Light absorbance of the BaSO4 suspension is measured by a photometer and the SO4-2 concentration is determined by comparison of the reading with a standard curve. This method is compliant with NEPM (2013) Schedule B(3)
Chloride by Discrete Analyser	ED045G	WATER	APHA 21st ed., 4500 Cl - G. The thiocyanate ion is liberated from mercuric thiocyanate through sequestration of mercury by the chloride ion to form non-ionised mercuric chloride. In the presence of ferric ions the liberated thiocyanate forms highly-coloured ferric thiocyanate which is measured at 480 nm APHA 21st edition seal method 2 017-1-L april 2003
Major Cations - Dissolved	ED093F	WATER	Major Cations is determined based on APHA 21st ed., 3120; USEPA SW 846 - 6010 The ICPAES technique ionises the 0.45um filtered sample atoms emitting a characteristic spectrum. This spectrum is then compared against matrix matched standards for quantification. This method is compliant with NEPM (2013) Schedule B(3) Sodium Adsorption Ratio is calculated from Ca, Mg and Na which determined by ALS in house method QWI-EN/ED093F. This method is compliant with NEPM (2013) Schedule B(3) Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (2013) Schedule B(3)
Total Metals by ICP-MS - Suite A	EG020A-T	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): The ICPMS technique utilizes a highly efficient argon plasma to ionize selected elements. Ions are then passed into a high vacuum mass spectrometer, which separates the analytes based on their distinct mass to charge ratios prior to their measurement by a discrete dynode ion detector.



Analytical Methods	Method	Matrix	Method Descriptions
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the unfiltered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Fluoride by PC Titrator	EK040P	WATER	APHA 21st ed., 4500 F--C CDTA is added to the sample to provide a uniform ionic strength background, adjust pH, and break up complexes. Fluoride concentration is determined by either manual or automatic ISE measurement. This method is compliant with NEPM (2013) Schedule B(3)
Ionic Balance by PCT DA and Turbi SO4 DA	EN055 - PG	WATER	APHA 21st Ed. 1030F. The Ionic Balance is calculated based on the major Anions and Cations. The major anions include Alkalinity, Chloride and Sulfate which determined by PCT and DA. The Cations are determined by Turbi SO4 by DA. This method is compliant with NEPM (2013) Schedule B(3)
Oxygen - Dissolved	EP025	WATER	APHA 21st ed., 4500-O G. Dissolved Oxygen Probe. This method is compliant with NEPM (2013) Schedule B(3)
Polychlorinated Biphenyls (PCB)	EP066	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH - Semivolatile Fraction	EP071	WATER	USEPA SW 846 - 8015A The sample extract is analysed by Capillary GC/FID and quantification is by comparison against an established 5 point calibration curve of n-Alkane standards. This method is compliant with NEPM (2013) Schedule B(3)
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	WATER	USEPA SW 846 - 8270D Sample extracts are analysed by Capillary GC/MS in SIM Mode and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
TPH Volatiles/BTEX	EP080	WATER	USEPA SW 846 - 8260B Water samples are directly purged prior to analysis by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. Alternatively, a sample is equilibrated in a headspace vial and a portion of the headspace determined by GCMS analysis. This method is compliant with NEPM (2013) Schedule B(3)

Preparation Methods	Method	Matrix	Method Descriptions
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.
Digestion for Total Recoverable Metals	EN25	WATER	USEPA SW846-3005 Method 3005 is a Nitric/Hydrochloric acid digestion procedure used to prepare surface and ground water samples for analysis by ICPAES or ICPMS. This method is compliant with NEPM (2013) Schedule B(3)
Separatory Funnel Extraction of Liquids	ORG14	WATER	USEPA SW 846 - 3510B 100 mL to 1L of sample is transferred to a separatory funnel and serially extracted three times using 60mL DCM for each extract. The resultant extracts are combined, dehydrated and concentrated for analysis. This method is compliant with NEPM (2013) Schedule B(3) . ALS default excludes sediment which may be resident in the container.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **WATER**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA	ES1323112-017	EMP4-SW16	Sulfate as SO4 - Turbidimetric	14808-79-8	Not Determined	----	MS recovery not determined, background level greater than or equal to 4x spike level.

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

Matrix: **WATER**

Method	Extraction / Preparation			Analysis		
	Date extracted	Due for extraction	Days overdue	Date analysed	Due for analysis	Days overdue
EA075: Redox Potential						
Clear Plastic Bottle - Natural EMP4-SW16	----	----	----	29-OCT-2013	28-OCT-2013	1
EP025: Oxygen - Dissolved (DO)						
Clear Plastic Bottle - Natural EMP4-SW16	----	----	----	29-OCT-2013	28-OCT-2013	1

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

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Ph: 03 8514 9500 E: samples@chainofcustody.com.au

Perth: 10 Hordley Rd, Ingleby WA 6050
Ph: 08 9209 7655 E: samples@chainofcustody.com.au

CLIENT: Environ Australia P/L

OFFICE: 19B, Socklebe Rd, The Junction

PROJECT: Hydro Barter Zone

PURCHASE ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: SC CONTACT PH: 49625444

COC emailed to ALS? (YES) EDD FORMAT (or default): SC

Email Reports to (will default to PM if no other addresses are listed): Steve Cadman

Email Invoice to (will default to PM if no other addresses are listed): -

COMMENTS: SPECIAL HANDLING/STORAGE OR DISPOSAL: → scadman@envirocorp.com

PH CDN + Asbestos @ CDN

TURNAROUND REQUIREMENTS:
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:

Standard TAT (List due date):
☐ Standard
☐ Non Standard or urgent TAT

COC SEQUENCE NUMBER (Circle):
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

RELINQUISHED BY: SC DATE/TIME: 28/10/13 17:00

RECEIVED BY: Ravish DATE/TIME: 28/10/13 19:20

FOR LABORATORY USE ONLY (Circle):
Custody Seal Intact? Yes No
Free ice / frozen ice blocks present upon receipt? Yes No
Random Sample Temperature on Receipt: °C
Other comment:

ALS USE	SAMPLE DETAILS MATRIX - SOLID (S), WATER (W)		CONTAINER INFORMATION		ANALYSIS REQUIRED (including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required)).	Additional Information
LAB ID	SAMPLE ID	DATE/TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	
1	EMPL4-SF1	23/10/13	S	Rulp Bag	1	Environmental Division Sydney Work Order ES1323112  Telephone : +61-2-8784 8555
2	SF2	"	S	" "	1	
3	SF3	"	S	" "	1	
4	SF4	24/10/13	S	" "	1	
5	SF5	"	S	" "	1	
6	SF6	"	S	" "	1	
7	SF7	"	S	" "	1	
8	SF8	"	S	" "	1	
9	SF9	"	S	" "	1	
10	SF10	25/10/13	S	" "	1	
11	SF11	"	S	" "	1	
12	SF12	"	S	" "	1	
TOTAL					12	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; ST = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved Plastic; AP = Airtight Unpreserved Plastic; V = VOA Vial ICI Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; VV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speculation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

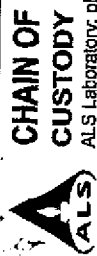
#14/13, 18-21 - ziplock bag not recd in gdn: check with ENV. Page 1 of 2

155065

Environmental Division
Sydney
Work Order
ES1323112



Telephone : + 61-2-8784 8555



CHAIN OF CUSTODY

Sydney: 277 Woodpark Rd, Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsenviro.com

Newcastle: 5 Rossington Rd, Warneck NSW 2294
Ph: 02 4964 9433 E: samples.newcastle@alsenviro.com

Brisbane: 32 Strand St, Stinson QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com

Townsville: 14-18 Deanna Ct, Seale QLD 4818
Ph: 07 4798 0600 E: samples.townsville@alsenviro.com

Melbourne: 2-4 Wattle Rd, Springvale VIC 3171
Ph: 03 8543 8600 E: samples.melbourne@alsenviro.com

Adelaide: 211 Burma Rd, Pooraka SA 5095
Ph: 08 8339 0899 E: samples.adelaide@alsenviro.com

Perth: 10 Hind Way, Malaga WA 6090
Ph: 08 9209 7895 E: samples.perth@alsenviro.com

Launceston: 27 Wellington St, Launceston TAS 7250
Ph: 03 6331 2148 E: samples.launceston@alsenviro.com

CLIENT: Environ Australia P/L

OFFICE: 1117, 50 Globe Rd, The Junction NSW 2231

PROJECT: HYDRO BUFFER ZONE

PURCHASE ORDER NUMBER: ASB0348

PROJECT MANAGER: Steve Cadman

SAMPLER: SC

COG emailed to ALS? (YES / NO) YES EDD FORMAT (or default): ASB0348

Email Reports to (will default to PM if no other addresses are listed): Steve Cadman

Email Invoice to (will default to PM if no other addresses are listed): Steve Cadman

COMMENTS/ SPECIAL HANDLING/STORAGE OR DISPOSAL: scadman@environcorp.com

TURNAROUND REQUIREMENTS:
(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.: 49625444

CONTACT PH: 0423 583 538

SAMPLER MOBILE: 0423 583 538

RECEIVED BY: SC

DATE/TIME: 28/10/13

RELINQUISHED BY: SC

DATE/TIME: 28/10/13

RECEIVED BY: Kain

DATE/TIME: 28/10/13 19:20

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

ALS USE	SAMPLE DETAILS MATRIX - SOLID (S), WATER (W)		CONTAINER INFORMATION			ANALYSIS REQUIRED INCLUDING SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).				Additional Information
LAB ID	SAMPLE ID	DATE/TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL CONTAINERS	Soluble Fluoride	Asbestos in Soil	EA200N Asbestos ID		Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
18	EMP4 - S14	25/10/13	S	Ziplock	1					Hold
13	" - S15	"	S	"	1		✓			Soil
19	" - Q1	"		Ziplock	1					Soil
20	" - Q2	"		"	1					Bulk Sol'd
14	" - Q3	"		"	1			✓		Bulk Sol'd
15	" - QA1	23/10/13	S	Pulp Bag	1	✓				Bulk Sol'd
16	" - QA2	25/11	S	"	1	✓				Bulk Sol'd
~~17 " - SW16 28/10/13 W 1000g/2000g container~~										
21	" - S13	25/10/13	S	Red Ziplock	1					Soil
TOTAL										

Winter Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SR = Sodium Hydroxide Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Solids; B = Unpreserved Bag.

155066

CERTIFICATE OF ANALYSIS

Work Order	: ES1405849	Page	: 1 of 39
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: STEVE CADMAN	Contact	: Client Services
Address	: Eastpoint Complex Suite 19B, Level 2 50 Glebe Road PO Box 435 The Junction NSW 2291	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: scadman@environcorp.com	E-mail	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: HYDRO BUFFER ZONE INVESTIGATION	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: AS130348	Date Samples Received	: 20-MAR-2014
C-O-C number	: ----	Issue Date	: 31-MAR-2014
Sampler	: KW/SC	No. of samples received	: 39
Site	: ----	No. of samples analysed	: 36
Quote number	: SY/433/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results
- Surrogate Control Limits



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 ^ = This result is computed from individual analyte detections at or above the level of reporting

- ALS is not NATA accredited for the analysis of Bifenthrin in soils when performed under ALS Method EP068D
- EA200 Legend
- EA200 'Am' Amosite (brown asbestos)
- EA200 'Ch' Chrysotile (white asbestos)
- EA200 'Cr' Crocidolite (blue asbestos)
- EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres
- EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.
- EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.
- EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.
- EA200Q: ALS laboratory procedures and methods used for the identification and quantitation of asbestos are consistent with AS4964-2004 and the requirements of the 2013 NEPM for Assessment of Site Contamination
- EA200Q: Asbestos weights and percentages are not covered under the Scope of NATA Accreditation.
 Weights of Asbestos are based on extracted bulk asbestos, fibre bundles, and/or ACM and do not include respirable fibres (if present).
 Percentages for Asbestos content in ACM are based on the 2013 NEPM default values. All numerical results under this method are approximate and should be used as a guide only.
- EA200Q: FA+AF (<7mm) in sample ES1405549-004 was detected at levels in excess 0.001%, however the LOR was raised due to the small sample size submitted.
- EG005: Poor precision was obtained for Zinc on sample ES1405849 - 1. Results have been confirmed by re-extraction and reanalysis.



NATA Accredited Laboratory 825

Accredited for compliance with
 ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Di-An Dao		Sydney Inorganics
Edwandy Fadjjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3
				Client sampling date / time	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-001	ES1405849-002	ES1405849-003	ES1405849-004	ES1405849-005	
EA002 : pH (Soils)									
pH Value	----	0.1	pH Unit	----	----	6.1	----	----	
EA055: Moisture Content									
Moisture Content (dried @ 103°C)	----	1.0	%	5.6	9.4	6.9	6.5	17.3	
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	Yes	Yes	
Asbestos Type	1332-21-4	-	--	-	-	-	Ch	Ch + Am	
Sample weight (dry)	----	0.01	g	44.4	43.8	37.9	47.4	38.1	
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	
EA200Q: Asbestos Quantification (non-NATA)									
Weight Used for % Calculation	----	0.0001	kg	----	----	----	0.0474	0.0381	
Asbestos Containing Material	1332-21-4	0.1	g	----	----	----	<0.1	<0.1	
Fibrous Asbestos	----	0.002	g	----	----	----	<0.002	0.002	
Asbestos Containing Material (as 15% Asbestos in ACM >7mm)	1332-21-4	0.01	%	----	----	----	<0.03	<0.04	
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%	----	----	----	<0.004	0.005	
Trace Asbestos Detected	----	5	Fibres	----	----	----	No	No	
ED008: Exchangeable Cations									
Exchangeable Calcium	----	0.1	meq/100g	----	----	3.5	----	----	
Exchangeable Magnesium	----	0.1	meq/100g	----	----	1.2	----	----	
Exchangeable Potassium	----	0.1	meq/100g	----	----	0.3	----	----	
Exchangeable Sodium	----	0.1	meq/100g	----	----	<0.1	----	----	
Cation Exchange Capacity	----	0.1	meq/100g	----	----	5.0	----	----	
EG005T: Total Metals by ICP-AES									
Arsenic	7440-38-2	5	mg/kg	<5	<5	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	2	
Chromium	7440-47-3	2	mg/kg	5	6	6	5	8	
Copper	7440-50-8	5	mg/kg	12	11	10	54	17	
Lead	7439-92-1	5	mg/kg	8	12	51	156	73	
Nickel	7440-02-0	2	mg/kg	12	7	8	6	12	
Zinc	7440-66-6	5	mg/kg	192	121	190	199	218	
EG035T: Total Recoverable Mercury by FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1	
EP004: Organic Matter									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3
				17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-001	ES1405849-002	ES1405849-003	ES1405849-004	ES1405849-005
EP004: Organic Matter - Continued								
Organic Matter	----	0.5	%	----	----	3.2	----	----
Total Organic Carbon	----	0.5	%	----	----	1.8	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3
				17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-001	ES1405849-002	ES1405849-003	ES1405849-004	ES1405849-005
EP068B: Organophosphorus Pesticides (OP) - Continued								
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3
				17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-001	ES1405849-002	ES1405849-003	ES1405849-004	ES1405849-005
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	120	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	120	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	89.8	85.8	89.0	76.0	85.9
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	98.4	91.5	85.2	88.1	89.9
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	104	95.4	94.2	99.0	92.2
2-Chlorophenol-D4	93951-73-6	0.1	%	110	101	103	101	95.9



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 422 TP1 0-0.5	P4 LOT 422 TP2 0-0.4	P4 LOT 422 TP3 0-0.3	P4 LOT 422 TP4 0-0.3	P4 LOT 422 TP5 0-0.3
				17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00	17-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-001	ES1405849-002	ES1405849-003	ES1405849-004	ES1405849-005
EP075(SIM)S: Phenolic Compound Surrogates - Continued								
2,4,6-Tribromophenol	118-79-6	0.1	%	108	108	112	117	118
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	104	97.2	100	112	92.4
Anthracene-d10	1719-06-8	0.1	%	103	96.5	98.7	101	102
4-Terphenyl-d14	1718-51-0	0.1	%	107	101	103	105	106
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	79.7	96.2	92.0	81.2	90.1
Toluene-D8	2037-26-5	0.1	%	79.0	79.7	88.9	84.7	84.8
4-Bromofluorobenzene	460-00-4	0.1	%	80.9	93.0	95.8	89.9	93.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P15 TP1 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-006	ES1405849-007	ES1405849-008	ES1405849-009	ES1405849-010
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	8.0	----	5.2
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	9.5	5.0	7.4	5.9	13.0
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	42.9	47.5	47.4	48.8	41.6
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	2.0	----	4.8
Exchangeable Magnesium	----	0.1	meq/100g	----	----	2.4	----	2.5
Exchangeable Potassium	----	0.1	meq/100g	----	----	<0.1	----	0.3
Exchangeable Sodium	----	0.1	meq/100g	----	----	0.7	----	0.1
Cation Exchange Capacity	----	0.1	meq/100g	----	----	5.1	----	7.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	6	<5	6	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	7	8	9	7	19
Copper	7440-50-8	5	mg/kg	5	6	<5	8	<5
Lead	7439-92-1	5	mg/kg	8	8	9	10	16
Nickel	7440-02-0	2	mg/kg	6	8	11	8	<2
Zinc	7440-66-6	5	mg/kg	19	25	29	45	20
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	<0.5	----	<0.5
Total Organic Carbon	----	0.5	%	----	----	<0.5	----	<0.5
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P15 TP1 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-006	ES1405849-007	ES1405849-008	ES1405849-009	ES1405849-010
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P15 TP1 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-006	ES1405849-007	ES1405849-008	ES1405849-009	ES1405849-010
EP068B: Organophosphorus Pesticides (OP) - Continued								
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	1.4	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	1.2	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.8	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.6	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	5.1	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.7	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	1.0	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.3	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P15 TP1 0.2-0.5
Client sampling date / time				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	
Compound	CAS Number	LOR	Unit	ES1405849-006	ES1405849-007	ES1405849-008	ES1405849-009	ES1405849-010	
EP080/071: Total Petroleum Hydrocarbons - Continued									
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10	
C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10	
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50	
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100	
>C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50	
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50	
EP080: BTEXN									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5	
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1	
EP068S: Organochlorine Pesticide Surrogate									
Dibromo-DDE	21655-73-2	0.1	%	99.9	91.4	108	85.6	96.0	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%	119	109	90.0	95.9	97.0	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%	83.8	91.9	87.4	87.3	90.5	
2-Chlorophenol-D4	93951-73-6	0.1	%	91.1	96.7	94.2	93.4	97.3	
2,4,6-Tribromophenol	118-79-6	0.1	%	101	110	106	106	113	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%	94.8	97.6	95.4	94.5	97.7	
Anthracene-d10	1719-06-8	0.1	%	94.4	96.5	95.6	94.9	101	
4-Terphenyl-d14	1718-51-0	0.1	%	97.1	101	97.8	98.4	102	
EP080S: TPH(V)/BTEX Surroqates									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT 420 TP1 0-0.3	P4 LOT 420 TP2 0.05-0.2	P4 LOT 420 TP3 0.05-0.25	P4 LOT 420 TP4 0.05-0.25	P15 TP1 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-006	ES1405849-007	ES1405849-008	ES1405849-009	ES1405849-010
EP080S: TPH(V)/BTEX Surrogates - Continued								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	82.4	73.6	84.0	87.5	73.1
Toluene-D8	2037-26-5	0.1	%	84.9	86.4	83.7	98.2	83.9
4-Bromofluorobenzene	460-00-4	0.1	%	92.2	94.5	89.8	110	92.3



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP2 0.3-0.6	P15 TP3 0.3-0.5	P15 TP4 0.3-0.5	P15 TP5 0.3-0.5	P15 TP6 0.3-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-011	ES1405849-012	ES1405849-013	ES1405849-014	ES1405849-015
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	8.5	9.9	11.3	15.6	8.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	Yes	No
Asbestos Type	1332-21-4	-	--	-	-	-	Ch + Am	-
Sample weight (dry)	----	0.01	g	40.0	46.7	43.0	42.1	47.0
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	8	13	7	11	7
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	18	14	5	17	11
Copper	7440-50-8	5	mg/kg	17	97	10	12	21
Lead	7439-92-1	5	mg/kg	72	109	33	9	94
Nickel	7440-02-0	2	mg/kg	16	10	7	9	16
Zinc	7440-66-6	5	mg/kg	154	217	74	52	254
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP2 0.3-0.6	P15 TP3 0.3-0.5	P15 TP4 0.3-0.5	P15 TP5 0.3-0.5	P15 TP6 0.3-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-011	ES1405849-012	ES1405849-013	ES1405849-014	ES1405849-015
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4.4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP2 0.3-0.6	P15 TP3 0.3-0.5	P15 TP4 0.3-0.5	P15 TP5 0.3-0.5	P15 TP6 0.3-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-011	ES1405849-012	ES1405849-013	ES1405849-014	ES1405849-015
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.4	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	1.4	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	0.8	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	1.1	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	0.9	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	0.6	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	7.6	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	1.1	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	1.4	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.7	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	120
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	120
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP2 0.3-0.6	P15 TP3 0.3-0.5	P15 TP4 0.3-0.5	P15 TP5 0.3-0.5	P15 TP6 0.3-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-011	ES1405849-012	ES1405849-013	ES1405849-014	ES1405849-015
EP080: BTEXN - Continued								
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	90.3	83.5	95.6	90.0	93.8
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	95.0	82.2	113	105	73.2
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	104	86.0	85.6	86.2	80.8
2-Chlorophenol-D4	93951-73-6	0.1	%	99.7	92.5	89.0	93.9	86.0
2,4,6-Tribromophenol	118-79-6	0.1	%	115	97.5	92.6	105	108
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	103	94.1	97.4	95.2	93.4
Anthracene-d10	1719-06-8	0.1	%	104	95.1	97.9	95.6	93.6
4-Terphenyl-d14	1718-51-0	0.1	%	106	98.1	101	99.2	98.0
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	79.1	84.8	82.3	81.1	80.0
Toluene-D8	2037-26-5	0.1	%	86.3	94.4	89.3	88.3	80.8
4-Bromofluorobenzene	460-00-4	0.1	%	93.6	99.8	100	96.9	90.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP7 0.1-0.2	P15 TP9 0.1-0.2	P4 LOT16 TP2 0.1-0.2	P4 LOT16 TP3 0.1-0.3	P4 LOT16 TP4 0.1-0.3
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-016	ES1405849-017	ES1405849-019	ES1405849-020	ES1405849-021
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	6.8	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	3.8	18.6	8.7	10.3	5.9
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	49.2	45.3	32.6	34.6	47.4
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	12.7	----	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	1.3	----	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	0.2	----	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	0.1	----	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	14.4	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	6	<5	13	16	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	8	6	22	24	3
Copper	7440-50-8	5	mg/kg	8	<5	39	47	<5
Lead	7439-92-1	5	mg/kg	9	7	43	36	<5
Nickel	7440-02-0	2	mg/kg	48	10	15	7	<2
Zinc	7440-66-6	5	mg/kg	34	24	238	232	6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	4.4	----	----
Total Organic Carbon	----	0.5	%	----	----	2.6	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP7 0.1-0.2	P15 TP9 0.1-0.2	P4 LOT16 TP2 0.1-0.2	P4 LOT16 TP3 0.1-0.3	P4 LOT16 TP4 0.1-0.3
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-016	ES1405849-017	ES1405849-019	ES1405849-020	ES1405849-021
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP7 0.1-0.2	P15 TP9 0.1-0.2	P4 LOT16 TP2 0.1-0.2	P4 LOT16 TP3 0.1-0.3	P4 LOT16 TP4 0.1-0.3
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-016	ES1405849-017	ES1405849-019	ES1405849-020	ES1405849-021
EP068B: Organophosphorus Pesticides (OP) - Continued								
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	1.0	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	2.3	0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	2.2	0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	1.0	0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	1.2	0.8	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	2.1	1.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.7	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	1.1	0.6	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.9	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	1.2	0.6	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	13.7	5.0	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	1.6	0.8	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	1.8	1.1	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	2.1	1.4	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	160	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	160	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P15 TP7 0.1-0.2	P15 TP9 0.1-0.2	P4 LOT16 TP2 0.1-0.2	P4 LOT16 TP3 0.1-0.3	P4 LOT16 TP4 0.1-0.3
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-016	ES1405849-017	ES1405849-019	ES1405849-020	ES1405849-021
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	130	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	200	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	330	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	86.4	105	73.5	88.4	89.5
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	86.8	113	72.8	78.6	102
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	84.6	84.3	101	91.6	87.1
2-Chlorophenol-D4	93951-73-6	0.1	%	89.4	89.5	109	99.2	94.3
2,4,6-Tribromophenol	118-79-6	0.1	%	105	109	119	116	113
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	96.0	106	98.6	92.2	97.7
Anthracene-d10	1719-06-8	0.1	%	96.7	97.9	102	98.7	98.5
4-Terphenyl-d14	1718-51-0	0.1	%	101	101	106	101	102
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	84.6	80.4	88.3	75.5	87.0
Toluene-D8	2037-26-5	0.1	%	88.8	82.0	94.6	80.6	92.3
4-Bromofluorobenzene	460-00-4	0.1	%	98.2	91.8	105	89.4	102



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT16 TP5 0.1-0.2	P4 LOT16 TP6 0.3-0.5	P4 LOT16 TP7 0.2-0.4	P8 TP1 0.2-0.5	P8 TP2 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-022	ES1405849-023	ES1405849-024	ES1405849-025	ES1405849-026
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	----	4.7
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	8.3	8.3	5.2	5.4	3.8
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	35.0	41.2	48.6	35.2	38.4
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	----	0.2
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	----	0.4
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	----	<0.1
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	----	<0.1
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	----	0.7
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	7	6	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	19	11	17	2	4
Copper	7440-50-8	5	mg/kg	24	36	14	<5	<5
Lead	7439-92-1	5	mg/kg	44	41	23	6	15
Nickel	7440-02-0	2	mg/kg	28	14	21	<2	<2
Zinc	7440-66-6	5	mg/kg	308	322	192	12	9
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	----	1.3
Total Organic Carbon	----	0.5	%	----	----	----	----	0.8
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT16 TP5 0.1-0.2	P4 LOT16 TP6 0.3-0.5	P4 LOT16 TP7 0.2-0.4	P8 TP1 0.2-0.5	P8 TP2 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-022	ES1405849-023	ES1405849-024	ES1405849-025	ES1405849-026
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT16 TP5 0.1-0.2	P4 LOT16 TP6 0.3-0.5	P4 LOT16 TP7 0.2-0.4	P8 TP1 0.2-0.5	P8 TP2 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-022	ES1405849-023	ES1405849-024	ES1405849-025	ES1405849-026
EP068B: Organophosphorus Pesticides (OP) - Continued								
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	1.1	0.8	1.9	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	3.3	2.9	3.9	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	3.0	2.7	3.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	1.1	1.4	1.3	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	1.2	1.6	1.4	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.8	2.4	2.0	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.7	0.9	0.7	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.3	1.6	1.6	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.0	1.2	1.0	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	1.5	1.4	1.3	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	16.0	16.9	18.6	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.8	2.2	2.1	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	2.0	2.5	2.4	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	2.3	2.7	2.6	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	140	<100	120	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	140	<50	120	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P4 LOT16 TP5 0.1-0.2	P4 LOT16 TP6 0.3-0.5	P4 LOT16 TP7 0.2-0.4	P8 TP1 0.2-0.5	P8 TP2 0.2-0.5
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-022	ES1405849-023	ES1405849-024	ES1405849-025	ES1405849-026
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	160	<100	120	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	140	<100	140	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	300	<50	260	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	106	116	101	113	101
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	76.7	71.3	72.3	105	90.9
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	90.7	91.0	100	101	87.9
2-Chlorophenol-D4	93951-73-6	0.1	%	85.7	91.7	91.3	101	101
2,4,6-Tribromophenol	118-79-6	0.1	%	71.6	68.5	71.3	67.1	71.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	74.8	82.8	83.8	85.2	83.5
Anthracene-d10	1719-06-8	0.1	%	83.7	101	101	104	103
4-Terphenyl-d14	1718-51-0	0.1	%	95.3	72.2	71.9	77.8	76.7
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	112	117	120	116	119
Toluene-D8	2037-26-5	0.1	%	99.0	110	102	102	98.4
4-Bromofluorobenzene	460-00-4	0.1	%	91.3	95.8	89.6	90.5	89.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P8 TP3 0.2-0.5	P8 TP5 0.1-0.3	P14 TP1 0.3-0.5	P14 TP2 0.3-0.5	P14 TP3 0.2-0.4
				19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-027	ES1405849-029	ES1405849-030	ES1405849-031	ES1405849-032
EA002 : pH (Soils)								
pH Value	----	0.1	pH Unit	----	----	----	4.6	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	1.7	5.8	10.5	11.4	12.5
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	No	No	No	No
Asbestos Type	1332-21-4	-	--	-	-	-	-	-
Sample weight (dry)	----	0.01	g	42.2	38.9	45.4	43.5	35.5
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
ED008: Exchangeable Cations								
Exchangeable Calcium	----	0.1	meq/100g	----	----	----	0.5	----
Exchangeable Magnesium	----	0.1	meq/100g	----	----	----	5.3	----
Exchangeable Potassium	----	0.1	meq/100g	----	----	----	0.2	----
Exchangeable Sodium	----	0.1	meq/100g	----	----	----	2.2	----
Cation Exchange Capacity	----	0.1	meq/100g	----	----	----	8.1	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	7	7	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	2	4	17	10	9
Copper	7440-50-8	5	mg/kg	<5	<5	<5	<5	<5
Lead	7439-92-1	5	mg/kg	7	8	12	12	15
Nickel	7440-02-0	2	mg/kg	<2	<2	2	<2	<2
Zinc	7440-66-6	5	mg/kg	14	18	6	<5	6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EP004: Organic Matter								
Organic Matter	----	0.5	%	----	----	----	<0.5	----
Total Organic Carbon	----	0.5	%	----	----	----	<0.5	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P8 TP3 0.2-0.5	P8 TP5 0.1-0.3	P14 TP1 0.3-0.5	P14 TP2 0.3-0.5	P14 TP3 0.2-0.4
				19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-027	ES1405849-029	ES1405849-030	ES1405849-031	ES1405849-032
EP068A: Organochlorine Pesticides (OC) - Continued								
Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P8 TP3 0.2-0.5	P8 TP5 0.1-0.3	P14 TP1 0.3-0.5	P14 TP2 0.3-0.5	P14 TP3 0.2-0.4
				19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-027	ES1405849-029	ES1405849-030	ES1405849-031	ES1405849-032
EP068B: Organophosphorus Pesticides (OP) - Continued								
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	0.6	0.6	0.6	0.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	1.2	1.2	1.2	1.2	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	<10	<10	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	<50	<50	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
C29 - C36 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				P8 TP3 0.2-0.5	P8 TP5 0.1-0.3	P14 TP1 0.3-0.5	P14 TP2 0.3-0.5	P14 TP3 0.2-0.4
				19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-027	ES1405849-029	ES1405849-030	ES1405849-031	ES1405849-032
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	<10	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
>C34 - C40 Fraction	----	100	mg/kg	<100	<100	<100	<100	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	<50	<50	<50	<50	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	<50	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	<1	<1	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	104	119	120	101	96.0
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	89.5	104	120	82.7	79.4
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	93.3	107	99.2	101	98.5
2-Chlorophenol-D4	93951-73-6	0.1	%	97.6	109	97.7	98.3	96.6
2,4,6-Tribromophenol	118-79-6	0.1	%	68.9	73.8	65.1	63.0	63.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	101	90.5	84.5	85.9	85.2
Anthracene-d10	1719-06-8	0.1	%	103	111	107	106	104
4-Terphenyl-d14	1718-51-0	0.1	%	74.8	79.4	76.3	75.0	75.0
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	126	118	122	132	128
Toluene-D8	2037-26-5	0.1	%	107	94.2	93.4	108	112
4-Bromofluorobenzene	460-00-4	0.1	%	97.8	86.4	87.9	104	102



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				ID1	ID2	QA01	QA02	QA03
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-033	ES1405849-034	ES1405849-035	ES1405849-036	ES1405849-037
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	----	----	6.0	11.9	11.6
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	Yes	Yes	Yes	No
Asbestos Type	1332-21-4	-	--	Ch + Cr	Ch + Cr	Am	Ch	-
Sample weight (dry)	----	0.01	g	27.3	111	38.7	40.6	38.7
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER	S.SPOONER
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	----	----	33	6	9
Cadmium	7440-43-9	1	mg/kg	----	----	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	----	----	4	19	11
Copper	7440-50-8	5	mg/kg	----	----	23	30	<5
Lead	7439-92-1	5	mg/kg	----	----	10	56	13
Nickel	7440-02-0	2	mg/kg	----	----	7	25	<2
Zinc	7440-66-6	5	mg/kg	----	----	81	400	6
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	----	----	<0.1	<0.1	<0.1
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-BHC	319-85-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
gamma-BHC	58-89-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
delta-BHC	319-86-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Aldrin	309-00-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
^ Total Chlordane (sum)	----	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Dieldrin	60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4,4'-DDE	72-55-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin	72-20-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				ID1	ID2	QA01	QA02	QA03
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-033	ES1405849-034	ES1405849-035	ES1405849-036	ES1405849-037
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4,4'-DDD	72-54-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
4,4'-DDT	50-29-3	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Endrin ketone	53494-70-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Methoxychlor	72-43-5	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Demeton-S-methyl	919-86-8	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Monocrotophos	6923-22-4	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Parathion-methyl	298-00-0	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Chlorfenvinphos	470-90-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Bromophos-ethyl	4824-78-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Fenamiphos	22224-92-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Carbophenothion	786-19-6	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg	----	----	<0.05	<0.05	<0.05
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				ID1	ID2	QA01	QA02	QA03
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-033	ES1405849-034	ES1405849-035	ES1405849-036	ES1405849-037
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued								
Phenanthrene	85-01-8	0.5	mg/kg	----	----	<0.5	1.0	<0.5
Anthracene	120-12-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	----	----	<0.5	2.7	<0.5
Pyrene	129-00-0	0.5	mg/kg	----	----	<0.5	2.4	<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	----	----	<0.5	0.8	<0.5
Chrysene	218-01-9	0.5	mg/kg	----	----	<0.5	0.9	<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	----	----	<0.5	1.5	<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg	----	----	<0.5	1.0	<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	----	----	<0.5	0.7	<0.5
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	----	----	<0.5	0.9	<0.5
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	----	----	<0.5	11.9	<0.5
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	----	----	<0.5	1.3	<0.5
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	----	----	0.6	1.6	0.6
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	----	----	1.2	1.9	1.2
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction	----	10	mg/kg	----	----	<10	<10	<10
C10 - C14 Fraction	----	50	mg/kg	----	----	<50	<50	<50
C15 - C28 Fraction	----	100	mg/kg	----	----	<100	270	<100
C29 - C36 Fraction	----	100	mg/kg	----	----	<100	410	<100
^ C10 - C36 Fraction (sum)	----	50	mg/kg	----	----	<50	680	<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
C6 - C10 Fraction	C6_C10	10	mg/kg	----	----	<10	<10	<10
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	----	----	<10	<10	<10
>C10 - C16 Fraction	>C10_C16	50	mg/kg	----	----	<50	<50	<50
>C16 - C34 Fraction	----	100	mg/kg	----	----	<100	410	<100
>C34 - C40 Fraction	----	100	mg/kg	----	----	<100	410	<100
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	----	----	<50	820	<50
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	----	----	<50	<50	<50
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg	----	----	<0.2	<0.2	<0.2



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

Client sampling date / time

				ID1	ID2	QA01	QA02	QA03
				18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	18-MAR-2014 15:00	19-MAR-2014 15:00
Compound	CAS Number	LOR	Unit	ES1405849-033	ES1405849-034	ES1405849-035	ES1405849-036	ES1405849-037
EP080: BTEXN - Continued								
Toluene	108-88-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Ethylbenzene	100-41-4	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
ortho-Xylene	95-47-6	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
^ Sum of BTEX	----	0.2	mg/kg	----	----	<0.2	<0.2	<0.2
^ Total Xylenes	1330-20-7	0.5	mg/kg	----	----	<0.5	<0.5	<0.5
Naphthalene	91-20-3	1	mg/kg	----	----	<1	<1	<1
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	----	----	84.0	92.5	84.3
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	----	----	76.1	78.2	94.8
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	----	----	105	108	96.7
2-Chlorophenol-D4	93951-73-6	0.1	%	----	----	96.3	106	92.5
2,4,6-Tribromophenol	118-79-6	0.1	%	----	----	69.6	82.4	67.8
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	----	----	74.5	88.9	81.9
Anthracene-d10	1719-06-8	0.1	%	----	----	85.0	95.5	102
4-Terphenyl-d14	1718-51-0	0.1	%	----	----	94.3	76.6	76.5
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	----	----	123	119	137
Toluene-D8	2037-26-5	0.1	%	----	----	107	92.9	105
4-Bromofluorobenzene	460-00-4	0.1	%	----	----	94.2	87.8	99.0



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				P4-LOT16-TP1	----	----	----	----
				0.2-0.35				
Client sampling date / time				18-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1405849-040	----	----	----	----
EA055: Moisture Content								
Moisture Content (dried @ 103°C)	----	1.0	%	6.5	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	No	----	----	----	----
Asbestos Type	1332-21-4	-	--	-	----	----	----	----
Sample weight (dry)	----	0.01	g	63.8	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	----	----	----	----
Cadmium	7440-43-9	1	mg/kg	<1	----	----	----	----
Chromium	7440-47-3	2	mg/kg	7	----	----	----	----
Copper	7440-50-8	5	mg/kg	27	----	----	----	----
Lead	7439-92-1	5	mg/kg	46	----	----	----	----
Nickel	7440-02-0	2	mg/kg	7	----	----	----	----
Zinc	7440-66-6	5	mg/kg	243	----	----	----	----
EG035T: Total Recoverable Mercury by FIMS								
Mercury	7439-97-6	0.1	mg/kg	<0.1	----	----	----	----
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05	----	----	----	----
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	----	----	----	----
beta-BHC	319-85-7	0.05	mg/kg	<0.05	----	----	----	----
gamma-BHC	58-89-9	0.05	mg/kg	<0.05	----	----	----	----
delta-BHC	319-86-8	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor	76-44-8	0.05	mg/kg	<0.05	----	----	----	----
Aldrin	309-00-2	0.05	mg/kg	<0.05	----	----	----	----
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	----	----	----	----
^ Total Chlordane (sum)	----	0.05	mg/kg	<0.05	----	----	----	----
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	----	----	----	----
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	----	----	----	----
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	----	----	----	----
Dieldrin	60-57-1	0.05	mg/kg	<0.05	----	----	----	----
4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	----	----	----	----
Endrin	72-20-8	0.05	mg/kg	<0.05	----	----	----	----
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	----	----	----	----



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				P4-LOT16-TP1 0.2-0.35	----	----	----	----
Client sampling date / time				18-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1405849-040	----	----	----	----
EP068A: Organochlorine Pesticides (OC) - Continued								
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05	----	----	----	----
4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	----	----	----	----
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	----	----	----	----
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	----	----	----	----
4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	----	----	----	----
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	----	----	----	----
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	----	----	----	----
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05	----	----	----	----
^ Sum of DDD + DDE + DDT	----	0.05	mg/kg	<0.05	----	----	----	----
EP068B: Organophosphorus Pesticides (OP)								
Dichlorvos	62-73-7	0.05	mg/kg	<0.05	----	----	----	----
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	----	----	----	----
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	----	----	----	----
Dimethoate	60-51-5	0.05	mg/kg	<0.05	----	----	----	----
Diazinon	333-41-5	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	----	----	----	----
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	----	----	----	----
Malathion	121-75-5	0.05	mg/kg	<0.05	----	----	----	----
Fenthion	55-38-9	0.05	mg/kg	<0.05	----	----	----	----
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	----	----	----	----
Parathion	56-38-2	0.2	mg/kg	<0.2	----	----	----	----
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	----	----	----	----
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	----	----	----	----
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	----	----	----	----
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	----	----	----	----
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	----	----	----	----
Ethion	563-12-2	0.05	mg/kg	<0.05	----	----	----	----
Carbophenothion	786-19-6	0.05	mg/kg	<0.05	----	----	----	----
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Naphthalene	91-20-3	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	----	----	----	----
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	----	----	----	----

Sub-Matrix: **SOIL** (Matrix: **SOIL**)

Client sample ID

Client sampling date / time

Sub-Matrix: SOIL (Matrix: SOIL)				Client sample ID	P4-LOT16-TP1	----	----	----	----
				Client sampling date / time	18-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1405849-040	----	----	----	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons - Continued									
Fluorene	86-73-7	0.5	mg/kg	<0.5	----	----	----	----	----
Phenanthrene	85-01-8	0.5	mg/kg	0.8	----	----	----	----	----
Anthracene	120-12-7	0.5	mg/kg	<0.5	----	----	----	----	----
Fluoranthene	206-44-0	0.5	mg/kg	4.4	----	----	----	----	----
Pyrene	129-00-0	0.5	mg/kg	3.3	----	----	----	----	----
Benz(a)anthracene	56-55-3	0.5	mg/kg	2.1	----	----	----	----	----
Chrysene	218-01-9	0.5	mg/kg	9.9	----	----	----	----	----
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	3.6	----	----	----	----	----
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.8	----	----	----	----	----
Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.3	----	----	----	----	----
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	0.7	----	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	----	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	0.9	----	----	----	----	----
^ Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	27.8	----	----	----	----	----
^ Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	2.1	----	----	----	----	----
^ Benzo(a)pyrene TEQ (half LOR)	----	0.5	mg/kg	2.4	----	----	----	----	----
^ Benzo(a)pyrene TEQ (LOR)	----	0.5	mg/kg	2.6	----	----	----	----	----
EP080/071: Total Petroleum Hydrocarbons									
C6 - C9 Fraction	----	10	mg/kg	<10	----	----	----	----	----
C10 - C14 Fraction	----	50	mg/kg	<50	----	----	----	----	----
C15 - C28 Fraction	----	100	mg/kg	<100	----	----	----	----	----
C29 - C36 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ C10 - C36 Fraction (sum)	----	50	mg/kg	<50	----	----	----	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013									
C6 - C10 Fraction	C6_C10	10	mg/kg	<10	----	----	----	----	----
^ C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg	<10	----	----	----	----	----
>C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	----	----	----	----	----
>C16 - C34 Fraction	----	100	mg/kg	120	----	----	----	----	----
>C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----	----
^ >C10 - C40 Fraction (sum)	----	50	mg/kg	120	----	----	----	----	----
^ >C10 - C16 Fraction minus Naphthalene (F2)	----	50	mg/kg	<50	----	----	----	----	----
EP080: BTEXN									



Analytical Results

Sub-Matrix: SOIL (Matrix: SOIL)

Client sample ID

				P4-LOT16-TP1 0.2-0.35	----	----	----	----
				18-MAR-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	ES1405849-040	----	----	----	----
EP080: BTEXN - Continued								
Benzene	71-43-2	0.2	mg/kg	<0.2	----	----	----	----
Toluene	108-88-3	0.5	mg/kg	<0.5	----	----	----	----
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	----	----	----	----
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5	----	----	----	----
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	----	----	----	----
^ Sum of BTEX	----	0.2	mg/kg	<0.2	----	----	----	----
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	----	----	----	----
Naphthalene	91-20-3	1	mg/kg	<1	----	----	----	----
EP068S: Organochlorine Pesticide Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	86.9	----	----	----	----
EP068T: Organophosphorus Pesticide Surrogate								
DEF	78-48-8	0.1	%	60.8	----	----	----	----
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%	83.8	----	----	----	----
2-Chlorophenol-D4	93951-73-6	0.1	%	85.3	----	----	----	----
2,4,6-Tribromophenol	118-79-6	0.1	%	94.3	----	----	----	----
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	83.3	----	----	----	----
Anthracene-d10	1719-06-8	0.1	%	83.9	----	----	----	----
4-Terphenyl-d14	1718-51-0	0.1	%	82.0	----	----	----	----
EP080S: TPH(V)/BTEX Surrogates								
1,2-Dichloroethane-D4	17060-07-0	0.1	%	94.0	----	----	----	----
Toluene-D8	2037-26-5	0.1	%	107	----	----	----	----
4-Bromofluorobenzene	460-00-4	0.1	%	88.5	----	----	----	----



Analytical Results

Descriptive Results

Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	P4 LOT 422 TP1 0-0.5 - 17-MAR-2014 15:00	Mid-brown sandy soil with grey rocks and a trace of vegetation.
EA200: Description	P4 LOT 422 TP2 0-0.4 - 17-MAR-2014 15:00	Mid-brown sandy soil with grey rocks and a trace of vegetation.
EA200: Description	P4 LOT 422 TP3 0-0.3 - 17-MAR-2014 15:00	Mid-brown sandy soil with grey rocks and a trace of vegetation.
EA200: Description	P4 LOT 422 TP4 0-0.3 - 17-MAR-2014 15:00	Mid-brown sandy soil with grey rocks and a trace of vegetation plus one loose bundle of friable asbestos fibres approximately 2 x 1 x 0.5mm.
EA200: Description	P4 LOT 422 TP5 0-0.3 - 17-MAR-2014 15:00	Mid-brown sandy soil with grey rocks plus two pieces of friable asbestos cement sheeting approximately 3 x 3 x 2mm.
EA200: Description	P4 LOT 420 TP1 0-0.3 - 18-MAR-2014 15:00	Mid yellow-brown sandy soil with brown rocks plus a trace of vegetation.
EA200: Description	P4 LOT 420 TP2 0.05-0.2 - 18-MAR-2014 15:00	Mid yellow-brown sandy soil with brown rocks plus a trace of vegetation.
EA200: Description	P4 LOT 420 TP3 0.05-0.25 - 18-MAR-2014 15:00	Mid yellow-brown sandy soil with brown rocks plus a trace of vegetation.
EA200: Description	P4 LOT 420 TP4 0.05-0.25 - 18-MAR-2014 15:00	Pale yellow-brown sandy soil with brown rocks plus a trace of vegetation.
EA200: Description	P15 TP1 0.2-0.5 - 18-MAR-2014 15:00	Mid red-brown clay soil with red and grey rocks plus a trace of vegetation.
EA200: Description	P15 TP2 0.3-0.6 - 18-MAR-2014 15:00	Mid brown clay soil with red and grey rocks plus a trace of vegetation.
EA200: Description	P15 TP3 0.3-0.5 - 18-MAR-2014 15:00	Pale grey-brown clay soil with red and grey rocks plus a trace of vegetation.
EA200: Description	P15 TP4 0.3-0.5 - 18-MAR-2014 15:00	Pale grey clay soil with red and grey rocks plus a trace of vegetation.
EA200: Description	P15 TP5 0.3-0.5 - 18-MAR-2014 15:00	Mid red-brown clay soil with grey rocks plus one friable asbestos fibre bundle approx 2 x 1 x 1mm.
EA200: Description	P15 TP6 0.3-0.5 - 18-MAR-2014 15:00	Pale brown clay soil with grey rocks plus a trace of vegetation.
EA200: Description	P15 TP7 0.1-0.2 - 18-MAR-2014 15:00	Pale grey clay soil with grey rocks plus some small synthetic mineral fibre bundles and a trace of vegetation.
EA200: Description	P15 TP9 0.1-0.2 - 18-MAR-2014 15:00	Pale grey-brown clay soil with grey and brown rocks plus some metal fragments and a trace of vegetation.
EA200: Description	P4 LOT16 TP2 0.1-0.2 - 18-MAR-2014 15:00	Mid brown clay soil with grey and brown rocks plus plenty of vegetation and one piece of organic fibre matting.
EA200: Description	P4 LOT16 TP3 0.1-0.3 - 18-MAR-2014 15:00	Mid brown clay soil with grey rocks plus plenty of vegetation.
EA200: Description	P4 LOT16 TP4 0.1-0.3 - 18-MAR-2014 15:00	Pale brown-cream sandy soil with grey rocks plus a trace of vegetation.
EA200: Description	P4 LOT16 TP5 0.1-0.2 - 18-MAR-2014 15:00	Mid brown sandy soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	P4 LOT16 TP6 0.3-0.5 - 18-MAR-2014 15:00	Mid brown sandy soil with grey and orange rocks plus a trace of vegetation.
EA200: Description	P4 LOT16 TP7 0.2-0.4 - 18-MAR-2014 15:00	Mid brown sandy clay soil with grey and red rocks plus a trace of vegetation.
EA200: Description	P8 TP1 0.2-0.5 - 19-MAR-2014 15:00	Mid brown sandy soil with some grey rocks plus a trace of vegetation.
EA200: Description	P8 TP2 0.2-0.5 - 19-MAR-2014 15:00	Mid yellow clay soil with grey rocks plus a trace of vegetation.
EA200: Description	P8 TP3 0.2-0.5 - 19-MAR-2014 15:00	Mid brown sandy soil with grey and orange rocks plus some vegetation.
EA200: Description	P8 TP5 0.1-0.3 - 19-MAR-2014 15:00	Mid brown sandy soil with grey rocks plus some vegetation.
EA200: Description	P14 TP1 0.3-0.5 - 19-MAR-2014 15:00	Mid red-brown clay soil with grey and red rocks plus a trace of vegetation.
EA200: Description	P14 TP2 0.3-0.5 - 19-MAR-2014 15:00	Mid red-brown clay soil with grey and red rocks plus a trace of vegetation.
EA200: Description	P14 TP3 0.2-0.4 - 19-MAR-2014 15:00	Pale off white clay soil with grey rocks plus a trace of vegetation.
EA200: Description	ID1 - 18-MAR-2014 15:00	One piece of bonded asbestos cement sheeting approximately 70 x 40 x 5mm.
EA200: Description	ID2 - 18-MAR-2014 15:00	Three pieces of bonded asbestos cement sheeting approximately 110 x 35 x 4mm.
EA200: Description	QA01 - 18-MAR-2014 15:00	Mid grey-brown sandy soil with grey rocks plus one loose bundle of friable asbestos fibres approx 2 x 1 x 0.5mm.
EA200: Description	QA02 - 18-MAR-2014 15:00	Mid brown sandy soil with with grey and red rocks plus one loose bundle of friable asbestos fibres approx 2 x 1 x 0.5mm.
EA200: Description	QA03 - 19-MAR-2014 15:00	Pale brown clay soil with red rocks plus a trace of vegetation.

Page : 38 of 39
Work Order : ES1405849
Client : ENVIRON AUSTRALIA PTY LTD
Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: **SOIL**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: Description	P4-LOT16-TP10.2-0.35 - 18-MAR-2014 15:00	Mid yellow-brown clay soil with grey and red rocks plus a trace of vegetation.



Surrogate Control Limits

Sub-Matrix: SOIL		Recovery Limits (%)	
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	147
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	35	143
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	123
2-Chlorophenol-D4	93951-73-6	66	122
2,4,6-Tribromophenol	118-79-6	40	138
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	70	122
Anthracene-d10	1719-06-8	66	128
4-Terphenyl-d14	1718-51-0	65	129
EP080S: TPH(V)/BTEX Surrogates			
1,2-Dichloroethane-D4	17060-07-0	72.8	133.2
Toluene-D8	2037-26-5	73.9	132.1
4-Bromofluorobenzene	460-00-4	71.6	130.0

QUALITY CONTROL REPORT

Work Order	: ES1405849	Page	: 1 of 30
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: STEVE CADMAN	Contact	: Client Services
Address	: Eastpoint Complex Suite 19B, Level 2 50 Glebe Road PO Box 435 The Junction NSW 2291	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: scadman@environcorp.com	E-mail	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: HYDRO BUFFER ZONE INVESTIGATION	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 20-MAR-2014
Sampler	: KW/SC	Issue Date	: 31-MAR-2014
Order number	: AS130348		
Quote number	: SY/433/13	No. of samples received	: 39
		No. of samples analysed	: 36

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key :
Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
LOR = Limit of reporting
RPD = Relative Percentage Difference
= Indicates failed QC



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Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Ashesh Patel	Inorganic Chemist	Sydney Inorganics
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
Di-An Dao		Sydney Inorganics
Edwandy Fadjar	Organic Coordinator	Sydney Organics
Pabi Subba	Senior Organic Chemist	Sydney Organics
Sanjeshni Jyoti Mala	Senior Chemist Volatile	Sydney Organics
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA002 : pH (Soils) (QC Lot: 3353765)									
ES1405888-002	Anonymous	EA002: pH Value	----	0.1	pH Unit	5.3	5.2	0.0	0% - 20%
EA002 : pH (Soils) (QC Lot: 3356205)									
EB1406066-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	8.6	8.6	0.0	0% - 20%
ES1405796-001	Anonymous	EA002: pH Value	----	0.1	pH Unit	6.9	6.6	5.8	0% - 20%
EA002 : pH (Soils) (QC Lot: 3356219)									
ES1405849-026	P8 TP2 0.2-0.5	EA002: pH Value	----	0.1	pH Unit	4.7	4.4	5.0	0% - 20%
ES1405969-004	Anonymous	EA002: pH Value	----	0.1	pH Unit	4.9	5.0	0.0	0% - 20%
EA055: Moisture Content (QC Lot: 3354720)									
ES1405849-003	P4 LOT 422 TP3 0-0.3	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.9	7.9	13.9	No Limit
ES1405849-014	P15 TP5 0.3-0.5	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	15.6	12.8	19.8	0% - 50%
EA055: Moisture Content (QC Lot: 3354721)									
ES1405849-024	P4 LOT16 TP7 0.2-0.4	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	5.2	5.3	2.3	No Limit
ES1406076-001	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	18.2	19.7	7.8	0% - 50%
EA055: Moisture Content (QC Lot: 3361300)									
ES1405849-040	P4-LOT16-TP1 0.2-0.35	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.5	6.8	4.9	No Limit
ES1406275-006	Anonymous	EA055-103: Moisture Content (dried @ 103°C)	----	1.0	%	6.9	6.7	3.4	No Limit
ED008: Exchangeable Cations (QC Lot: 3355018)									
ES1406134-002	Anonymous	ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	6.3	6.1	3.5	0% - 20%
		ED008: Exchangeable Potassium	----	0.1	meq/100g	0.1	0.1	0.0	0% - 20%
		ED008: Exchangeable Sodium	----	0.1	meq/100g	2.7	2.7	0.0	0% - 20%
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	9.2	9.0	3.2	0% - 20%
ES1405849-003	P4 LOT 422 TP3 0-0.3	ED008: Exchangeable Calcium	----	0.1	meq/100g	3.5	3.6	0.0	0% - 20%
		ED008: Exchangeable Magnesium	----	0.1	meq/100g	1.2	1.2	0.0	0% - 20%
		ED008: Exchangeable Potassium	----	0.1	meq/100g	0.3	0.3	0.0	0% - 20%
		ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
		ED008: Cation Exchange Capacity	----	0.1	meq/100g	5.0	5.1	0.0	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3359246)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	5	5	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	12	7	52.1	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	12	13	10.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	8	13	42.6	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	192	112	# 52.5	0% - 20%



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metals by ICP-AES (QC Lot: 3359246) - continued									
ES1405849-011	P15 TP2 0.3-0.6	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	18	17	8.8	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	16	13	19.8	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	10	25.1	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	17	14	19.3	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	72	77	6.2	0% - 50%
		EG005T: Zinc	7440-66-6	5	mg/kg	154	150	2.8	0% - 20%
EG005T: Total Metals by ICP-AES (QC Lot: 3361161)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	17	11.9	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	28	27	0.0	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	24	22	8.9	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	44	35	22.5	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	308	338	9.5	0% - 20%
ES1405849-035	QA01	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	4	6	31.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	7	8	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	33	<5	147	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	23	10	78.4	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	10	10	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	81	100	20.0	0% - 50%
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3359247)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.1	0.0	No Limit
EG035T: Total Recoverable Mercury by FIMS (QC Lot: 3361162)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1405849-035	QA01	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EP004: Organic Matter (QC Lot: 3358600)									
ES1405849-003	P4 LOT 422 TP3 0-0.3	EP004: Organic Matter	----	0.5	%	3.2	2.9	9.4	No Limit
		EP004: Total Organic Carbon	----	0.5	%	1.8	1.7	9.4	No Limit
ES1406179-005	Anonymous	EP004: Organic Matter	----	0.5	%	66.3	65.4	1.3	0% - 20%
		EP004: Total Organic Carbon	----	0.5	%	38.5	38.0	1.3	0% - 20%
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3352021)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3352021) - continued											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
ES1405849-011	P15 TP2 0.3-0.6	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit		
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit		
		EP068A: Organochlorine Pesticides (OC) (QC Lot: 3354882)									
		ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
EP068: Hexachlorobenzene (HCB)	118-74-1			0.05	mg/kg	<0.05	<0.05	0.0	No Limit		



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3354882) - continued									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1405849-035	QA01	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlorine Pesticides (OC) (QC Lot: 3358994)									
ES1406424-001	Anonymous	EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3352021)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3352021) - continued									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EP068B: Organophosphorus Pesticides (OP) (QC Lot: 3354882)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3352040)



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report							
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3352040) - continued											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
		ES1405849-011	P15 TP2 0.3-0.6	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
				EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Acenaphthene	83-32-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Fluorene	86-73-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Phenanthrene	85-01-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Anthracene	120-12-7			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Fluoranthene	206-44-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Pyrene	129-00-0			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benz(a)anthracene	56-55-3			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Chrysene	218-01-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(b)fluoranthene	205-99-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(k)fluoranthene	207-08-9			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(a)pyrene	50-32-8			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Dibenz(a,h)anthracene	53-70-3			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(g,h,i)perylene	191-24-2			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----			0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3355326)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2			EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3355326) - continued									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	1.1	1.1	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	3.3	2.6	23.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	3.0	2.4	21.2	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	1.1	0.8	24.2	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	1.2	1.0	24.4	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	1.8	1.5	18.5	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	0.7	0.7	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	1.3	1.1	18.8	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	1.0	0.8	20.8	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	1.5	1.2	22.9	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	16.0	13.2	19.2	0% - 20%
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	1.8	1.5	17.3	No Limit
ES1405849-035	QA01	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3357396)									
ES1406229-021	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QC Lot: 3357396) - continued									
ES1406229-021	Anonymous	EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1406306-003	Anonymous	EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Sum of polycyclic aromatic hydrocarbons	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrene TEQ (zero)	----	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3352039)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit

Page : 13 of 30
 Work Order : ES1405849
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3352039) - continued									
ES1405849-011	P15 TP2 0.3-0.6	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3352044)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3354279)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1405849-035	QA01	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3355325)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	140	110	17.2	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1405849-035	QA01	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3357393)									
ES1406229-021	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
ES1406306-003	Anonymous	EP071: C15 - C28 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C29 - C36 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: C10 - C14 Fraction	----	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Petroleum Hydrocarbons (QC Lot: 3357407)									
ES1406229-021	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
ES1406306-003	Anonymous	EP080: C6 - C9 Fraction	----	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3352039)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3352044)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3354279)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1405849-035	QA01	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3355325)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: >C16 - C34 Fraction	----	100	mg/kg	160	130	21.5	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	140	130	8.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1405849-035	QA01	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3357393)									
ES1406229-021	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
ES1406306-003	Anonymous	EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QC Lot: 3357407)									
ES1406229-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
ES1406306-003	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit
EP080: BTEXN (QC Lot: 3352044)									
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1405849-011	P15 TP2 0.3-0.6	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3354279)									
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1405849-035	QA01	EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
		EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit

Page : 15 of 30
 Work Order : ES1405849
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: SOIL				Laboratory Duplicate (DUP) Report					
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC Lot: 3354279) - continued									
ES1405849-035	QA01	EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
EP080: BTEXN (QC Lot: 3357407)									
ES1406229-021	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit
ES1406306-003	Anonymous	EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3						
		EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: Naphthalene	91-20-3	1	mg/kg	<1	<1	0.0	No Limit



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

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

Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
ED008: Exchangeable Cations (QCLot: 3355018)								
ED008: Exchangeable Calcium	----	0.1	meq/100g	<0.1	1 meq/100g	103	90	128
ED008: Exchangeable Magnesium	----	0.1	meq/100g	<0.1	1.67 meq/100g	99.8	86	120
ED008: Exchangeable Potassium	----	0.1	meq/100g	<0.1	0.51 meq/100g	115	85	135
ED008: Exchangeable Sodium	----	0.1	meq/100g	<0.1	0.87 meq/100g	116	86	128
ED008: Cation Exchange Capacity	----	0.1	meq/100g	<0.1	----	----	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3359246)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	114	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	108	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	105	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	112	86	128
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	106	81	123
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	109	84	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	115	81	133
EG005T: Total Metals by ICP-AES (QCLot: 3361161)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	116	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	113	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	103	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	124	86	128
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	111	81	123
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	121	84	130
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	118	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3359247)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.1	66	112
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3361162)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	89.8	66	112
EP004: Organic Matter (QCLot: 3358600)								
EP004: Organic Matter	----	0.5	%	<0.5	4.58 %	94.6	85	105
EP004: Total Organic Carbon	----	0.5	%	<0.5	2.66 %	94.4	84	106
EP068A: Organochlorine Pesticides (OC) (QCLot: 3352021)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.0	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.5	65	113

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) LowHigh	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 3352021) - continued								
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	107	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.7	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.0	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.3	66	118
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.8	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	76	120
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	66.4	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	60	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	95.1	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	90.0	65	129
EP068A: Organochlorine Pesticides (OC) (QCLot: 3354882)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.2	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	78.2	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	100	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.0	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	66	118
EP068: 4,4'-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.3	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	73.4	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.9	76	120
EP068: 4,4'-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	82.1	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	104	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	60	124
EP068: 4,4'-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	102	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	104	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	110	65	129
EP068A: Organochlorine Pesticides (OC) (QCLot: 3358994)								



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068A: Organochlorine Pesticides (OC) (QCLot: 3358994) - continued								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.8	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	90.2	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	87.2	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.2	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	79.8	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	99.5	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	88.1	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.9	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	66	118
EP068: 4,4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	83.0	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	73.6	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	82.3	76	120
EP068: 4,4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.4	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	60	124
EP068: 4,4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	108	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	106	65	129
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3352021)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	87.1	56	126
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	64	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	78.0	54	122
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	64	124
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	81.5	73	117
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	90.5	55	119
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	76.2	69	123
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.9	70	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.6	71	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	68	114
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	89.1	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	97.6	69	115
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	86.8	70	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	68	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	64	120
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	68	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	91.8	70	118



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3352021) - continued								
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	93.1	67	123
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	62.3	42	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3354882)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	99.3	56	126
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	109	64	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	76.6	54	122
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	64	124
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	83.6	73	117
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	84.6	55	119
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	96.4	69	123
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	77.3	70	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	92.6	71	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	82.0	68	114
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	97.3	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	86.7	69	115
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.3	70	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.6	68	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.2	64	120
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	80.2	68	116
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.7	70	118
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	108	67	123
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	63.6	42	126
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3358994)								
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	86.1	56	126
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.5	64	128
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	73.6	54	122
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	64	124
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	84.0	73	117
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	85.9	55	119
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	97.6	69	123
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	78.1	70	120
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	93.6	71	115
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	83.7	68	114
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	97.7	68	122
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.4	69	115
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.7	70	118
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.1	68	116
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	84.4	64	120
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	81.7	68	116



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3358994) - continued								
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	89.6	70	118
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	67	123
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	75.9	42	126
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3352040)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	91.0	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	92.9	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	89.9	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	93.0	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	92.2	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	90.3	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	93.2	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	93.9	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	86.8	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	91.0	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	85.4	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	97.3	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	83.3	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	82.6	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	80.9	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	82.8	72.4	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3355326)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	94.3	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	96.9	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	97.0	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	88.4	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	98.5	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	97.6	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	108	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	109	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.1	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	106	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	98.2	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	107	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	98.4	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	96.4	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	97.6	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	107	72.4	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3357396)								
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	91.5	80	124



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3357396) - continued								
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	90.5	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	93.4	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	88.6	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	95.0	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	94.0	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	105	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	108	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	84.2	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	88.5	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	87.1	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	88.8	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	85.8	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	71.9	71	113
EP075(SIM): Dibenz(a,h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	80.1	71.7	113
EP075(SIM): Benzo(g,h,i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	77.9	72.4	114
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352039)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	95.8	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	104	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	105	64	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352044)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	90.1	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3354279)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	98.5	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3355325)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	117	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	101	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	100	64	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357393)								
EP071: C10 - C14 Fraction	----	50	mg/kg	<50	200 mg/kg	98.8	71	131
EP071: C15 - C28 Fraction	----	100	mg/kg	<100	300 mg/kg	107	74	138
EP071: C29 - C36 Fraction	----	100	mg/kg	<100	200 mg/kg	112	64	128
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357407)								
EP080: C6 - C9 Fraction	----	10	mg/kg	<10	26 mg/kg	92.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352039)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	97.0	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	106	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	101	63	131



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352044)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	84.5	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3354279)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	99.7	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3355325)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	111	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	99.7	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	85.8	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3357393)								
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	103	70	130
EP071: >C16 - C34 Fraction	----	100	mg/kg	<100	350 mg/kg	108	74	138
EP071: >C34 - C40 Fraction	----	100	mg/kg	<100	----	----	----	----
		50	mg/kg	----	150 mg/kg	114	63	131
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3357407)								
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	93.0	68.4	128
EP080: BTEXN (QCLot: 3352044)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	86.2	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	84.3	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	78.8	58	118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	79.2	60	120
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	79.7	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	92.0	62	138
EP080: BTEXN (QCLot: 3354279)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.9	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	114	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	82.9	58	118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	84.7	60	120
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	88.2	60	120
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	87.5	62	138
EP080: BTEXN (QCLot: 3357407)								
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	93.8	62	116
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	116	62	128
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	87.2	58	118
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	85.4	60	120
	106-42-3							
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	91.4	60	120

Page : 23 of 30
 Work Order : ES1405849
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: SOIL				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike Concentration	Spike Recovery (%) LCS	Recovery Limits (%) Low High	
Method: Compound	CAS Number	LOR	Unit	Result				
EP080: BTEXN (QCLot: 3357407) - continued								
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	72.8	62	138

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3359246)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	118	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	111	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	108	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	90.1	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	86.6	70	130
EG005T: Total Metals by ICP-AES (QCLot: 3361161)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	111	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	98.9	70	130
		EG005T: Copper	7440-50-8	125 mg/kg	115	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	98.0	70	130
		EG005T: Zinc	7440-66-6	125 mg/kg	87.3	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3359247)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG035T: Mercury	7439-97-6	5 mg/kg	100	70	130
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3361162)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	102	70	130
EP004: Organic Matter (QCLot: 3358600)							
ES1405849-003	P4 LOT 422 TP3 0-0.3	EP004: Organic Matter	----	1.84 %	85.8	----	----
		EP004: Total Organic Carbon	----	1.07 %	85.6	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 3352021)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	99.7	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	93.2	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	95.4	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	96.3	70	130



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 3352021) - continued							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Endrin	72-20-8	2 mg/kg	94.4	70	130
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	98.2	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3354882)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	80.4	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.2	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	82.9	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	84.5	70	130
		EP068: Endrin	72-20-8	2 mg/kg	88.6	70	130
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	74.0	70	130
EP068A: Organochlorine Pesticides (OC) (QCLot: 3358994)							
ES1406424-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	83.2	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	92.8	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	75.8	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	80.7	70	130
		EP068: Endrin	72-20-8	2 mg/kg	92.6	70	130
		EP068: 4,4`-DDT	50-29-3	2 mg/kg	80.9	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3352021)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	104	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	74.8	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	94.1	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	96.7	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	82.5	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3354882)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	99.2	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.0	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	97.7	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.9	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	86.1	70	130
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3358994)							
ES1406424-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	106	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	101	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	87.9	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	83.1	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3352040)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.6	70	130

Page : 25 of 30
 Work Order : ES1405849
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: SOIL				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3355326)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	84.1	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	87.8	70	130
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3357396)							
ES1406229-021	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.3	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.2	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352039)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	80.0	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	94.2	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	92.1	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352044)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.9	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3354279)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.3	70	130
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3355325)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: C10 - C14 Fraction	----	640 mg/kg	77.8	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	74.1	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.6	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357393)							
ES1406229-021	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	75.8	73	137
		EP071: C15 - C28 Fraction	----	3140 mg/kg	104	53	131
		EP071: C29 - C36 Fraction	----	2860 mg/kg	118	52	132
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357407)							
ES1406229-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	102	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352039)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	122	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.6	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	59.4	52	132
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352044)							
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	94.8	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3354279)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	82.0	70	130
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3355325)							
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	95.7	73	137
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	70.8	53	131
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	62.3	52	132

Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
					MS	MSD	Low	High	Value	Control Limit	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number								
EP068A: Organochlorine Pesticides (OC) (QCLot: 3352021) - continued											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: gamma-BHC	58-89-9	0.5 mg/kg	99.7	----	70	130	----	----	
		EP068: Heptachlor	76-44-8	0.5 mg/kg	93.2	----	70	130	----	----	
		EP068: Aldrin	309-00-2	0.5 mg/kg	95.4	----	70	130	----	----	
		EP068: Dieldrin	60-57-1	0.5 mg/kg	96.3	----	70	130	----	----	
		EP068: Endrin	72-20-8	2 mg/kg	94.4	----	70	130	----	----	
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	98.2	----	70	130	----	----	
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3352021)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP068: Diazinon	333-41-5	0.5 mg/kg	104	----	70	130	----	----	
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	74.8	----	70	130	----	----	
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	94.1	----	70	130	----	----	
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	96.7	----	70	130	----	----	
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	82.5	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352039)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: C10 - C14 Fraction	----	640 mg/kg	80.0	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	94.2	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	92.1	----	52	132	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352039)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	122	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	78.6	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	59.4	----	52	132	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3352040)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	90.3	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	97.6	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3352044)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C9 Fraction	----	32.5 mg/kg	89.9	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3352044)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	94.8	----	70	130	----	----	
EP080: BTEXN (QCLot: 3352044)											
ES1405849-001	P4 LOT 422 TP1 0-0.5	EP080: Benzene	71-43-2	2.5 mg/kg	77.4	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	82.1	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.4	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	78.9	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	79.4	----	70	130	----	----	
	EP080: Naphthalene	91-20-3	2.5 mg/kg	80.4	----	70	130	----	----		
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3354279)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C9 Fraction	----	32.5 mg/kg	85.3	----	70	130	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3354279)											

Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3354279) - continued											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	82.0	----	70	130	----	----	
EP080: BTEXN (QCLot: 3354279)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP080: Benzene	71-43-2	2.5 mg/kg	83.8	----	70	130	----	----	
		EP080: Toluene	108-88-3	2.5 mg/kg	83.7	----	70	130	----	----	
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	76.9	----	70	130	----	----	
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	77.6	----	70	130	----	----	
			106-42-3								
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.2	----	70	130	----	----	
		EP080: Naphthalene	91-20-3	2.5 mg/kg	74.5	----	70	130	----	----	
EP068A: Organochlorine Pesticides (OC) (QCLot: 3354882)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: gamma-BHC	58-89-9	0.5 mg/kg	80.4	----	70	130	----	----	
		EP068: Heptachlor	76-44-8	0.5 mg/kg	81.2	----	70	130	----	----	
		EP068: Aldrin	309-00-2	0.5 mg/kg	82.9	----	70	130	----	----	
		EP068: Dieldrin	60-57-1	0.5 mg/kg	84.5	----	70	130	----	----	
		EP068: Endrin	72-20-8	2 mg/kg	88.6	----	70	130	----	----	
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	74.0	----	70	130	----	----	
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3354882)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP068: Diazinon	333-41-5	0.5 mg/kg	99.2	----	70	130	----	----	
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.0	----	70	130	----	----	
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	97.7	----	70	130	----	----	
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	88.9	----	70	130	----	----	
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	86.1	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3355325)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: C10 - C14 Fraction	----	640 mg/kg	77.8	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	74.1	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	73.6	----	52	132	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3355325)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	95.7	----	73	137	----	----	
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	70.8	----	53	131	----	----	
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	62.3	----	52	132	----	----	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3355326)											
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	84.1	----	70	130	----	----	
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	87.8	----	70	130	----	----	
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357393)											
ES1406229-021	Anonymous	EP071: C10 - C14 Fraction	----	640 mg/kg	75.8	----	73	137	----	----	
		EP071: C15 - C28 Fraction	----	3140 mg/kg	104	----	53	131	----	----	
		EP071: C29 - C36 Fraction	----	2860 mg/kg	118	----	52	132	----	----	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3357393)											



Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number		MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3357393) - continued										
ES1406229-021	Anonymous	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	103	----	73	137	----	----
		EP071: >C16 - C34 Fraction	----	4800 mg/kg	105	----	53	131	----	----
		EP071: >C34 - C40 Fraction	----	2400 mg/kg	99.2	----	52	132	----	----
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons (QCLot: 3357396)										
ES1406229-021	Anonymous	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	88.3	----	70	130	----	----
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	98.2	----	70	130	----	----
EP080/071: Total Petroleum Hydrocarbons (QCLot: 3357407)										
ES1406229-021	Anonymous	EP080: C6 - C9 Fraction	----	32.5 mg/kg	102	----	70	130	----	----
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3357407)										
ES1406229-021	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	98.7	----	70	130	----	----
EP080: BTEXN (QCLot: 3357407)										
ES1406229-021	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	105	----	70	130	----	----
		EP080: Toluene	108-88-3	2.5 mg/kg	119	----	70	130	----	----
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	100	----	70	130	----	----
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	101	----	70	130	----	----
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	104	----	70	130	----	----
		EP080: Naphthalene	91-20-3	2.5 mg/kg	72.3	----	70	130	----	----
EP004: Organic Matter (QCLot: 3358600)										
ES1405849-003	P4 LOT 422 TP3 0-0.3	EP004: Organic Matter	----	1.84 %	85.8	----	----	----	----	----
		EP004: Total Organic Carbon	----	1.07 %	85.6	----	----	----	----	----
EP068A: Organochlorine Pesticides (OC) (QCLot: 3358994)										
ES1406424-001	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	83.2	----	70	130	----	----
		EP068: Heptachlor	76-44-8	0.5 mg/kg	92.8	----	70	130	----	----
		EP068: Aldrin	309-00-2	0.5 mg/kg	75.8	----	70	130	----	----
		EP068: Dieldrin	60-57-1	0.5 mg/kg	80.7	----	70	130	----	----
		EP068: Endrin	72-20-8	2 mg/kg	92.6	----	70	130	----	----
		EP068: 4,4'-DDT	50-29-3	2 mg/kg	80.9	----	70	130	----	----
EP068B: Organophosphorus Pesticides (OP) (QCLot: 3358994)										
ES1406424-001	Anonymous	EP068: Diazinon	333-41-5	0.5 mg/kg	106	----	70	130	----	----
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	77.5	----	70	130	----	----
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	101	----	70	130	----	----
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	87.9	----	70	130	----	----
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	83.1	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3359246)										
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG005T: Arsenic	7440-38-2	50 mg/kg	118	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	106	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	108	----	70	130	----	----

Page : 30 of 30
 Work Order : ES1405849
 Client : ENVIRON AUSTRALIA PTY LTD
 Project : HYDRO BUFFER ZONE INVESTIGATION



Sub-Matrix: **SOIL**

Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Concentration	Spike Recovery (%)		Recovery Limits (%)		RPDs (%)	
					MS	MSD	Low	High	Value	Control Limit
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number							
EG005T: Total Metals by ICP-AES (QCLot: 3359246) - continued										
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG005T: Copper	7440-50-8	125 mg/kg	111	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	108	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	90.1	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	86.6	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3359247)										
ES1405849-001	P4 LOT 422 TP1 0-0.5	EG035T: Mercury	7439-97-6	5 mg/kg	100	----	70	130	----	----
EG005T: Total Metals by ICP-AES (QCLot: 3361161)										
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG005T: Arsenic	7440-38-2	50 mg/kg	111	----	70	130	----	----
		EG005T: Cadmium	7440-43-9	50 mg/kg	109	----	70	130	----	----
		EG005T: Chromium	7440-47-3	50 mg/kg	98.9	----	70	130	----	----
		EG005T: Copper	7440-50-8	125 mg/kg	115	----	70	130	----	----
		EG005T: Lead	7439-92-1	125 mg/kg	102	----	70	130	----	----
		EG005T: Nickel	7440-02-0	50 mg/kg	98.0	----	70	130	----	----
		EG005T: Zinc	7440-66-6	125 mg/kg	87.3	----	70	130	----	----
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3361162)										
ES1405849-022	P4 LOT16 TP5 0.1-0.2	EG035T: Mercury	7439-97-6	5 mg/kg	102	----	70	130	----	----

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1405849	Page	: 1 of 15
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Sydney
Contact	: STEVE CADMAN	Contact	: Client Services
Address	: Eastpoint Complex Suite 19B, Level 2 50 Glebe Road PO Box 435 The Junction NSW 2291	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: scadman@environcorp.com	E-mail	: sydney@alsglobal.com
Telephone	: ----	Telephone	: +61-2-8784 8555
Facsimile	: ----	Facsimile	: +61-2-8784 8500
Project	: HYDRO BUFFER ZONE INVESTIGATION	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 20-MAR-2014
C-O-C number	: ----	Issue Date	: 31-MAR-2014
Sampler	: KW/SC	No. of samples received	: 39
Order number	: AS130348	No. of samples analysed	: 36
Quote number	: SY/433/13		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA002 : pH (Soils)								
Soil Glass Jar - Unpreserved (EA002) P4 LOT 422 TP3 0-0.3		17-MAR-2014	24-MAR-2014	24-MAR-2014	✓	24-MAR-2014	24-MAR-2014	✓
Soil Glass Jar - Unpreserved (EA002) P4 LOT 420 TP3 0.05-0.25, P4 LOT16 TP2 0.1-0.2		P15 TP1 0.2-0.5, 18-MAR-2014	25-MAR-2014	25-MAR-2014	✓	25-MAR-2014	25-MAR-2014	✓
Soil Glass Jar - Unpreserved (EA002) P8 TP2 0.2-0.5,		P14 TP2 0.3-0.5 19-MAR-2014	25-MAR-2014	26-MAR-2014	✓	25-MAR-2014	25-MAR-2014	✓
EA055: Moisture Content								
Soil Glass Jar - Unpreserved (EA055-103) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3		P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3, 17-MAR-2014	----	----	----	24-MAR-2014	31-MAR-2014	✓
Soil Glass Jar - Unpreserved (EA055-103) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, QA01, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3, P4 LOT16 TP6 0.3-0.5,		P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, QA02, P4 LOT16 TP3 0.1-0.3, P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4 18-MAR-2014	----	----	----	24-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EA055-103) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	----	----	----	27-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EA055-103) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,		P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03 19-MAR-2014	----	----	----	24-MAR-2014	02-APR-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	---	13-SEP-2014	----	28-MAR-2014	24-SEP-2014	✓
Snap Lock Bag (EA200) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, QA01, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3, P4 LOT16 TP6 0.3-0.5, P4-LOT16-TP1 - 0.2-0.35	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, QA02, P4 LOT16 TP3 0.1-0.3, P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4,	18-MAR-2014	---	14-SEP-2014	----	28-MAR-2014	24-SEP-2014	✓
Snap Lock Bag (EA200) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	---	15-SEP-2014	----	28-MAR-2014	24-SEP-2014	✓
Soil Glass Jar - Unpreserved (EA200) ID1,	ID2	18-MAR-2014	---	14-SEP-2014	----	28-MAR-2014	24-SEP-2014	✓
ED008: Exchangeable Cations								
Soil Glass Jar - Unpreserved (ED008) P4 LOT 422 TP3 0-0.3		17-MAR-2014	26-MAR-2014	14-APR-2014	✓	26-MAR-2014	14-APR-2014	✓
Soil Glass Jar - Unpreserved (ED008) P4 LOT 420 TP3 0.05-0.25, P4 LOT16 TP2 0.1-0.2	P15 TP1 0.2-0.5,	18-MAR-2014	26-MAR-2014	15-APR-2014	✓	26-MAR-2014	15-APR-2014	✓
Soil Glass Jar - Unpreserved (ED008) P8 TP2 0.2-0.5,	P14 TP2 0.3-0.5	19-MAR-2014	26-MAR-2014	16-APR-2014	✓	26-MAR-2014	16-APR-2014	✓



Matrix: **SOIL**

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

Method	Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EG005T: Total Metals by ICP-AES								
Soil Glass Jar - Unpreserved (EG005T) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	26-MAR-2014	13-SEP-2014	✓	27-MAR-2014	13-SEP-2014	✓
Soil Glass Jar - Unpreserved (EG005T) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	26-MAR-2014	14-SEP-2014	✓	27-MAR-2014	14-SEP-2014	✓
Soil Glass Jar - Unpreserved (EG005T) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02,	P4 LOT16 TP6 0.3-0.5, QA01, P4-LOT16-TP1 - 0.2-0.35	18-MAR-2014	27-MAR-2014	14-SEP-2014	✓	27-MAR-2014	14-SEP-2014	✓
Soil Glass Jar - Unpreserved (EG005T) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	27-MAR-2014	15-SEP-2014	✓	27-MAR-2014	15-SEP-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG035T: Total Recoverable Mercury by FIMS								
Soil Glass Jar - Unpreserved (EG035T) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	26-MAR-2014	14-APR-2014	✓	31-MAR-2014	14-APR-2014	✓
Soil Glass Jar - Unpreserved (EG035T) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	26-MAR-2014	15-APR-2014	✓	31-MAR-2014	15-APR-2014	✓
Soil Glass Jar - Unpreserved (EG035T) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02,	P4 LOT16 TP6 0.3-0.5, QA01, P4-LOT16-TP1 - 0.2-0.35	18-MAR-2014	27-MAR-2014	15-APR-2014	✓	28-MAR-2014	15-APR-2014	✓
Soil Glass Jar - Unpreserved (EG035T) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	27-MAR-2014	16-APR-2014	✓	28-MAR-2014	16-APR-2014	✓
EP004: Organic Matter								
Soil Glass Jar - Unpreserved (EP004) P4 LOT 422 TP3 0-0.3		17-MAR-2014	26-MAR-2014	14-APR-2014	✓	28-MAR-2014	14-APR-2014	✓
Soil Glass Jar - Unpreserved (EP004) P4 LOT 420 TP3 0.05-0.25, P4 LOT16 TP2 0.1-0.2	P15 TP1 0.2-0.5,	18-MAR-2014	26-MAR-2014	15-APR-2014	✓	28-MAR-2014	15-APR-2014	✓
Soil Glass Jar - Unpreserved (EP004) P8 TP2 0.2-0.5,	P14 TP2 0.3-0.5	19-MAR-2014	26-MAR-2014	16-APR-2014	✓	28-MAR-2014	16-APR-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)								
Soil Glass Jar - Unpreserved (EP068) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	26-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	26-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	25-MAR-2014	01-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	26-MAR-2014	05-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	25-MAR-2014	02-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068B: Organophosphorus Pesticides (OP)								
Soil Glass Jar - Unpreserved (EP068) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	26-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	26-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	25-MAR-2014	01-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	26-MAR-2014	05-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP068) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	25-MAR-2014	02-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP071) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	25-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP071) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	25-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP071) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	25-MAR-2014	01-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP071) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	28-MAR-2014	05-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP071) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	25-MAR-2014	02-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons								
Soil Glass Jar - Unpreserved (EP075(SIM)) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	25-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	25-MAR-2014	03-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	25-MAR-2014	01-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	28-MAR-2014	05-MAY-2014	✓
Soil Glass Jar - Unpreserved (EP075(SIM)) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	25-MAR-2014	02-APR-2014	✓	26-MAR-2014	04-MAY-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080: BTEXN								
Soil Glass Jar - Unpreserved (EP080) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	24-MAR-2014	31-MAR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	24-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	25-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	29-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	24-MAR-2014	02-APR-2014	✓	25-MAR-2014	02-APR-2014	✓



Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013								
Soil Glass Jar - Unpreserved (EP080) P4 LOT 422 TP1 0-0.5, P4 LOT 422 TP3 0-0.3, P4 LOT 422 TP5 0-0.3	P4 LOT 422 TP2 0-0.4, P4 LOT 422 TP4 0-0.3,	17-MAR-2014	24-MAR-2014	31-MAR-2014	✓	24-MAR-2014	31-MAR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4 LOT 420 TP1 0-0.3, P4 LOT 420 TP3 0.05-0.25, P15 TP1 0.2-0.5, P15 TP3 0.3-0.5, P15 TP5 0.3-0.5, P15 TP7 0.1-0.2, P4 LOT16 TP2 0.1-0.2, P4 LOT16 TP4 0.1-0.3	P4 LOT 420 TP2 0.05-0.2, P4 LOT 420 TP4 0.05-0.25, P15 TP2 0.3-0.6, P15 TP4 0.3-0.5, P15 TP6 0.3-0.5, P15 TP9 0.1-0.2, P4 LOT16 TP3 0.1-0.3,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	24-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4 LOT16 TP5 0.1-0.2, P4 LOT16 TP7 0.2-0.4, QA02	P4 LOT16 TP6 0.3-0.5, QA01,	18-MAR-2014	24-MAR-2014	01-APR-2014	✓	25-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P4-LOT16-TP1 - 0.2-0.35		18-MAR-2014	26-MAR-2014	01-APR-2014	✓	29-MAR-2014	01-APR-2014	✓
Soil Glass Jar - Unpreserved (EP080) P8 TP1 0.2-0.5, P8 TP3 0.2-0.5, P14 TP1 0.3-0.5, P14 TP3 0.2-0.4,	P8 TP2 0.2-0.5, P8 TP5 0.1-0.3, P14 TP2 0.3-0.5, QA03	19-MAR-2014	24-MAR-2014	02-APR-2014	✓	25-MAR-2014	02-APR-2014	✓



Quality Control Parameter Frequency Compliance

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Matrix: **SOIL**

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Exchangeable Cations with pre-treatment	ED008	2	13	15.4	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	6	60	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	2	11	18.2	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	6	55	10.9	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	5	45	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	5	47	10.6	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	4	40	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	6	60	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	6	58	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Exchangeable Cations with pre-treatment	ED008	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	55	5.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	3	45	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	60	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	58	5.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Exchangeable Cations with pre-treatment	ED008	1	13	7.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	55	5.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	3	45	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	60	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	58	5.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Organic Matter	EP004	1	11	9.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	3	55	5.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	3	45	6.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	2	40	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	3	60	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	3	58	5.2	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
pH (1:5)	EA002	SOIL	(APHA 21st ed., 4500H+) pH is determined on soil samples after a 1:5 soil/water leach. This method is compliant with NEPM (2013) Schedule B(3) (Method 103)
Moisture Content	EA055-103	SOIL	A gravimetric procedure based on weight loss over a 12 hour drying period at 103-105 degrees C. This method is compliant with NEPM (2013) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples
Asbestos - Quantitative Analysis	* EA200Q	SOIL	Asbestos Materials Content with Confirmation of Identification by AS 4964 - 2004 Asbestos
Exchangeable Cations with pre-treatment	ED008	SOIL	Rayment & Higginson (1992) Method 15A2. Soluble salts are removed from the sample prior to analysis. Cations are exchanged from the sample by contact with Ammonium Chloride. They are then quantitated in the final solution by ICPAES and reported as meq/100g of original soil. This method is compliant with NEPM (2013) Schedule B(3) (Method 301)
Total Metals by ICP-AES	EG005T	SOIL	(APHA 21st ed., 3120; USEPA SW 846 - 6010) (ICPAES) Metals are determined following an appropriate acid digestion of the soil. The ICPAES technique ionises samples in a plasma, emitting a characteristic spectrum based on metals present. Intensities at selected wavelengths are compared against those of matrix matched standards. This method is compliant with NEPM (2013) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl ₂)(Cold Vapour generation) AAS) FIM-AAS is an automated flameless atomic absorption technique. Mercury in solids are determined following an appropriate acid digestion. Ionic mercury is reduced online to atomic mercury vapour by SnCl ₂ which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (2013) Schedule B(3)
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3)
Pesticides by GCMS	EP068	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS and quantification is by comparison against an established 5 point calibration curve. This technique is compliant with NEPM (2013) Schedule B(3) (Method 504,505)
TPH - Semivolatile Fraction	EP071	SOIL	(USEPA SW 846 - 8015A) Sample extracts are analysed by Capillary GC/FID and quantified against alkane standards over the range C10 - C36. This method is compliant with NEPM (2013) Schedule B(3) (Method 506.1)
PAH/Phenols (SIM)	EP075(SIM)	SOIL	(USEPA SW 846 - 8270B) Extracts are analysed by Capillary GC/MS in Selective Ion Mode (SIM) and quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 502 and 507)
TPH Volatiles/BTEX	EP080	SOIL	(USEPA SW 846 - 8260B) Extracts are analysed by Purge and Trap, Capillary GC/MS. Quantification is by comparison against an established 5 point calibration curve. This method is compliant with NEPM (2013) Schedule B(3) (Method 501)
Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH ₄ Cl extraction by end over end tumbling at a ratio of 1:20. There is no pretreatment for soluble salts. Extracts can be run by ICP for cations.
1:5 solid / water leach for soluble analytes	EN34	SOIL	10 g of soil is mixed with 50 mL of distilled water and tumbled end over end for 1 hour. Water soluble salts are leached from the soil by the continuous suspension. Samples are settled and the water filtered off for analysis.



Preparation Methods	Method	Matrix	Method Descriptions
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (2013) Schedule B(3) (Method 105)
Methanolic Extraction of Soils for Purge and Trap	* ORG16	SOIL	(USEPA SW 846 - 5030A) 5g of solid is shaken with surrogate and 10mL methanol prior to analysis by Purge and Trap - GC/MS.
Tumbler Extraction of Solids (Option A - Concentrating)	ORG17A	SOIL	In-house, Mechanical agitation (tumbler). 20g of sample, Na2SO4 and surrogate are extracted with 150mL 1:1 DCM/Acetone by end over end tumble. The solvent is decanted, dehydrated and concentrated (by KD) to the desired volume for analysis.
Tumbler Extraction of Solids (Option B - Non-concentrating)	ORG17B	SOIL	In-house, Mechanical agitation (tumbler). 10g of sample, Na2SO4 and surrogate are extracted with 20mL 1:1 DCM/Acetone by end over end tumble. The solvent is transferred directly to a GC vial for analysis.



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Duplicate (DUP) RPDs							
EG005T: Total Metals by ICP-AES	ES1405849-001	P4 LOT 422 TP1 0-0.5	Zinc	7440-66-6	52.5 %	0-20%	RPD exceeds LOR based limits

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

Sub-Matrix: **SOIL**

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Samples Submitted							
EP080S: TPH(V)/BTEX Surrogates	ES1405849-037	QA03	1,2-Dichloroethane-D4	17060-07-0	137 %	72.8-133.2 %	Recovery greater than upper data quality objective

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory, please tick →

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Ph: 08 8595 0890 E: lab@als.com.au
LABORATORY: 21 Bunn Road, Bunn Road, Bunn Road, SA 5095
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LABORATORY: 21 Bunn Road, Bunn Road, Bunn Road, SA 5095
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Ph: 08 8595 0890 E: lab@als.com.au
LABORATORY: 21 Bunn Road, Bunn Road, Bunn Road, SA 5095
Ph: 08 8595 0890 E: lab@als.com.au

CLIENT: Enviro Australia Pty Ltd

OFFICE: 198, 50 Glebe Road, The Junction, NSW 2291

PROJECT: Hydro Buffer Zone Investigation

ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: Kate Woods/Steve Cadman

COC: Emailed to ALS? (YES / NO) Yes

Email Reports to (will default to PM if no other addresses are listed): scadman@envirocorp.com

Email Invoice to (will default to PM if no other addresses are listed): scadman@envirocorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:
☐ Standard TAT (list due date)
☐ Non Standard or urgent TAT (list due date)

PROJECT NO: AS130348

PURCHASE ORDER NO:

COUNTRY OF ORIGIN:

CONTACT PH: 49625444

SAMPLER MOBILE: 0423583538

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

COC SEQUENCE NUMBER (Circle)

COO: 1 2 3 4 5 6 7

OFF: 1 2 3 4 5 6 7

RECEIVED BY: D. J.

DATE/TIME: 20/3

RELINQUISHED BY:

DATE/TIME:

FOR LABORATORY USE ONLY (Circle)

Free ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

SAMPLE DETAILS
MATRIX: Solids(Water(W)

CONTAINER INFORMATION

ANALYSIS REQUIRED INCLUDING SUITES (NB: Suite Codes must be listed to attend suite p/c)

Which Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TPH/BTEX	PAHs	8 metals	asbestos ID	OC/OP Pesticides	asbestos 200N	HOLD	ph, CEC, TOC
1	P4 Lot 422 TP1 0-0.5	17/03/2014	S		1	1	1	1	1	1			
2	P4 Lot 422 TP2 0-0.4	17/03/2014	S		1	1	1	1	1	1			
3	P4 Lot 422 TP3 0-0.3	17/03/2014	S		1	1	1	1	1	1			
4	P4 Lot 422 TP4 0-0.3	17/03/2014	S		2	1	1	1	1	1	1		
5	P4 Lot 422 TP5 0-0.3	17/03/2014	S		2	1	1	1	1	1	1		
6	P4 Lot 420 TP1 0-0.3	18/03/2014	S		1	1	1	1	1	1			
7	P4 Lot 420 TP2 0.05-0.2	18/03/2014	S		1	1	1	1	1	1		1	
8	P4 Lot 420 TP3 0.05-0.25	18/03/2014	S		1	1	1	1	1	1			
9	P4 Lot 420 TP4 0.05-0.25	18/03/2014	S		1	1	1	1	1	1			
10	P15 TP1 0.2-0.5	18/03/2014	S		1	1	1	1	1	1			
11	P15 TP2 0.3-0.6	18/03/2014	S		1	1	1	1	1	1			
TOTAL					14	11	11	11	11	11	2	1	

ES1405849



Telephone : +61-2-8784 8555

Environmental Division
Sydney
Work Order
ES1405849



CHAIN OF CUSTODY

ALS Laboratory, please tick →

UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 0800 E: mdelaine@als.com.au
JERISDALE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 7222 E: jdelaine@als.com.au
UNDELALINE 46 Callaghan Drive, Clifton QLD 4660
Ph: 07 7471 5600 E: jdelaine@als.com.au

UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 07 4641 0177 E: mdelaine@als.com.au
UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 7222 E: jdelaine@als.com.au
UNDELALINE 46 Callaghan Drive, Clifton QLD 4660
Ph: 07 7471 5600 E: jdelaine@als.com.au

UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 0800 E: mdelaine@als.com.au
UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 7222 E: jdelaine@als.com.au
UNDELALINE 46 Callaghan Drive, Clifton QLD 4660
Ph: 07 7471 5600 E: jdelaine@als.com.au

UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 0800 E: mdelaine@als.com.au
UNDELALINE 21 Duran Road, Rosedale SA 5095
Ph: 08 8303 7222 E: jdelaine@als.com.au
UNDELALINE 46 Callaghan Drive, Clifton QLD 4660
Ph: 07 7471 5600 E: jdelaine@als.com.au

CLIENT: Enviro Australia Pty Ltd

OFFICE: 198, 50 Glebe Road, The Junction, NSW 2291

PROJECT: Hydro Buffer Zone Investigation

ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: Kate Woods/Steve Cadman

COC Emailled to ALS? (YES / NO) Yes

Email Reports to (will default to PM if no other addresses are listed): scadman@envirocorp.com

Email Invoice to (will default to PM if no other addresses are listed): scadman@envirocorp.com

COMMENT/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests)
e.g. Ultra Trace Organics

☐ Standard TAT (list due date):
☐ Non Standard or urgent TAT (list due date):

FOR LABORATORY USE ONLY (Circle)
Custody Seal intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C

PURCHASE ORDER NO.:

COUNTRY OF ORIGIN:

CONTACT PH: 49625444

SAMPLER MOBILE: 0423583538

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

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DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

SAMPLE DETAILS

CONTAINER INFORMATION

ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price)

Additional Information

LAB ID

SAMPLE ID

DATE / TIME

MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

TPH/BTEX

PAHs

8 metals

asbestos ID

OC/OP Pesticides

HOLD

pH, CEC, TOC

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

Water Containment Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic

V = VOA Vial; HCl Preserved; VS = VOA Vial Sodium Bisulfate Preserved; AV = Airtight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Soluble Solids; U = Unpreserved Bag; LI = Lugo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle;

Water Containment Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic

V = VOA Vial; HCl Preserved; VS = VOA Vial Sodium Bisulfate Preserved; AV = Airtight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Soluble Solids; U = Unpreserved Bag; LI = Lugo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle;

Water Containment Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic

V = VOA Vial; HCl Preserved; VS = VOA Vial Sodium Bisulfate Preserved; AV = Airtight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Soluble Solids; U = Unpreserved Bag; LI = Lugo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle;

Water Containment Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airtight Unpreserved Plastic

V = VOA Vial; HCl Preserved; VS = VOA Vial Sodium Bisulfate Preserved; AV = Airtight Unpreserved Vial; SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;

Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Soluble Solids; U = Unpreserved Bag; LI = Lugo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle;



SHACKRAY 72 Hildastraat 10001, Netherby QLD 4170
 Ph 07 4944 0177 E marcy@shackray.com
DMELBOYBORNIE 24 Violett Road Springvale VIC 3171
 Ph 03 8549 4500 E dmelboyn@dmelboyn.com
DMJDEG 1200 Sydney Road Mulgoa NSW 2650
 Ph 02 6332 6236 E nurture@dmjdeg.com.au

UNEWCASTLE 5 Rose Gurn Road Vernalis NSW 2303
Ph: 02 4968 9433 E: sam@unewcastle5.com.au
UNOWRA 4/13 Gentry Place North Nowra NSW 2541
Ph: 02 4453 5063 E: nova4@bigpond.com
UPERTH 10 Hord Valey Maitland WA 6000
Ph: 08 0209 7855 E: carly@unewcastle5.com.au

USYDNEY 2/77-289 Woodlark Road Smithfield NSW 2165
Ph 02 8784-8555 E samples.usydney@algaebiol.com
DTCOMNSVILLE 14-15 Deanna Court Boble QLD 4318
Ph 07 4726 0800 E torresella.environmental@algaebiol.com
UWOLONGONG 50 Kenny Street Wollongong NSW 2520
Ph 02 4226 8000 E uwo@algaebiol.com

CLIENT: Environ Australia Pty Ltd

OFFICE: 19B, 50 Glebe Road, The Junction, NSW 2291

TURNAROUND REQUIREMENTS :
(Standard TAT may be longer for some tests)
(2-3 (Three) Weeks (Quarterly))

☐ Standard TAT (list due date):
☐ Non Standard or urgent TAT (list due date):

FOR LABORATORY USE ONLY (Circle)

PROJECT: Hydro Buffer Zone Investigation

ALSO QUOTE NO.:

Free ice / frozen ice bricks present upon

ORDER NUMBER:: AS130348

COUNTRY OF ORIGIN:

COC:

Random Sample Temperature on Receipt:

PROJECT MANAGER: Steve Cadman

PH: 49625444

OEI

Other comment:

SAMPLER: Kate Woods/Steve Cadman

MOBILE: 0423583538

RECEIVED BY:

RECEIVED BY:

COC Emailed to ALS? (YES / NO) Yes

AT (or default):

Annual reports to (firm) concern to: in the other businesses

p. 2011

המחיר: 100 ש"ח

CLAIM:	DATE:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

[illegible]

Water Control Preserved Plastic: P = Unpreserved Plastic; N = Nitric Preserved Plastic; O = Sodium Hydroxide Preserved Plastic; S = Sodium Hydroxide Preserved Plastic; AP = Air-tight Unpreserved Plastic; V = VOA Val HCl Preserved; VB = VOA Val Sodium Bisulfate Preserved; VS = VOA Val Sulfuric Preserved; AV = Air-tight Unpreserved Vali Glass; S = Sulfuric Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specimen Bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfuric Solis; B = Unpreserved Bag; U = Liquids, Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CHAIN OF CUSTODY

ALS Laboratory, please tick ->

UNDELAGE 21 Burrey Road, Pootah SA 5095
Ph: 08 8339 0000 E: info@als.com.au
CHURCHILL 2 Bunn Street, Stirling QLD 4053
Ph: 07 3248 7222 E: samples@als.com.au
UL-4053 ONE 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au

UL-4053 TWO 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au
UL-4053 THREE 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au

UNDELAGE 21 Burrey Road, Pootah SA 5095
Ph: 08 8339 0000 E: info@als.com.au
CHURCHILL 2 Bunn Street, Stirling QLD 4053
Ph: 07 3248 7222 E: samples@als.com.au
UL-4053 ONE 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au

UL-4053 TWO 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au
UL-4053 THREE 26 Calverton Drive, Cheltenham QLD 4060
Ph: 07 4271 5600 E: phd@als.com.au

CLIENT: Environ Australia Pty Ltd

OFFICE: 19B, 50 Gibe Road, The Junction, NSW 2291

PROJECT: Hydro Buffer Zone Investigation

ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: Kate Woods/Steve Cadman

COC Emailed to ALS? (YES / NO) Yes

Email Reports to (will default to PM if no other addresses are listed): scadman@envirocorp.com

Email Invoice to (will default to PM if no other addresses are listed): scadman@envirocorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: ☐ Standard TAT (list due date):
☐ Non Standard or urgent TAT (list due date):

FOR LABORATORY USE ONLY (Circle)
Custody Seal intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C

PROJECT NO AS130348

PURCHASE ORDER NO:

COUNTRY OF ORIGIN:

CONTACT PH: 49625444

SAMPLER MOBILE: 0423583538

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY: *D. J.*

DATE/TIME: 20/3

RELINQUISHED BY:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

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Telephone: +61-2-6784 8555



Environmental Division
Sydney
Work Order
ES1405849

27314

ES1405849

ES1405849

Subcon / Forward Lab / Split WO
Lab / Analysis: *Nege*
Organised By / Date: *AS6872*
Relinquished By / Date:
Connote / Carrier:
WO No: *20-083*
Attach By PO / Internal Sheet:

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TPH/BTEX	PAHs	8 metals	asbestos ID	OC/OP Pesticides	asbestos 200N	HOLD	pH, CEC, TOC
1	P4 Lot 422 TP1 0-0.5	17/03/2014	S		1	1	1	1	1	1			
2	P4 Lot 422 TP2 0-0.4	17/03/2014	S		1	1	1	1	1	1			
3	P4 Lot 422 TP3 0-0.3	17/03/2014	S		1	1	1	1	1	1			
4	P4 Lot 422 TP4 0-0.3	17/03/2014	S		2	1	1	1	1	1	1		
5	P4 Lot 422 TP5 0-0.3	17/03/2014	S		2	1	1	1	1	1	1		
6	P4 Lot 420 TP1 0-0.3	18/03/2014	S		1	1	1	1	1	1			
7	P4 Lot 420 TP1 0.6-0.8	18/03/2014	S		1	1	1	1	1	1			
8	P4 Lot 420 TP2 0.05-0.2	18/03/2014	S		1	1	1	1	1	1			
9	P4 Lot 420 TP3 0.05-0.25	18/03/2014	S		1	1	1	1	1	1			
10	P4 Lot 420 TP4 0.05-0.25	18/03/2014	S		1	1	1	1	1	1			
11	P45 TP1 0.2-0.5	18/03/2014	S		1	1	1	1	1	1			
12	P45 TP2 0.3-0.6	18/03/2014	S		1	1	1	1	1	1			
TOTAL					14	11	11	11	11	11	2	1	

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved Plastic; AP = Air-tight Unpreserved Plastic
V = VOA Vial HCl Preserved; VA = VOA Vial Sodium Hydroxide Preserved; VS = VOA Vial Sulfuric Preserved; AV = Air-tight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Fomaledehyde Preserved Glass
Z = Zinc Assay Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulfate Solids; B = Unpreserved BSL; LI = Lignin Sulfonate Preserved Bottle; SSI = Sterile Sodium Thiosulfate Preserved Bottle



CHAIN OF CUSTODY

ALS Laboratory, please tick →

DUPLICATE 21 Burns Road, Peoria, NSW 2806
Ph: 08 939 0800 E: als@als.com.au
DUPLICATE 21 Burns Road, Peoria, NSW 2806
Ph: 08 939 0800 E: als@als.com.au
DUPLICATE 21 Burns Road, Peoria, NSW 2806
Ph: 08 939 0800 E: als@als.com.au

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Ph: 08 939 0800 E: als@als.com.au
DUPLICATE 21 Burns Road, Peoria, NSW 2806
Ph: 08 939 0800 E: als@als.com.au

CLIENT: Envirotron Australia Pty Ltd

OFFICE: 198, 50 Glebe Road, The Junction, NSW 2291

PROJECT: Hydro Buffer Zone Investigation

ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: Kate Woods/Steve Cadman

COC Emailed to ALS? (YES / NO) Yes

Email Reports to (will default to PM if no other addresses are listed): scadman@envirotroncorp.com

Email Invoice to (will default to PM if no other addresses are listed): scadman@envirotroncorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:
☐ Standard TAT (last due date):
☐ Non Standard or urgent TAT (last due date):

COB SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

RECEIVED BY:
DATE/TIME:

FOR LABORATORY USE ONLY (Circle)
Custody Seal intact? Yes No
Free Ice / frozen ice bricks present upon receipt? Yes No
Random Sample Temperature on Receipt: °C

RECEIVED BY:
DATE/TIME:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solids(S) Water(W)	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price) Which Media are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	TPH/BTEX	PAHs	8 metals	asbestos ID	OC/OP Pesticides	HOLD	PH, CEC, TOC	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

23	P4 Lot 16 TP6 0.3-0.5	18/03/2014	S	P4 Lot 16 TP6	1	1	1	1	1	1			

24	P4 Lot 16 TP7 0.2-0.4	18/03/2014	S		1	1	1	1	1	1			

25	P8 TP1 0.2-0.5	18/03/2014	S		1	1	1	1	1	1			

26	P8 TP2 0.2-0.5	18/03/2014	S		1	1	1	1	1	1			

27	P8 TP3 0.2-0.5	18/03/2014	S		1	1	1	1	1	1			

28	P8 TP4 0.1-0.3	18/03/2014	S		1	1	1	1	1	1			

29	P8 TP5 0.1-0.3	18/03/2014	S		1	1	1	1	1	1			

30	P14 TP1 0.3-0.5	18/03/2014	S		1	1	1	1	1	1			

31	P14 TP2 0.3-0.5	18/03/2014	S		1	1	1	1	1	1			

32	P14 TP3 0.2-0.4	18/03/2014	S		1	1	1	1	1	1			



CHAIN OF CUSTODY

ALS Laboratory, please tick →

LABORATORY: 21 Burns Road, Potts Point, NSW 2015
Ph: 08 8359 0800 E: info@als.com.au
LABORATORY: 21 Burns Road, Potts Point, NSW 2015
Ph: 08 8359 0800 E: info@als.com.au
LABORATORY: 21 Burns Road, Potts Point, NSW 2015
Ph: 08 8359 0800 E: info@als.com.au

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Ph: 08 8359 0800 E: info@als.com.au
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Ph: 08 8359 0800 E: info@als.com.au
LABORATORY: 21 Burns Road, Potts Point, NSW 2015
Ph: 08 8359 0800 E: info@als.com.au

CLIENT: Enviro Australia Pty Ltd

OFFICE: 199, 50 Glebe Road, The Junction, NSW 2291

PROJECT: Hydro Buffer Zone Investigation

ORDER NUMBER: AS130348

PROJECT MANAGER: Steve Cadman

SAMPLER: Kate Woods/Steve Cadman

COC Emailed to ALS? (YES / NO) Yes

Email Reports to (will default to PM if no other addresses are listed): scadman@envirocorp.com

Email Invoice to (will default to PM if no other addresses are listed): scadman@envirocorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: ☐ Standard TAT (list due date) ☐ Non Standard or urgent TAT (list due date)

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:

COUNTRY OF ORIGIN:

CONTACT PH: 49625444

SAMPLER MOBILE: 0423583538

EDD FORMAT (for default):

RELINQUISHED BY:

DATE/TIME:

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact? Yes No

Free Ice / frozen ice bricks present upon receipt? Yes No

Random Sample Temperature on Receipt: °C

Other comment:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

ALS USE ONLY

SAMPLE DETAILS
MATRIX: Solids(s) Water(w)

CONTAINER INFORMATION

ANALYSIS REQUIRED including SITES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required):

Additional Information

LAB ID SAMPLE ID DATE / TIME MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

TPH/BTEX

PAHs

8 metals

asbestos ID

OC/OP Pesticides

HOLD

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

33

ID1

17/03/2014

S

1

1

1

1

1

1

1

1

1

1

1

34

ID2

17/03/2014

S

1

1

1

1

1

1

1

1

1

1

1

35

QA01

17/03/2014

S

1

1

1

1

1

1

1

1

1

1

1

36

QA02

18/03/2014

S

1

1

1

1

1

1

1

1

1

1

1

37

QA03

19/03/2014

S

1

1

1

1

1

1

1

1

1

1

1

40

P4 Lot 16 TP1

0.2-0.35

18/3

= 18 (SNR)

1

1

1

1

1

1

1

1

1

1

41

P4 Lot 16 TP4

0.2-0.4

18/3

held (as per client)

1

1

1

1

1

1

1

1

1

1

TOTAL

5

3

3

3

5

3

0

0

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Air-tight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulfate Preserved; VS = VOA Vial Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Specimen bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottle; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lugo's Iodine Preserved Bottle; STT = Sterile Sodium Thiosulfate Preserved Bottle.

Helen Simpson

From: Steven Cadman <scadman@environcorp.com>
Sent: Monday, 24 March 2014 11:25 AM
To: Helen Simpson
Subject: RE: Hydro Buffer Zone Investigation ES1405849

Helen,

Please see comments below re errors in sample or COC labelling.

Regards,

Steve



Steve Cadman | Senior Environmental Scientist
ENVIRON Australia Pty Ltd
Eastpoint Complex | Suite 19B, Level 2
50 Glebe Road | PO Box 435 | The Junction NSW 2291
T: 02 4962 5444 | F: 02 4962 5888 | M: 0423 583 538
scadman@environcorp.com

From: Helen Simpson [<mailto:helen.simpson@alsglobal.com>]
Sent: Friday, 21 March 2014 2:22 PM
To: Steven Cadman
Subject: Hydro Buffer Zone Investigation ES1405849

Hi Steve,

We have received work yesterday for job Hydro Buffer Zone Investigation, our ref ES1405849, however there were some samples that were not received and extra samples as well.

We did not receive

P4lot16 TP1 0.35-0.8 this has been incorrectly identified on COC - actually refers to P4lot16 TP1 0.2-0.35 (as per below)

P8TP4 0.1-0.3 OK, not required for now

Extra samples received and placed on hold until further instructions received

P4Lot16 TP1 0.2-0.35 see above

P4Lot16TP4 0.2-0.4 hold this for now

There were also some samples received where the ID on the jars did not quite match the COC, these will be analysed OK

P4Lot420 TP3 0.05-0.25 received as P4Lot420 TP3

P15TP9 0.1-0.2 received as P15TP9 0.0-0.1

P4Lot16 TP2 0.1-0.2 received as P4Lot16 TP2 0.1-0.3

P4Lot16TP6 0.3-0.5 received as P4Lot16 TP6

Please let me know if any changes are required.

Kind Regards

Helen Simpson

Commitital Officer

A.L.S | Environmental Division

277-289 Woodpark Road

Smithfield NSW 2164 Australia

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Appendix F

QA/QC Assessment

APPENDIX F

DATA QUALITY OBJECTIVES

To ensure that reliable data of adequate type was collected and assessed for the investigation, the seven-step Data Quality Objective (DQO) approach, endorsed in the NSW DEC (2006) Guidelines for the NSW Site Auditor Scheme 2nd Edition, will be adopted. The DQOs set quality assurance and quality control parameters for the field and laboratory programs to ensure data of appropriate reliability will be used to assess the environmental conditions at Parcel 4.

ENVIRON has developed DQOs in accordance with the seven-step process, which is presented below.

Step 1 – State the Problem

Based on the information available from the Phase 1 ESA, uses of Parcel 4 appear to include dwellings and sheds for agricultural use and an overflow car park for the smelter. These uses of Parcel 4 require confirmation via a site walkover and judgemental sampling. In addition, the potential for fluoride in surface soils from dust deposition from the Hydro smelter requires assessment.

Step 2 – Identification of the Goals (Decisions) of the Study

The following decisions are to be made from this study:

- Are the current and former uses of Parcel 4 consistent with site observations?
- Has Parcel 4 been impacted by fluoride from dust deposition from the Hydro smelter?
- Has Parcel 4 been impacted by other contaminants from historical site use?
- Is Parcel 4 suitable for general industrial and environmental conservation landuse?

Step 3 – Identify Information Inputs to the Decision or Goal of the Study

The inputs required to make the above decisions are listed below:

- A site walkover, including collection of field notes and photographs;
- Results of surface soil samples collected for fluoride analysis;
- Results of other soil samples from fill/ hummocky ground collected for suitable analysis during the site walkover;
- Proposed land use;

- Appropriate NSW contamination guidelines.

Step 4 – Define the Study Boundaries

Spatial boundaries - the study boundaries have been defined as the spatial boundary of Parcel 4, as shown on **Figure 1**.

Vertical boundaries – as areas of concern at Parcel 4 are restricted to surface soils, the vertical boundary of the study is the top 200mm unless subsurface contamination issues are identified during the site walkover.

Temporal boundaries – the temporal boundary is limited to the data collected during the investigation works.

Constraints within the study boundaries – This investigation does not require investigation of subsurface soils or groundwater unless impacts to subsurface soils or groundwater are considered likely to have occurred from the historical site activities

Step 5 – Develop a Decision Rule

The decision rules for this investigation are as follows:

- If it is determined that the data generated through this investigation is reliable for use in producing a site conceptual model and assessing the suitability of Parcel 4 for general industrial and environmental conservation landuse, then an assessment of the suitability of Parcel 4 for general industrial and environmental conservation landuse will be made;
- If it is determined that the data generated through this investigation is not suitable, comprehensive or reliable for use in producing a site conceptual model, then further investigations may be recommended prior to the development of a site conceptual model and assessment of the suitability of Parcel 4 for general industrial and environmental conservation landuse.

Step 6 – Specify Performance or Acceptance Criteria that the Data need to Achieve

Acceptable limits on decision errors have been developed based on the Data Quality Indicators (DQIs) of precision, accuracy, representativeness, comparability and completeness. The DQIs for this investigation are outlined below.

The potential for significant decision errors were minimized by:

- Completion of a QA/QC assessment of the investigation data to assess if the data satisfies the DQIs;
- Assessment of whether appropriate sampling and analytical densities were completed for the purpose of the investigation; and

- Ensuring that the criteria set for the investigation were appropriate for the proposed use of Parcel 4.

Minimization of the potential for significant decision errors limits the potential that a conclusive statement may be incorrect.

Step 7 – Optimisation of the Design of Collection of Data

The collection of data was optimized by the completion of a Phase 1 ESA, data gap review and development of a sampling design, which is included in Section 4.3. Attainment of the DQOs has been assessed by reference to the DQIs, presented below.

DATA QUALITY INDICATORS

The project Data Quality Indicators (DQIs) have been established to set acceptance limits on field and laboratory data collected as part of this investigation. Field and laboratory procedures acceptance limits are set at different levels for different projects and by different laboratories. Non-compliances with acceptance limits are to be documented and discussed in the report. The DQIs are presented in Table A.

Table A: Data Quality Indicators

DQI	Field	Laboratory	Acceptability Limits
Completeness	All critical locations sampled, including targeted sampling of areas of environmental concern identified during the site walkover including areas of fill identified on Lots 422, 420 and 16.. Fluoride soil sampling completed on a reduced density to identify if fluoride in surface soils is an issue. All samples collected Experienced sampler Documentation correct	All critical samples analysed and all analytes analysed according to Standard Operating Procedures (SOPs) Appropriate Practical Quantitation Limits (PQLs) Sample documentation complete Sample holding times complied with	As per NEPM (2013)
Comparability	Experienced sampler In the event of multiple sampling events: Same types of samples collected Same sampling methodologies used Climatic conditions	Same analytical methods used Same PQLs Same units Same primary and secondary laboratories	As per NEPM (2013)
Representativeness	Appropriate media sampled Relevant media sampled	All samples analysed according to SOPs	

Precision	Collection of duplicate samples Sampling methodologies appropriate and complied with	Analysis of: Blind duplicate samples at rate of 1 in 10 samples Split duplicate samples at rate of 1 in 20 samples Laboratory duplicate samples	RPD of 30 to 50% RPD of 30 to 50% RPD of 30 to 50%
Accuracy	Sampling methodologies appropriate and complied with.	Analysis of: Method blanks Matrix spikes Surrogate spikes Laboratory control samples Reagent blanks Reference material	Non-detect 70 to 130% 70-130% 70 to 130%

QUALITY ASSURANCE AND QUALITY CONTROL

A quality assurance assessment for this report is presented in Table B and C below. An assessment was made of data completeness, comparability, representativeness, precision and accuracy based on field and laboratory considerations, as outlined in NSW DEC (2006) and NSW EPA (2007) guidelines.

Table B: QA/QC – Sampling and Analysis Methodology Assessment	
Sampling Methodology	Methodology
Sampling Pattern and Locations	Surface soil sampling was undertaken around Parcel 4 to assess the impact of particulate fallout from Hydro Aluminium Smelter. Targeted sampling was undertaken in areas of fill identified in Lots 422, 420 and Lot 16. A total of 7 test pits were excavated on Lot 422, 4 pits on Lot 420 and 7 pits on Lot 16.
Sampling Density	Twelve soil samples were collected from an approximate grid across open areas of Parcel 4 which is approximately 25 ha. The purpose of the sampling was to assess for impacts from smelter particulate fallout and therefore is considered suitable in density and spatial layout. A total of 16 samples were collected and analysed from 18 test pits in fill profiles identified on Lots 422, 420 and 16. Given the homogeneous nature of the fill and its limited vertical distribution, this sampling density is considered adequate
Sample depths	Surface soil samples were collected from a grid across the entire of Parcel 4 from surface soils. Soil samples were collected from 0.05m to 0.5m from within the fill profiles.
Sample Collection Method	Surface soil samples across Parcel 4 were collected directly from the ground surface using dedicated disposable gloves and a hand trowel. The hand trowel was brushed clean prior to sample collection. Soil samples were collected into laboratory supplied, acid rinsed glass jars. Test pits samples (fill) were collected from the centre of the

Table B: QA/QC – Sampling and Analysis Methodology Assessment	
Sampling Methodology	Methodology
	back hoe bucket using dedicated disposable gloves. Soil samples were collected into laboratory supplied, acid rinsed glass jars.
Decontamination Procedures	Surface soil samples across Parcel 4 were collected directly from the ground surface using using dedicated disposable gloves and a hand trowel. The hand trowel was generally used to loosen the soil prior to sample collection and was brushed clean between sample locations. As fill soil samples were collected from the centre of the back hoe bucket, decontamination of the back hoe was not required
Sample handling and containers	All soil samples were placed into laboratory-supplied glass jars. Soil and water samples were placed on ice following collection and during transportation to the laboratory.
Chain of Custody	Samples were transported to the laboratory under chain of custody conditions. The chain of custody forms were signed by the laboratory on receipt of the samples.
Detailed description of field screening protocols	Field screening for volatiles was not completed during soil sampling as volatile contaminants were not the main chemical of concern.
Calibration of field equipment	No field equipment requiring calibration was used.
Sampling Logs	The lithology of surface soil samples was documented on the field information sheets, which are included in Appendix C.

Table C: QA/QC – Field and Lab Quality Assurance and Quality Control	
Field and Lab QA/QC	ENVIRON Comments
Field quality control samples	Intra-laboratory duplicate soil samples were analysed at a ratio of 1:10 for TPH, BTEX and PAHs analysed for the grid samples across the entire of Parcel 4. No rinsate blank samples were collected.
Field quality control results	Intra-laboratory duplicate results are presented in Table C. There was one slight RPD exceedence for the intra-laboratory duplicates collected for this assessment (for arsenic for TP2, Lot 16). It was considered that this was due to sample heterogeneity and had no significant impact on the data quality. Arsenic was detected at concentrations well below the guideline criteria. .
NATA registered laboratory and NATA endorsed methods	ALS was used as the primary laboratory. ALS laboratory certificates are NATA stamped and the lab is accredited for the analyses performed for this assessment.
Analytical methods	A summary of analytical methods were included in the laboratory test certificates.

Table C: QA/QC – Field and Lab Quality Assurance and Quality Control	
Field and Lab QA/QC	ENVIRON Comments
Holding times	Review of the COCs and laboratory certificates indicate that holding times were met.
Practical Quantitation Limits (PQLs)	PQLs for all soil analytes were below Parcel 4 assessment criteria. PQLs for the surface water sample exceeded the guideline criteria for some PAHs and OP/OC pesticides. This is not considered to significantly impact on site results for Parcel 4 as these compounds were not identified as contaminants of concern in the soil analyses.
Laboratory quality control samples	Laboratory quality control samples including duplicates, laboratory control samples, matrix spikes, surrogate spikes and blanks were undertaken by the laboratories at appropriate frequencies.
Laboratory quality control results	All results for laboratory soil duplicates, laboratory control samples, matrix spikes and surrogates were acceptable and no detections were made in blank samples.

Overall it is considered that the completed investigation works and the data obtained adequately complied with the requirements of NSW DEC (2006) and NSW EPA (2007) guidelines and that the data is of suitable quality to meet the project objectives.

Appendix G

VENM Assessment (Lots 429 and 18 – Scales Avenue)

RCA ref 10184-601/0

10 January 2014

Abigroup Contractors
PO Box 27,
GRETA NSW 2334

Attention: James Fairgrieve

Geotechnical Engineering

Engineering Geology

Environmental Engineering

Hydrogeology

Construction Materials Testing

Environmental Monitoring

Noise & Vibration

Occupational Hygiene

VENM ASSESSMENT
SCALES AVENUE PADDOCK, LOXFORD

1 INTRODUCTION

This report details the findings of a Virgin Excavated Natural Material (VENM) assessment undertaken upon a stockpile of excavated material located at Scales Avenue Paddock, Scales Avenue, Loxford NSW at the request of James Fairgrieve of Abigroup.

The aim of this assessment was to determine whether the excavated material could be classified as VENM as defined by the DECCWs *Waste Classification Guidelines 2009* (Ref [1]). If so, the soil is proposed to remain at the current location.

The following excerpt from the DECCW *Waste Classification Guidelines* (Ref [1]) defines VENM:

Virgin excavated natural material means natural material:

- *that has been excavated or quarried from areas that are not contaminated with manufactured chemicals or process residues, as a result of industrial, commercial, mining or agricultural activities, and*
- *that does not contain sulphidic ores or soils, and includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved for the time being pursuant to an EPA gazettal notice.*

2 SITE IDENTIFICATION

The material which has been characterised during this assessment is located at Scales Avenue Paddock on the corner of Hart and Scales Avenue, Sawyers Gully, NSW. **Drawing 1, Appendix A** shows the locality and the layout of the site.

The stockpiled soil was generally described as sandy or silty clay with gravels up to 120mm present throughout the stockpile. Some remnants of geofabric were noted on the surface of the stockpile, however this has been removed. This geofabric was present due to the earthworks undertaken. No geofabric was encountered within the stockpile. Small tree branches and bark was encountered within the stockpile. Photographs of the stockpile and general area are shown in **Appendix B**.

Based on information provided by to RCA, the stockpile was 15,000m³ in size and estimated to be approximately 27,000 tonnes.

The stockpiled material located on site has originated from cut earthworks associated with the Hunter Expressway project. Materials were sourced from cut 5 and cut 6 which are located north-west and south-east of Scales Road Paddock. The location of the cut works in respect to Scales Road Paddock is shown in **Appendix C**.

3 SITE HISTORY/ASSESSMENT OF POTENTIAL CONTAMINATION

It is understood that the temporary placement site for material sourced from cut 5 and cut 6 is land owned by Hydro Aluminium. It is now proposed that the material will remain onsite.

Review of the 1:25,000 scale Cessnock Acid Sulfate map (Ref [2]) indicates that the site is an area of no known occurrences of acid sulphate soils within the area of the sourced VENM.

A review of the Singleton 1:250,000 scale Geological Series Sheet S1 56-1 (Ref [3]) indicates that the site is located within the 'Dalwood Group' which contains mudstone, sandstone, shales, limestone and conglomeratic sandstone.

No significant potential contaminant sources were noted during site inspection or discussions with site operators.

4 FIELDWORK

An environmental engineer and geotechnical engineer undertook the fieldwork on the 25 and 26 September 2013. This fieldwork consisted of the following:

- A site inspection.
- The collection of 70 composite samples which comprised of 5 subsamples.
 - Individual samples were collected from across the stockpile at regularly spaced intervals in a triangular grid. Samples were collected from the stockpiled materials from between depths of approximately 0.05m and 0.6m below the stockpile surface using an excavator.

- Samples were labelled and described in the field for texture, colour, odour and moisture content.
- Individual samples were generated into composite samples in the field by RCA prior to analytical dispatch.
- The re-instatement of all excavations.

The collection of soil samples was undertaken in compliance with RCA methodology and comprised:

- Disturbed soil samples from the within the excavator bucket.

These soil collection methods were chosen for the site due to the requirement for full inspection of the stockpiles strata and the large number of samples required being collected.

No decontamination of the excavator bucket was undertaken, however the collection of the sample from within the bulk of the excavated material (rather than against the side of the bucket) is considered to prevent potential cross-contamination.

Field Sheets are attached in **Appendix D**.

No visual or olfactory evidence of contamination was noted during fieldwork, however there was geofabric encountered on the surface of the stockpile which was removed and disposed of during fieldwork.

5 SITE GUIDELINES

5.1 NEPM – NATIONAL ENVIRONMENT PROTECTION (ASSESSMENT OF SITE CONTAMINATION) MEASURE (2013)

The investigation and screening levels (ISL) utilised for the assessment of the soil on site were sourced from the National Environment Protection Measure (NEPM) for the Assessment of Site Contamination (Ref [4]). These ISL are not derived as acceptance criteria for contamination at a site, but as levels above which specific consideration of risk, based on the site use and potential exposure, is required. If a risk is determined as present, then remediation and/or management must be undertaken.

- Human Health:

Intentionally conservative health investigation levels (HIL) have been derived for four (4) generic land use settings.

- HIL 'A' - Residential with garden/accessible soil (home grown produce <10% fruit and vegetable intake (no poultry). This category includes children's daycare centres, preschools and primary schools.
- HIL 'B' - Residential with minimal opportunities for soil access includes dwellings with fully and permanently paved yard space such as high rise buildings and flats.

- HIL 'C' - Public open space such as parks, playgrounds, playing fields (eg, ovals) secondary schools and footpaths. It does not include undeveloped public open space (such as urban bushland and reserves).
- HIL 'D' - Commercial/industrial such as shops, offices, factories and industrial sites.

Health screening levels (HSL) have been determined for risks associated from vapour intrusion from petroleum compound¹ contamination. These are based on the fraction of compound, the soil texture and the depth of the encountered impacts in addition to the land use settings detailed above. Other exposure routes, such as direct contact, are considered under the aesthetic assessment.

- Ecological Health:

These levels are considered to apply to soil within two (2) metres of the surface, the root zone and habitation zone of many species.

Ecological investigation levels (EIL) have been determined for arsenic, copper, chromium III, DDT, naphthalene, nickel, lead and zinc in soil based on species sensitivity model and for three (3) generic land use settings as follows:

- Areas of ecological significance (AES) – for areas where the primary intention is for the conservation and protection of the natural environment. Protection level of 99%.
- Urban residential areas and public open space (URPOS) – broadly equivalent to the HIL 'A', HIL 'B' and HIL 'C' land use settings. Protection level of 80%.
- Commercial and industrial land uses (C and I) – considered to be broadly equivalent to HIL 'D' land use setting. Protection level of 60%.

Methodology for the derivation of EIL for other contaminants is available in the NEPM and requires additional soil characterisation data.

Ecological screening levels (ESL) have been determined for petroleum compound contamination. Due to limitations in the data only moderate reliability ESL have been determined for fractions <C₁₆, applied generically in fine and coarse grained soils. ESL for petroleum fractions >C₁₆, BTEX and naphthalene are consider low reliability.

5.2 APPROPRIATENESS OF GUIDELINES

The NEPM provides investigation concentrations for contaminants based on exposure scenarios due to site use, however VENM must meet the most stringent guidelines and therefore the most sensitive guidelines have been adopted as the guidelines for the material. The 'HIL/HSL A' (residential) and EIL/ESL URPOS (urban residential and public open space guidelines have been adopted.

¹ Laboratory analysis of hydrocarbons is now being reported as total recoverable hydrocarbons (TRH). This change in reporting does not represent an alteration in the analytical method, rather acknowledges that the testing method includes all forms of hydrocarbons, not just petroleum hydrocarbons and therefore can be considered a conservative measure against the chosen TPH criteria. Further laboratory analysis using a silica gel clean up may enable a better identification of the extent of petroleum based contamination.

6 RESULTS AND DISCUSSION

6.1 POTENTIAL CONTAMINANT SAMPLE RESULTS

A total of seventy (70) soil samples were collected from the stockpile.

The results are tabulated in **Appendix E** and the following provides a summary:

- All soil samples reported concentrations for total recoverable hydrocarbons (TRH), benzene toluene ethylbenzene and xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH) and metals (As, Cd, Cr, Cu, Ni, Pb, Zn, Hg) were reported below the adopted guidelines (HIL 'A' and EIL for urban residential and public open space) with the exception of the following:
 - Sample S17 reported a concentration of 67mg/kg for nickel which exceeded the EIL URPOS guideline by 37mg/kg.
 - Sample S28 reported a concentration of 40mg/kg for nickel which exceeded the EIL URPOS guideline by 10mg/kg.

The nickel EIL guideline is 30mg/kg, however this guideline is the lower limit. The NEPM stipulates that the contaminant limits for nickel is between 30 and 560mg/kg. As both these samples are within the contaminant limits it is considered that these slightly elevated concentrations reflect natural background concentrations within the soil. The material is considered to be classified as VENM.

Laboratory report sheets are provided in **Appendix F**.

7 CONCLUSIONS

This report details the findings of a VENM assessment undertaken at Scales Avenue Paddock, Scales Avenue, Loxford. Field observations undertaken by RCA and analysis of material samples indicate that the Scales Avenue stockpile material meets the adopted VENM guidelines and as such RCA considers that the **material described within this report meets the requirements for VENM classification.**

8 LIMITATIONS

This report has been prepared for Abigroup in accordance with an agreement with RCA dated 18 September 2013. The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Abigroup. The report may not contain sufficient information for purposes of other uses or for parties other than Abigroup. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA.

The information in this report is considered accurate at the date of issue with regard to the current conditions of the site. Conditions can vary across any site that cannot be explicitly defined by investigation.

Environmental conditions including contaminant concentrations can change in a limited period of time. This should be considered if the report is used following a significant period of time after the date of issue.

Yours faithfully

RCA AUSTRALIA



Carmen Rocher
Environmental Engineer



Matthew Clark
Associate Environmental Scientist

REFERENCES

- [1] DECCW, *Waste Classification Guidelines*, December 2009.
- [2] NSW Government (Department of Natural Resources), *Acid Sulfate Soil Risk Map, Edition 2 - Cessnock*, December 1997.
- [3] NSW Government, *Singleton Regional Geology Map, Geological Series Sheet S1 56-1*, 1969.
- [4] NEPC, *National Environment Protection (Assessment of Site Contamination) Measure*, 2013.

Appendix A

Drawing



Locality Plan
N.T.S.

- LEGEND
- ⊕ Approximate sample location
 - ⬭ Approximate stockpile location



Aerial image taken from Google Earth, December 19 2009

 GEOTECHNICAL • ENVIRONMENTAL			SAMPLE LOCATION PLAN SCALES AVENUE PADDOCK STOCKPILE CNR SCALES AVENUE AND HART ROAD LOXFORD		
CLIENT		Abigroup		RCA Ref	
DRAWN BY		CR		10184-601/0	
APPROVED BY		MC		DRAWING No	1
				REV	0
		SCALE		1 : 1000 (A3)	
		DATE		9/1/2014	
		OFFICE		NEWCASTLE	

Appendix B

Site Photographs



PHOTOGRAPH 1 *Stockpile Surface (taken facing south-west)*



PHOTOGRAPH 2 *Stockpile Surface showing geofabric remnant*

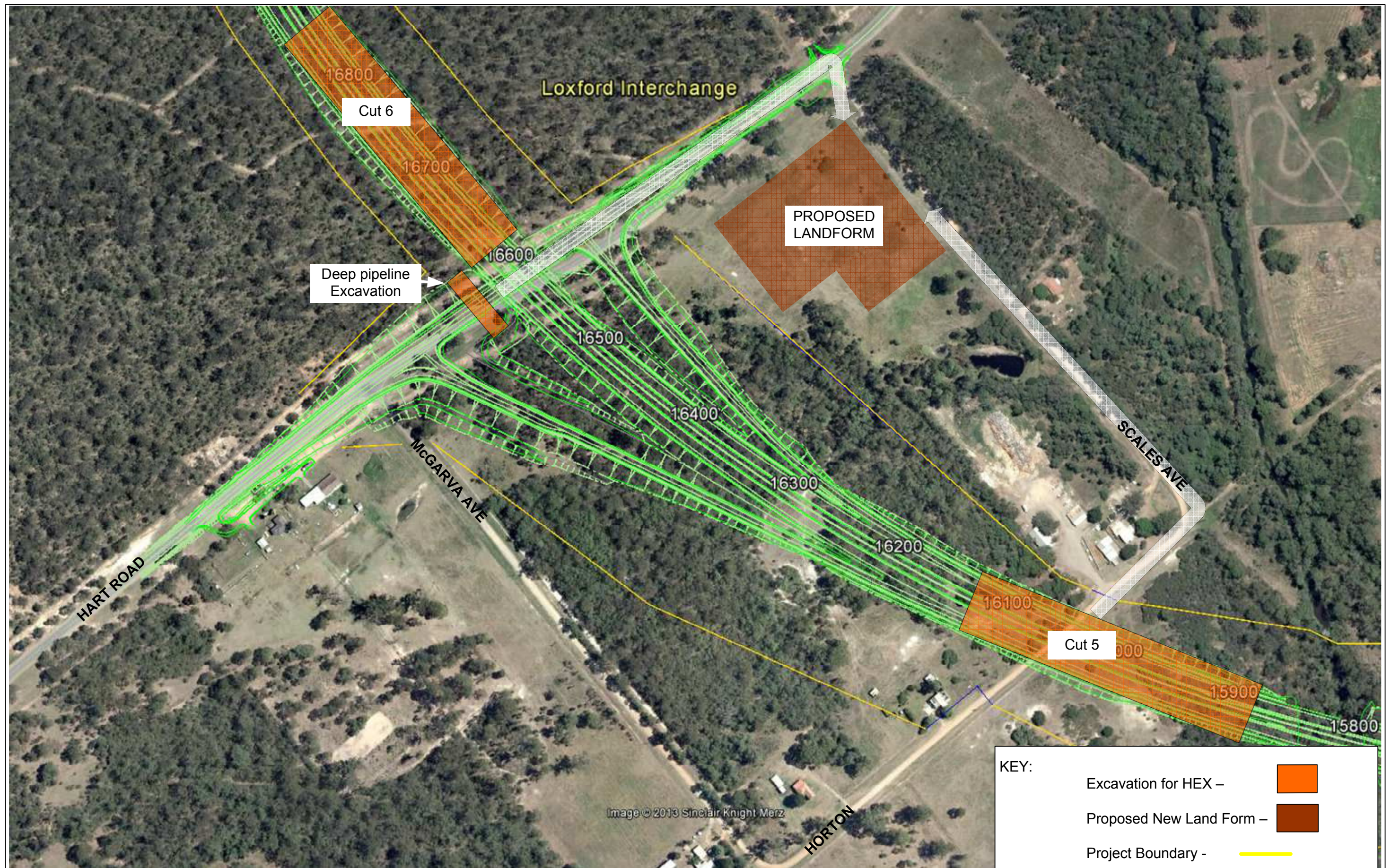
Client: Abigroup
Project: VENM Assessment
Location: Scales Avenue, Loxford

RCA Australia

RCA ref: 10184-601/0

Appendix C

Abigroup Cut Section Drawing



Appendix D

Field Sheets

12.5m
+
1.6m
2.4m
3.5m

Barra.

0404 021341

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: Abigroup
PROJECT: HEX
LOCATION: Scales Avenue Loxford
PROJECT MANAGER: Matt C

DATE: 25-9-13
PROJECT No: 10184
CLIENT REF: _____

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S1	0357477; 6370254	0.3		S	Sandy clay with sandy clay, brown with pebbles	0357477; 6370254	
S2	0357484; 6370246	0.3		S	sandy clay, brown with gravels		
S3	0357495; 6370239	0.3		S	Silty sandy clay, brown, with gravels	tree branch encountered	
S4	0357501; 6370232	0.3		S	Silty sandy clay, brown		
S5	0357509; 6370228	0.3			Sandy clay, dark brown with gravels		
S6	0357515; 6370223	0.3			" "		
S7	0357521; 6370217	0.3			Sandy clay, dark brown with gravels & clay pieces		
S8	0357527; 6370211	0.3			" "		
S9	0357534; 6370207	0.3			" "		
S10	0357540; 6370191	0.3			" "		
S11	0357544; 6370183	0.3			sandy clay dark brown		
S12	0357541; 6370169	0.3			Sandy clay dark brown/black		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: _____
 PROJECT: _____
 LOCATION: _____
 PROJECT MANAGER: _____

DATE: 25-9-13
 PROJECT No: 10184
 CLIENT REF: _____

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S13	0357528 ; 6370179	0.3			sandy clay, dark brown.		
S14	0357517 ; 6370189	0.3			Clayey sand, grey & brown.		
S15	0357509 ; 6370197	0.3			" "		
S16	0357502 ; 6370206	0.3			clay sandy clay; brown		
S17	0357493 ; 6370211	0.3			sandy clay brown with	gravels	
S18	0357487 ; 6370214	0.3			" "		
S19	0357480 ; 6370217	0.3			Sandy clay, brown, bark	fragments	
S20	0357469 ; 6370222	0.3			Sandy clay, brown, with	gravels	
S21	0357458 ; 6370230				" "		
S22	0357444 ; 6370231				" "		
S23	0357457 ; 6370219				Sandy clay, brown with orange mottled clay pieces		
S24	0357472 ; 6370210				Sandy clay with bark, brown		

RCA Australia	Sampled by: <u>CR</u>	Date: _____
Office: _____	Checked by: _____	Date: _____

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: Abigroup
PROJECT: _____
LOCATION: _____
PROJECT MANAGER: _____

DATE: 25-9-13
PROJECT No: 10184
CLIENT REF: _____

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S25	0357480; 6370207	0.3			Sandy clay, brown with gravel		
S26	0357490; 6370204				Sandy clay, brown/grey		
S27	0357498; 6370204				clayey sand, brown		
S28	0357501; 6370207				Sandy clay, brown with gravels		
S29	0357510; 6370189				sandy clay, brown		
S30	0357512; 6370174				sandy clay, brown		
S31	0357520; 6370166				Sandy clay with bark, black/brown		
S32	0357507; 6370164				Sandy clay, light brown/black		
S33	0357494; 6370176				sandy clay, brown		
S34	0357467; 6370189				clayey silty sand, light brown		
S35	0357483; 6370199				sandy clay, brown	dark	
S36	0357473; 6370208				sandy clay, brown	with gravels	

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: _____
 PROJECT: _____
 LOCATION: _____
 PROJECT MANAGER: _____

DATE: 25-9-13
 PROJECT No: 10184
 CLIENT REF: _____

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S37	0357462; 6370215	0.3			Sandy clay, brown		
S38	0357445; 6370224				" "		
S39	0357440; 6370225				" "		
S40	0357444; 6370213				" " with gravels		
S41	0357456; 6370206				Sandy clay, brown with gravels		
S42	0357466; 6370202				" "		
S43	0357475; 6370193				clayey sand, brown		
S44	0357481; 6370187				" "		
S45	0357488; 6370177				" "		
S46	0357493; 6370167				Sandy clay, brown		
S47	0357482; 6370164				Sandy clay, brown		
S48	0357479; 6370169				Sandy clay, brown with orange/brown clay pieces & sandstone pieces		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT:

PROJECT:

LOCATION:

PROJECT MANAGER:

DATE:

PROJECT No:

CLIENT REF:

26-9-13

10184

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S49	0357470; 6370173				Sandy clay with brown/orange clay pieces, gravels		
S50	0357464; 6370181				"	"	
S51	0357458; 6370186				Sandy clay with sandstone & gravel, brown		
S52	0357452; 6370192				"	"	
S53	0357445; 6370199				"	"	
S54	0357438; 6370204				"	"	
S55	0357432; 6370216				"	" # geofabric	
S56	0357416; 6370201				Sandy clay with gravels, brown		
S57	0357422; 6370195				"	"	
S58	0357432; 6370189				"	"	
S59	0357443; 6370174				"	"	
S60	0357452; 6370171				Sandy clay with gravels, brown, bark		
					Sandy clay, with gravels brown		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

ENVIRONMENTAL SAMPLE COLLECTION RECORD

CLIENT: _____
PROJECT: _____
LOCATION: _____
PROJECT MANAGER: _____

DATE: 26-9-13
PROJECT No: _____
CLIENT REF: _____

Sample ID	Location	Depth (m)	PID (ppm)	Sample Type	Sample Description	Comments	Lab (y/n)
S61	0357465 ; 6370164				Sandy clay with gravels, brown		
S62	0357479 ; 6370157				" " & wood		
S63	0357474 ; 6370148				Sandy clay with gravels, brown/black.		
S64	0357459 ; 6370153				Sandy clay brown, with clay pieces		
S65	0357454 ; 6370154				" "		
S66	0357443 ; 6370159				Sandy clay, brown with gravels.		
S67	0357434 ; 6370162				See " "		
S68	0357429 ; 6370165				Sandy clay brown with gravels & bark.		
S69	0357425 ; 6370171				" "		
S70	0357412 ; 6370182				Sandy clay, brown with gravels		

RCA Australia	Sampled by:	Date:
Office:	Checked by:	Date:

Appendix E

Results

Soil Results Summary
HIL/EIL Comparison

Sample Identification	PQL	Guideline ^A		S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	S12	S13	S14	S15	S16	
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date				25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13
Sample Profile				clay with sandy clay pieces, brown, cobbles present	sandy clay, brown with gravels	silty sandy clay, brown with gravel and sticks	silty sandy clay, brown	sandy clay, dark brown with gravels	sandy clay, dark brown with gravels	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown	sandy clay, dark brown/black	sandy clay, dark brown	clayey sand, grey & brown	clayey sand, grey & brown	sandy clay, brown	
Sample Purpose				Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by				CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Polycyclic Aromatic Hydrocarbons (PAH)																				
Acenaphthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Acenaphthylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a) pyrene	0.5		0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(b)&(j)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(g,h,i)perylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chrysene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibenz(a,h)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluorene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Naphthalene	0.5		170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	
Sum of reported PAH	8	300		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Metals																				
Arsenic	2	100	100	4.5	6.1	5	6.3	3.7	13	5.8	4.6	2.3	3.2	2.7	3	4.8	< 2	9.3	16	
Cadmium	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium	5	100	190	6.7	11	9.6	14	8.3	17	18	9.2	5.8	7.9	6.4	7.1	12	< 5	23	18	
Copper	5	6000	280	< 5	5.8	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	< 5	7.7	
Mercury	0.05	40		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Lead	5	300	1100	5.3	8.8	10	13	10	24	10	8.7	5.8	6.7	7	6.5	9.9	< 5	11	12	
Nickel	5	400	30	6.9	21	8.9	5.6	< 5	17	9.8	8.5	< 5	5.2	< 5	< 5	5.7	< 5	24	30	
Zinc	5	7400	230	22	45	68	150	95	110	100	95	91	89	120	110	130	180	140	120	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
^A NEPM 2013 Health Investigation Levels (HIL) 'A' (Residential)
^A NEPM 2013 Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)
^B Start of sample over a 0.1m interval
HIL for Chromium are for Chromium VI
For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero
Presented ecological value for benzo(a)pyrene is a low reliability ESL
EIL for Naphthalene are for fresh (<2years) Naphthalene
EIL for Arsenic are for aged (>2years) Arsenic
EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.
EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.
EIL for Lead are the added contaminant limit for aged (>2years) Lead.
EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% clay, the most conservative of the criteria.
EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% clay and pH of 6.5, the most conservative of the criteria at pH 6.5.
Results shown in **BOLD** are in excess of the primary acceptance criteria
Results shown in shading are >250%of the primary acceptance criteria
Results shown in underline are in excess of primary EIL
Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

Soil Results Summary
HIL/EIL Comparison

Sample Identification	PQL	Guideline ^A		S17	S18	S19	S20	S21	S22	S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date				25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13
Sample Profile				sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with bark	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with orange mottle clay pieces	sandy clay, brown with bark	sandy clay, brown with gravel	sandy clay, brown/grey	clayey sand, brown	sandy clay, brown with gravels	sandy clay, brown	sandy clay, brown	sandy clay, brown/black with bark	sandy clay, light brown/black	
Sample Purpose				Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	
Sample collected by				CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Polycyclic Aromatic Hydrocarbons (PAH)																				
Acenaphthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Acenaphthylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a) pyrene	0.5		0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(b)&(j)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(g,h,i)perylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chrysene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibenz(a,h)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluorene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Naphthalene	0.5		170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	
Sum of reported PAH	8	300		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	
Metals																				
Arsenic	2	100	100	35	6.4	7.2	8.3	9.1	8.1	8.6	6.6	4.9	2.1	2.2	7.1	< 2	5.7	3	5.2	
Cadmium	0.4	20		0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium	5	100	190	32	15	21	19	17	18	17	15	13	< 5	< 5	16	< 5	15	10	9.4	
Copper	5	6000	280	12	< 5	6.6	9.1	7.7	5.9	8.3	< 5	< 5	< 5	< 5	7.1	< 5	< 5	< 5	< 5	
Mercury	0.05	40		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Lead	5	300	1100	19	11	9.8	11	10	11	10	9	8.5	< 5	< 5	10	< 5	10	7	8.2	
Nickel	5	400	30	67	12	15	18	19	21	18	14	9.7	< 5	5.1	40	< 5	6	6.5	5.2	
Zinc	5	7400	230	200	71	82	89	89	92	80	89	56	36	32	70	32	42	16	29	

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit.

^A NEPM 2013 Health Investigation Levels (HIL) 'A' (Residential)

^A NEPM 2013 Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)

^B Start of sample over a 0.1m interval

HIL for Chromium are for Chromium VI

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

Presented ecological value for benzo(a)pyrene is a low reliability ESL

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% clay, the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% clay and pH of 6.5, the most conservative of the criteria at pH 6.5.

Results shown in **BOLD** are in excess of the primary acceptance criteria

Results shown in shading are >250%of the primary acceptance criteria

Results shown in underline are in excess of primary EIL

Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

Soil Results Summary
HIL/EIL Comparison

Sample Identification	PQL	Guideline ^A		S33	S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	S45	S46	S47	S48	
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date				25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	26/9/13	26/9/13
Sample Profile				sandy clay, brown	clayey silty sand, light brown	sandy clay, brown with bark	sandy clay, brown with gravels	sandy clay, brown	sandy clay, brown	sandy clay, brown	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	clayey sand, brown	clayey sand, brown	clayey sand, brown	sandy clay, brown	sandy clay, brown	sandy clay, brown with orange/brown clay and sandstone	
Sample Purpose				Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	
Sample collected by				CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Polycyclic Aromatic Hydrocarbons (PAH)																				
Acenaphthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Acenaphthylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benz(a)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a) pyrene	0.5		0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(b)&(j)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.2	< 0.5	< 0.5	< 0.5	< 0.5	< 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	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(k)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Chrysene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Dibenz(a,h)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Fluorene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Naphthalene	0.5		170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Phenanthrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	1.3	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605	0.9525	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	
Sum of reported PAH	8	300		4	4	4	4	4	4	7.75	4	4	4	4	4	4	4	4	4	
Metals																				
Arsenic	2	100	100	4.8	< 2	< 2	6.2	4.3	6.6	8.7	11	7	2.1	< 2	2.8	4.3	4.6	4.3	7.2	
Cadmium	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	
Chromium	5	100	190	6.3	< 5	< 5	15	13	16	18	20	14	11	< 5	7.1	8	11	11	17	
Copper	5	6000	280	< 5	< 5	< 5	5.5	5	6	6.4	6.5	7.1	< 5	< 5	< 5	< 5	< 5	< 5	< 5	
Mercury	0.05	40		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
Lead	5	300	1100	6.6	< 5	< 5	9.2	10	9.4	11	11	8.5	5.3	< 5	5.2	11	8.8	8.4	9.8	
Nickel	5	400	30	< 5	< 5	< 5	9.5	< 5	17	21	25	21	7.6	< 5	5.7	7.1	5.2	5.1	13	
Zinc	5	7400	230	33	26	27	60	24	58	69	64	87	37	26	27	37	34	34	52	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
^A NEPM 2013 Health Investigation Levels (HIL) 'A' (Residential)
^A NEPM 2013 Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)
^B Start of sample over a 0.1m interval
HIL for Chromium are for Chromium VI
For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero
Presented ecological value for benzo(a)pyrene is a low reliability ESL
EIL for Naphthalene are for fresh (<2years) Naphthalene
EIL for Arsenic are for aged (>2years) Arsenic
EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.
EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.
EIL for Lead are the added contaminant limit for aged (>2years) Lead.
EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% clay, the most conservative of the criteria.
EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% clay and pH of 6.5, the most conservative of the criteria at pH 6.5.
Results shown in **BOLD** are in excess of the primary acceptance criteria
Results shown in shading are >250%of the primary acceptance criteria
Results shown in underline are in excess of primary EIL
Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A		S49	S50	S51	S52	S53	S54	S55	S56	S57	S58	S59	S60	S61	S62	S63	S64
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Date				26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13
Sample Profile				sandy clay, brown with brown/orange clay pieces	sandy clay, brown with brown/orange clay pieces	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown, geofabric present	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels & bark	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels and sticks	sandy clay, brown/black with gravels	sandy clay, brown with clay pieces
Sample Purpose				Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by				CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Polycyclic Aromatic Hydrocarbons (PAH)																			
Acenaphthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a) pyrene	0.5		0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b)&(j)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5		170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	300		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Metals																			
Arsenic	2	100	100	3.5	6	4.5	4.7	5.7	6	6.7	7.1	4.7	6.7	3.2	3.2	< 2	4.5	< 2	3
Cadmium	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	100	190	7.2	12	10	12	11	12	17	15	13	17	11	8.8	< 5	11	< 5	7.7
Copper	5	6000	280	< 5	< 5	< 5	< 5	< 5	< 5	6.1	< 5	< 5	5.9	< 5	< 5	< 5	< 5	< 5	8
Mercury	0.05	40		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Lead	5	300	1100	7.1	8.9	7.1	6.1	7	8.6	9.1	9.2	10	10	7.3	6.3	< 5	7.6	< 5	21
Nickel	5	400	30	6.5	12	12	< 5	9.3	8.2	16	17	6.7	16	5.3	7.7	5.9	< 5	< 5	5.5
Zinc	5	7400	230	20	44	27	17	37	32	62	52	30	54	22	17	16	16	< 5	92

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit.

^A NEPM 2013 Health Investigation Levels (HIL) 'A' (Residential)

^A NEPM 2013 Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)

^B Start of sample over a 0.1m interval

HIL for Chromium are for Chromium VI

For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero

Presented ecological value for benzo(a)pyrene is a low reliability ESL

EIL for Naphthalene are for fresh (<2years) Naphthalene

EIL for Arsenic are for aged (>2years) Arsenic

EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.

EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.

EIL for Lead are the added contaminant limit for aged (>2years) Lead.

EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% clay, the most conservative of the criteria.

EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% clay and pH of 6.5, the most conservative of the criteria at pH 6.5.

Results shown in **BOLD** are in excess of the primary acceptance criteria

Results shown in shading are >250%of the primary acceptance criteria

Results shown in underline are in excess of primary EIL

Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A		S65	S66	S67	S68	S69	S70
Sample Depth (m) ^B		HIL 'A'	EIL URPOS	0.3	0.3	0.3	0.3	0.3	0.3
Date				26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13
Sample Profile				sandy clay, brown with clay pieces	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels & bark	sandy clay, brown with gravels & bark	sandy clay, brown with gravels
Sample Purpose				Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by				CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Polycyclic Aromatic Hydrocarbons (PAH)									
Acenaphthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a) pyrene	0.5		0.7	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b)&(j)fluoranthene	0.5			< 0.5	< 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	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-c,d)pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5		170	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Carcinogenic PAH (B(a)P equivalent)	1.21	3		0.605	0.605	0.605	0.605	0.605	0.605
Sum of reported PAH	8	300		4	4	4	4	4	4
Metals									
Arsenic	2	100	100	2.7	8.1	3.6	5.4	4.3	3.4
Cadmium	0.4	20		< 0.4	< 0.4	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	100	190	8.5	21	10	14	22	8.8
Copper	5	6000	280	< 5	7	< 5	< 5	< 5	< 5
Mercury	0.05	40		< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Lead	5	300	1100	8.4	13	7.8	9.1	7.4	7.8
Nickel	5	400	30	< 5	< 5	< 5	10	< 5	6.6
Zinc	5	7400	230	21	29	12	37	19	29

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
^A NEPM 2013 Health Investigation Levels (HIL) 'A' (Residential)
^A NEPM 2013 Ecological Investigation Levels (EIL) URPOS (Urban Residential and Public Open Space)
^B Start of sample over a 0.1m interval
HIL for Chromium are for Chromium VI
For the purpose of the Tier 1 ESL/EIL assessment, all background concentrations are assumed to be zero
Presented ecological value for benzo(a)pyrene is a low reliability ESL
EIL for Naphthalene are for fresh (<2years) Naphthalene
EIL for Arsenic are for aged (>2years) Arsenic
EIL for Chromium are the added contaminant limit for aged (>2years) Chromium III in soils of 1% clay, the most conservative of the criteria.
EIL for Copper are the added contaminant limit for aged (>2years) Copper in soils of pH 6.5.
EIL for Lead are the added contaminant limit for aged (>2years) Lead.
EIL for Nickel are the added contaminant limit for aged (>2years) Nickel in soils of 5% clay, the most conservative of the criteria.
EIL for Zinc are the added contaminant limit for aged (>2years) Zinc in soils of 5% clay and pH of 6.5, the most conservative of the criteria at pH 6.5.
Results shown in **BOLD** are in excess of the primary acceptance criteria
Results shown in shading are >250%of the primary acceptance criteria
Results shown in underline are in excess of primary EIL
Where summation required (PAH) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	S11	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13
Sample Profile								clay with sandy clay pieces, brown, cobbles present	sandy clay, brown with gravels	silty sandy clay, brown with gravel and sticks	silty sandy clay, brown	sandy clay, dark brown with gravels	sandy clay, dark brown with gravels	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown with gravels & clay pieces	sandy clay, dark brown	
Dominant Stratum ^C								clay	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																			
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, most conservative criterion used
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than the solubility capacity for that compound based on a petroleum mixture. Vapour is therefore not a risk for this compound.
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S12	S13	S14	S15	S16	S17	S18	S19	S20	S21	S22		
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	
Sample Profile								sandy clay, dark brown/black	sandy clay, dark brown	clayey sand, grey & brown	clayey sand, grey & brown	sandy clay, brown	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with bark	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	
Dominant Stratum ^C								clay	clay	sand	sand	clay	clay	clay	clay	clay	clay	clay	clay	
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																				
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																				
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																				
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S23	S24	S25	S26	S27	S28	S29	S30	S31	S32	S33	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13
Sample Profile								sandy clay, brown with orange mottle clay pieces	sandy clay, brown with bark	sandy clay, brown with gravel	sandy clay, brown/grey	clayey sand, brown	sandy clay, brown with gravels	sandy clay, brown	sandy clay, brown	sandy clay, brown/black with bark	sandy clay, light brown/black	sandy clay, brown	
Dominant Stratum ^C								clay	clay	clay	clay	sand	clay	clay	clay	clay	clay	clay	clay
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																			
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S34	S35	S36	S37	S38	S39	S40	S41	S42	S43	S44	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13	25/9/13
Sample Profile								clayey silty sand, light brown	sandy clay, brown with bark	sandy clay, brown with gravels	sandy clay, brown	sandy clay, brown	sandy clay, brown	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	clayey sand, brown	clayey sand, brown
Dominant Stratum ^C								sand	clay	clay	clay	clay	clay	clay	clay	clay	clay	sand	sand
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	2	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																			
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S45	S46	S47	S48	S49	S50	S51	S52	S53	S54	S55	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	25/9/13	25/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13
Sample Profile								clayey sand, brown	sandy clay, brown	sandy clay, brown	sandy clay, brown with orange/brown clay and sandstone	sandy clay, brown with brown/orange clay pieces	sandy clay, brown with brown/orange clay pieces	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown	sandy clay, brown with sandstone and gravel, brown,	sandy clay, brown with gravels	
Dominant Stratum ^C								sand	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																			
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S56	S57	S58	S59	S60	S61	S62	S63	S64	S65	S66	
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13	26/9/13
Sample Profile								sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels & bark	sandy clay, brown with gravels	sandy clay, brown with gravels	sandy clay, brown with gravels and sticks	sandy clay, brown/black with gravels	sandy clay, brown with clay pieces	sandy clay, brown with clay pieces	sandy clay, brown with gravels	
Dominant Stratum ^C								clay	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay	clay
Sample Purpose								Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)																			
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2	
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	
Polycyclic Aromatic Hydrocarbons (PAH)																			
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	
Total Recoverable Hydrocarbons (TRH)																			
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	< 20	
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	< 50	
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	< 100	
F1	20	45	50	180	180			<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	
F2	50	110	280					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,
NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1
Presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A						S67	S68	S69	S70
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML		0.3	0.3	0.3	0.3
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine	26/9/13	26/9/13	26/9/13	26/9/13
Sample Profile								sandy clay, brown with gravels	sandy clay, brown with gravels & bark	sandy clay, brown with gravels & bark	sandy clay, brown with gravels
Dominant Stratum ^C								clay	clay	clay	clay
Sample Purpose								Investigation	Investigation	Investigation	Investigation
Sample collected by								CR/CN	CR/CN	CR/CN	CR/CN
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)											
Benzene	0.1	0.5	0.7	50	65			< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	160	480	85	85			< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	55	NL	70	125			< 0.1	< 0.1	< 0.1	< 0.1
meta- and para-Xylene	0.2							< 0.2	< 0.2	< 0.2	< 0.2
ortho-Xylene	0.1							< 0.1	< 0.1	< 0.1	< 0.1
Total Xylenes	0.3	40	110	105	45			0.15	0.15	0.15	0.15
Polycyclic Aromatic Hydrocarbons (PAH)											
Naphthalene	0.5	3	5	170	170			< 0.5	< 0.5	< 0.5	<50
Total Recoverable Hydrocarbons (TRH)											
TRH C6-C10	20					700	800	< 20	< 20	< 20	< 20
TRH >C10-C16	50			120	120	1000	1000	< 50	< 50	< 50	< 50
TRH >C16-C34	100			300	1300	2500	3500	< 100	< 100	< 100	< 100
TRH >C34-C40	100			2800	5600	10000	10000	< 100	< 100	< 100	< 100
F1	20	45	50	180	180			<20	<20	<20	<20
F2	50	110	280					<50	<50	<50	<50

All results are in units of mg/kg.

Blank Cell indicates no criterion available

PQL = Practical Quantitation Limit.

F1 PQL deemed equal TRH C6-C10.

F2 PQL deemed equal TRH >C10-C16.

^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)

^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)

^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)

^B Start of sample over a 0.1m interval

^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented,

NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than 1

Presented ecological value for naphthalene is an Ecological Investigation Level

Results for TRH have been compared to TPH guidelines.

ESL for TRH>C16-C34 and >C34-C40 are low reliability

F1 = TRH C6-C10 minus BTEX

F2 = TRH>C10-C16 minus naphthalene

Results shown in **BOLD** are in excess of the HSL

Results shown in shading are >250% of the HSL

Results shown in underline are in excess of the ESL

Results shown in *italics* are in excess of the management limit

Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Sample Identification	PQL	Guideline ^A					
Sample Depth (m) ^B		HSL 'A' HSL 'B'	HSL 'A' HSL 'B'	ESL URPOS		Sensitive ML	
Date		SAND 0-<1m	CLAY 0-<1m	Coarse	Fine	Coarse	Fine
Sample Profile							
Dominant Stratum ^C							
Sample Purpose							
Sample collected by							
Benzene, Toluene, Ethylbenzene, Xylene (BTEX)							
Benzene	0.1	0.5	0.7	50	65		
Toluene	0.1	160	480	85	85		
Ethylbenzene	0.1	55	NL	70	125		
meta- and para-Xylene	0.2						
ortho-Xylene	0.1						
Total Xylenes	0.3	40	110	105	45		
Polycyclic Aromatic Hydrocarbons (PAH)							
Naphthalene	0.5	3	5	170	170		
Total Recoverable Hydrocarbons (TRH)							
TRH C6-C10	20					700	800
TRH >C10-C16	50			120	120	1000	1000
TRH >C16-C34	100			300	1300	2500	3500
TRH >C34-C40	100			2800	5600	10000	10000
F1	20	45	50	180	180		
F2	50	110	280				

NA

All results are in units of mg/kg.
Blank Cell indicates no criterion available
PQL = Practical Quantitation Limit.
F1 PQL deemed equal TRH C6-C10.
F2 PQL deemed equal TRH >C10-C16.
^A NEPM 2013 Health Screening Levels (HSL) 'A' (Residential)
^A NEPM 2013 Ecological Screening Levels (ESL) URPOS (Urban Residential and Public Open Space)
^A NEPM 2013 Management Limits (ML) Sensitive Sites (Residential, open space)
^B Start of sample over a 0.1m interval
^C Note that this is a generalisation for the purpose of comparing to the HSL criteria. Where two strata equally represented, NL designates 'Not Limiting' indicating that the pore water concentration required to constitute a vapour risk is higher than presented ecological value for naphthalene is an Ecological Investigation Level
Results for TRH have been compared to TPH guidelines.
ESL for TRH>C16-C34 and >C34-C40 are low reliability
F1 = TRH C6-C10 minus BTEX
F2 = TRH>C10-C16 minus naphthalene
Results shown in **BOLD** are in excess of the HSL
Results shown in shading are >250% of the HSL
Results shown in underline are in excess of the ESL
Results shown in *italics* are in excess of the management limit
Where summation required (Xylene, F1, F2) calculation includes components reported as non detected as 1/2 PQL.

Appendix F

Laboratory Report Sheets

Robert Carr and Associates Pty Ltd
PO Box 175
Carrington
NSW 2294

Attention: Matt Clark

Report 394296-S
Client Reference PARENT: HEX ENM CLASS 10184
Received Date Sep 27, 2013



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.

Client Sample ID			S1 Soil	S2 Soil	S3 Soil	S4 Soil
Sample Matrix			S13-Se20503	S13-Se20504	S13-Se20505	S13-Se20506
Eurofins mgt Sample No.			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	104	106	108	102
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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

Client Sample ID			S1 Soil	S2 Soil	S3 Soil	S4 Soil
Sample Matrix			S13-Se20503	S13-Se20504	S13-Se20505	S13-Se20506
Eurofins mgt Sample No.			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Date Sampled						
Test/Reference	LOR	Unit				
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	86	93	87	86
p-Terphenyl-d14 (surr.)	1	%	86	92	87	86
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	360	400	170	330
pH (1:5 Aqueous extract)	0.1	units	6.3	6.6	5.9	5.2
% Moisture	0.1	%	13	10	13	11
Heavy Metals						
Arsenic	2	mg/kg	4.5	6.1	5.0	6.3
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.7	11	9.6	14
Copper	5	mg/kg	< 5	5.8	< 5	< 5
Lead	5	mg/kg	5.3	8.8	10	13
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	6.9	21	8.9	5.6
Zinc	5	mg/kg	22	45	68	150

Client Sample ID			S5 Soil	S6 Soil	S7 Soil	S8 Soil
Sample Matrix			S13-Se20507	S13-Se20508	S13-Se20509	S13-Se20510
Eurofins mgt Sample No.			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Date Sampled						
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	118	111	104	107
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			S5	S6	S7	S8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20507	S13-Se20508	S13-Se20509	S13-Se20510
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	88	88	88	93
p-Terphenyl-d14 (surr.)	1	%	87	88	89	94
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	370	280	210	620
pH (1:5 Aqueous extract)	0.1	units	5.2	6.0	6.3	5.7
% Moisture	0.1	%	11	18	12	12
Heavy Metals						
Arsenic	2	mg/kg	3.7	13	5.8	4.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.3	17	18	9.2
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	10	24	10	8.7
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	17	9.8	8.5
Zinc	5	mg/kg	95	110	100	95

Client Sample ID			S9	S10	S11	S12
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20511	S13-Se20512	S13-Se20513	S13-Se20514
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S9 Soil S13-Se20511 Sep 25, 2013	S10 Soil S13-Se20512 Sep 25, 2013	S11 Soil S13-Se20513 Sep 25, 2013	S12 Soil S13-Se20514 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	105	106	107	111
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	89	91	89	86
p-Terphenyl-d14 (surr.)	1	%	87	88	87	85
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	220	610	390	370
pH (1:5 Aqueous extract)	0.1	units	5.4	5.1	5.9	6.3
% Moisture	0.1	%	14	14	12	17
Heavy Metals						
Arsenic	2	mg/kg	2.3	3.2	2.7	3.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	5.8	7.9	6.4	7.1

Client Sample ID			S9	S10	S11	S12
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20511	S13-Se20512	S13-Se20513	S13-Se20514
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Heavy Metals						
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	5.8	6.7	7.0	6.5
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	5.2	< 5	< 5
Zinc	5	mg/kg	91	89	120	110

Client Sample ID			S13	S14	S15	S16
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20515	S13-Se20516	S13-Se20517	S13-Se20518
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	110	108	112	114
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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 Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S13 Soil S13-Se20515 Sep 25, 2013	S14 Soil S13-Se20516 Sep 25, 2013	S15 Soil S13-Se20517 Sep 25, 2013	S16 Soil S13-Se20518 Sep 25, 2013
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	90	89	89	90
p-Terphenyl-d14 (surr.)	1	%	86	87	84	91
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	580	110	420	540
pH (1:5 Aqueous extract)	0.1	units	5.4	5.9	6.1	7.6
% Moisture	0.1	%	14	12	11	8.6
Heavy Metals						
Arsenic	2	mg/kg	4.8	< 2	9.3	16
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	12	< 5	23	18
Copper	5	mg/kg	< 5	< 5	< 5	7.7
Lead	5	mg/kg	9.9	< 5	11	12
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	5.7	< 5	24	30
Zinc	5	mg/kg	130	180	140	120

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S17 Soil S13-Se20519 Sep 25, 2013	S18 Soil S13-Se20520 Sep 25, 2013	S19 Soil S13-Se20521 Sep 25, 2013	S20 Soil S13-Se20522 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	111	109	109	116
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{NO2}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S17 Soil S13-Se20519 Sep 25, 2013	S18 Soil S13-Se20520 Sep 25, 2013	S19 Soil S13-Se20521 Sep 25, 2013	S20 Soil S13-Se20522 Sep 25, 2013
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	91	91	92	88
p-Terphenyl-d14 (surr.)	1	%	89	90	93	87
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	320	720	690	940
pH (1:5 Aqueous extract)	0.1	units	6.5	6.4	5.5	7.5
% Moisture	0.1	%	11	12	8.9	11
Heavy Metals						
Arsenic	2	mg/kg	35	6.4	7.2	8.3
Cadmium	0.4	mg/kg	0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	32	15	21	19
Copper	5	mg/kg	12	< 5	6.6	9.1
Lead	5	mg/kg	19	11	9.8	11
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	67	12	15	18
Zinc	5	mg/kg	200	71	82	89

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S21 Soil S13-Se20523 Sep 25, 2013	S22 Soil S13-Se20524 Sep 25, 2013	S23 Soil S13-Se20525 Sep 25, 2013	S24 Soil S13-Se20526 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	112	114	114	80
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	88	109	90	89
p-Terphenyl-d14 (surr.)	1	%	84	108	83	84
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	1100	890	550	410
pH (1:5 Aqueous extract)	0.1	units	7.7	7.0	6.8	6.2
% Moisture	0.1	%	14	9.7	8.8	16

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S21 Soil S13-Se20523 Sep 25, 2013	S22 Soil S13-Se20524 Sep 25, 2013	S23 Soil S13-Se20525 Sep 25, 2013	S24 Soil S13-Se20526 Sep 25, 2013
Heavy Metals						
Arsenic	2	mg/kg	9.1	8.1	8.6	6.6
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	17	18	17	15
Copper	5	mg/kg	7.7	5.9	8.3	< 5
Lead	5	mg/kg	10	11	10	9.0
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	19	21	18	14
Zinc	5	mg/kg	89	92	80	89

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S25 Soil S13-Se20527 Sep 25, 2013	S26 Soil S13-Se20528 Sep 25, 2013	S27 Soil S13-Se20529 Sep 25, 2013	S28 Soil S13-Se20530 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	124	123	121	127
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S25 Soil S13-Se20527 Sep 25, 2013	S26 Soil S13-Se20528 Sep 25, 2013	S27 Soil S13-Se20529 Sep 25, 2013	S28 Soil S13-Se20530 Sep 25, 2013
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	87	85	91	86
p-Terphenyl-d14 (surr.)	1	%	82	76	87	79
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	620	300	280	660
pH (1:5 Aqueous extract)	0.1	units	6.0	6.3	5.1	7.7
% Moisture	0.1	%	11	14	9.7	12
Heavy Metals						
Arsenic	2	mg/kg	4.9	2.1	2.2	7.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	< 5	< 5	16
Copper	5	mg/kg	< 5	< 5	< 5	7.1
Lead	5	mg/kg	8.5	< 5	< 5	10
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	9.7	< 5	5.1	40
Zinc	5	mg/kg	56	36	32	70

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S29 Soil S13-Se20531 Sep 25, 2013	S30 Soil S13-Se20532 Sep 25, 2013	S31 Soil S13-Se20533 Sep 25, 2013	S32 Soil S13-Se20534 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	116	129	126	127

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S29 Soil S13-Se20531 Sep 25, 2013	S30 Soil S13-Se20532 Sep 25, 2013	S31 Soil S13-Se20533 Sep 25, 2013	S32 Soil S13-Se20534 Sep 25, 2013
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	89	90	92	90
p-Terphenyl-d14 (surr.)	1	%	84	86	88	81
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	180	540	330	420
pH (1:5 Aqueous extract)	0.1	units	6.0	6.3	6.6	7.7
% Moisture	0.1	%	13	14	17	15
Heavy Metals						
Arsenic	2	mg/kg	< 2	5.7	3.0	5.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	15	10	9.4
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	< 5	10.0	7.0	8.2
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	6.0	6.5	5.2
Zinc	5	mg/kg	32	42	16	29

Client Sample ID			S33	S34	S35	S36
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20535	S13-Se20536	S13-Se20537	S13-Se20538
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
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	21	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	2.0	< 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	%	122	121	125	128
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	87	91	82	86
p-Terphenyl-d14 (surr.)	1	%	78	79	72	76
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	370	110	560	1000
pH (1:5 Aqueous extract)	0.1	units	7.2	5.8	6.1	5.6
% Moisture	0.1	%	9.1	8.7	13	13

Client Sample ID			S33	S34	S35	S36
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20535	S13-Se20536	S13-Se20537	S13-Se20538
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.8	< 2	< 2	6.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	6.3	< 5	< 5	15
Copper	5	mg/kg	< 5	< 5	< 5	5.5
Lead	5	mg/kg	6.6	< 5	< 5	9.2
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	9.5
Zinc	5	mg/kg	33	26	27	60

Client Sample ID			S37	S38	S39	S40
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20539	S13-Se20540	S13-Se20541	S13-Se20542
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	119	123	121	119
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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	1.2	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S37 Soil S13-Se20539 Sep 25, 2013	S38 Soil S13-Se20540 Sep 25, 2013	S39 Soil S13-Se20541 Sep 25, 2013	S40 Soil S13-Se20542 Sep 25, 2013
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	1.5	< 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	1.3	< 0.5
Total PAH	0.5	mg/kg	< 0.5	< 0.5	5.0	< 0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	1.0	0.6
2-Fluorobiphenyl (surr.)	1	%	85	95	96	92
p-Terphenyl-d14 (surr.)	1	%	77	80	82	82
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	280	710	860	1200
pH (1:5 Aqueous extract)	0.1	units	5.4	5.2	6.3	7.0
% Moisture	0.1	%	13	11	7.9	7.9
Heavy Metals						
Arsenic	2	mg/kg	4.3	6.6	8.7	11
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	16	18	20
Copper	5	mg/kg	5.0	6.0	6.4	6.5
Lead	5	mg/kg	10.0	9.4	11	11
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	17	21	25
Zinc	5	mg/kg	24	58	69	64

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S41 Soil S13-Se20543 Sep 25, 2013	S42 Soil S13-Se20544 Sep 25, 2013	S43 Soil S13-Se20545 Sep 25, 2013	S44 Soil S13-Se20546 Sep 25, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	129	129	117	124

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S41 Soil S13-Se20543 Sep 25, 2013	S42 Soil S13-Se20544 Sep 25, 2013	S43 Soil S13-Se20545 Sep 25, 2013	S44 Soil S13-Se20546 Sep 25, 2013
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	83	87	88	92
p-Terphenyl-d14 (surr.)	1	%	72	84	72	82
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	1200	580	89	120
pH (1:5 Aqueous extract)	0.1	units	6.3	7.2	7.2	5.7
% Moisture	0.1	%	13	13	16	9.9
Heavy Metals						
Arsenic	2	mg/kg	7.0	2.1	< 2	2.8
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	14	11	< 5	7.1
Copper	5	mg/kg	7.1	< 5	< 5	< 5
Lead	5	mg/kg	8.5	5.3	< 5	5.2
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	21	7.6	< 5	5.7
Zinc	5	mg/kg	87	37	26	27

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S45 Soil S13-Se20547 Sep 25, 2013	S46 Soil S13-Se20548 Sep 25, 2013	S47 Soil S13-Se20549 Sep 26, 2013	S48 Soil S13-Se20550 Sep 26, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	131	128	117	119
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	98	92	93	91
p-Terphenyl-d14 (surr.)	1	%	72	113	88	91
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	970	540	490	590
pH (1:5 Aqueous extract)	0.1	units	5.6	6.3	5.5	6.2
% Moisture	0.1	%	13	16	13	9.9

Client Sample ID			S45	S46	S47	S48
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20547	S13-Se20548	S13-Se20549	S13-Se20550
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.3	4.6	4.3	7.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.0	11	11	17
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	11	8.8	8.4	9.8
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	7.1	5.2	5.1	13
Zinc	5	mg/kg	37	34	34	52

Client Sample ID			S49	S50	S51	S52
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20551	S13-Se20552	S13-Se20553	S13-Se20554
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	121	121	113	113
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S49 Soil S13-Se20551 Sep 26, 2013	S50 Soil S13-Se20552 Sep 26, 2013	S51 Soil S13-Se20553 Sep 26, 2013	S52 Soil S13-Se20554 Sep 26, 2013
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	100	91	93	95
p-Terphenyl-d14 (surr.)	1	%	79	72	78	76
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	530	520	450	230
pH (1:5 Aqueous extract)	0.1	units	6.3	5.7	6.8	6.3
% Moisture	0.1	%	10	9.5	10	12
Heavy Metals						
Arsenic	2	mg/kg	3.5	6.0	4.5	4.7
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	7.2	12	10	12
Copper	5	mg/kg	< 5	< 5	< 5	< 5
Lead	5	mg/kg	7.1	8.9	7.1	6.1
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	6.5	12	12	< 5
Zinc	5	mg/kg	20	44	27	17

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S53 Soil S13-Se20555 Sep 26, 2013	S54 Soil S13-Se20556 Sep 26, 2013	S55 Soil S13-Se20557 Sep 26, 2013	S56 Soil S13-Se20558 Sep 26, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	117	112	114	115

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S53 Soil S13-Se20555 Sep 26, 2013	S54 Soil S13-Se20556 Sep 26, 2013	S55 Soil S13-Se20557 Sep 26, 2013	S56 Soil S13-Se20558 Sep 26, 2013
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	92	95	94	94
p-Terphenyl-d14 (surr.)	1	%	77	83	82	79
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	590	690	750	670
pH (1:5 Aqueous extract)	0.1	units	5.7	7.3	6.6	6.4
% Moisture	0.1	%	10	15	8.4	10
Heavy Metals						
Arsenic	2	mg/kg	5.7	6.0	6.7	7.1
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	12	17	15
Copper	5	mg/kg	< 5	< 5	6.1	< 5
Lead	5	mg/kg	7.0	8.6	9.1	9.2
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	9.3	8.2	16	17
Zinc	5	mg/kg	37	32	62	52

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S57 Soil S13-Se20559 Sep 26, 2013	S58 Soil S13-Se20560 Sep 26, 2013	S59 Soil S13-Se20561 Sep 26, 2013	S60 Soil S13-Se20562 Sep 26, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	113	117	114	112
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	94	100	92	89
p-Terphenyl-d14 (surr.)	1	%	84	86	80	75
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	390	590	430	300
pH (1:5 Aqueous extract)	0.1	units	6.8	5.9	5.4	6.1
% Moisture	0.1	%	16	12	11	13

Client Sample ID			S57	S58	S59	S60
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20559	S13-Se20560	S13-Se20561	S13-Se20562
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Heavy Metals						
Arsenic	2	mg/kg	4.7	6.7	3.2	3.2
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	13	17	11	8.8
Copper	5	mg/kg	< 5	5.9	< 5	< 5
Lead	5	mg/kg	10	10	7.3	6.3
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	6.7	16	5.3	7.7
Zinc	5	mg/kg	30	54	22	17

Client Sample ID			S61	S62	S63	S64
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20563	S13-Se20564	S13-Se20565	S13-Se20566
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	124	117	109	113
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S61 Soil S13-Se20563 Sep 26, 2013	S62 Soil S13-Se20564 Sep 26, 2013	S63 Soil S13-Se20565 Sep 26, 2013	S64 Soil S13-Se20566 Sep 26, 2013
Polycyclic Aromatic Hydrocarbons						
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Total PAH	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	99	92	93	95
p-Terphenyl-d14 (surr.)	1	%	83	76	76	78
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	590	360	420	370
pH (1:5 Aqueous extract)	0.1	units	5.9	5.3	6.9	5.7
% Moisture	0.1	%	12	12	17	13
Heavy Metals						
Arsenic	2	mg/kg	< 2	4.5	< 2	3.0
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	< 5	11	< 5	7.7
Copper	5	mg/kg	< 5	< 5	< 5	8.0
Lead	5	mg/kg	< 5	7.6	< 5	21
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	5.9	< 5	< 5	5.5
Zinc	5	mg/kg	16	16	< 5	92

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S65 Soil S13-Se20567 Sep 26, 2013	S66 Soil S13-Se20568 Sep 26, 2013	S67 Soil S13-Se20569 Sep 26, 2013	S68 Soil S13-Se20570 Sep 26, 2013
Total Recoverable Hydrocarbons - 1999 NEPM Fractions						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	< 20
TRH C15-C28	50	mg/kg	< 50	< 50	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50	< 50	< 50
BTEX						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	111	113	111	112

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S65 Soil S13-Se20567 Sep 26, 2013	S66 Soil S13-Se20568 Sep 26, 2013	S67 Soil S13-Se20569 Sep 26, 2013	S68 Soil S13-Se20570 Sep 26, 2013
Total Recoverable Hydrocarbons - 2013 NEPM Fractions						
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
Polycyclic Aromatic Hydrocarbons						
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
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	88	91	83	89
p-Terphenyl-d14 (surr.)	1	%	81	81	76	78
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	99	340	91	590
pH (1:5 Aqueous extract)	0.1	units	5.8	5.1	5.4	6.2
% Moisture	0.1	%	11	10	12	10
Heavy Metals						
Arsenic	2	mg/kg	2.7	8.1	3.6	5.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	8.5	21	10.0	14
Copper	5	mg/kg	< 5	7.0	< 5	< 5
Lead	5	mg/kg	8.4	13	7.8	9.1
Mercury	0.05	mg/kg	< 0.05	< 0.05	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	< 5	< 5	10
Zinc	5	mg/kg	21	29	12	37

Client Sample ID			S69	S70
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S13-Se20571	S13-Se20572
Date Sampled			Sep 26, 2013	Sep 26, 2013
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	< 20
TRH C15-C28	50	mg/kg	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50
TRH C10-36 (Total)	50	mg/kg	< 50	< 50
BTEX				
Benzene	0.1	mg/kg	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1
Xylenes - Total	0.3	mg/kg	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	120	112
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				
Naphthalene ^{N02}	0.5	mg/kg	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20
TRH C6-C10 less BTEX (F1) ^{N04}	20	mg/kg	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) ^{N01}	50	mg/kg	< 50	< 50
TRH >C16-C34	100	mg/kg	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100
Polycyclic Aromatic Hydrocarbons				
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5
Benzo(b&j)fluoranthene ^{N07}	0.5	mg/kg	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5
Pyrene	0.5	mg/kg	< 0.5	< 0.5
Total PAH	0.5	mg/kg	< 0.5	< 0.5
Benzo(a)pyrene TEQ*	0.5	mg/kg	0.6	0.6
2-Fluorobiphenyl (surr.)	1	%	89	85
p-Terphenyl-d14 (surr.)	1	%	83	77
Conductivity (1:5 aqueous extract at 25°C)	5	uS/cm	170	330
pH (1:5 Aqueous extract)	0.1	units	5.5	5.2
% Moisture	0.1	%	11	12

Client Sample ID			S69	S70
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S13-Se20571	S13-Se20572
Date Sampled			Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit		
Heavy Metals				
Arsenic	2	mg/kg	4.3	3.4
Cadmium	0.4	mg/kg	< 0.4	< 0.4
Chromium	5	mg/kg	22	8.8
Copper	5	mg/kg	< 5	< 5
Lead	5	mg/kg	7.4	7.8
Mercury	0.05	mg/kg	< 0.05	< 0.05
Nickel	5	mg/kg	< 5	6.6
Zinc	5	mg/kg	19	29

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).

Description	Testing Site	Extracted	Holding Time
ENM Exemption 2012 - NSW Office of Environment and Heritage (excluding Foreign Materials)			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions	Sydney	Oct 03, 2013	14 Day
- Method: E004 Petroleum Hydrocarbons (TPH)			
BTEX	Sydney	Oct 03, 2013	14 Day
- Method: E029/E016 BTEX			
Total Recoverable Hydrocarbons - 2013 NEPM Fractions	Sydney	Oct 03, 2013	14 Day
- Method: LM-LTM-ORG2010			
Polycyclic Aromatic Hydrocarbons	Sydney	Oct 02, 2013	14 Day
- Method: E007 Polyaromatic Hydrocarbons (PAH)			
Conductivity (1:5 aqueous extract at 25°C)	Sydney	Oct 02, 2013	7 Day
- Method: E032.2 Electrical Conductivity (EC)			
pH (1:5 Aqueous extract)	Sydney	Oct 02, 2013	7 Day
- Method: E018.2 pH			
Metals M8	Sydney	Oct 01, 2013	28 Day
- Method: E022 Acid Extractable metals in Soils & E026 Mercury			
% Moisture	Sydney	Oct 01, 2013	28 Day
- Method: E005 Moisture Content			

Company Name: Robert Carr and Associates Pty Ltd
Address: PO Box 175
Carrington
NSW 2294
Client Job No.: PARENT: HEX ENM CLASS 10184

Order No.:
Report #: 394296
Phone: 02 4902 9200
Fax: 02 4902 9299

Received: Sep 27, 2013 8:30 AM
Due: Oct 4, 2013
Priority: 5 Day
Contact Name: Matt Clark

Eurofins | mgt Client Manager: Ruth Callander

Sample Detail

% Moisture
ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding

Laboratory where analysis is conducted						
Melbourne Laboratory - NATA Site # 1254 & 14271						
Sydney Laboratory - NATA Site # 18217					X	X
Brisbane Laboratory - NATA Site # 20794						
Internal Laboratory						
Sample ID	Sample Date	Sampling Time	Matrix	LAB ID		
1	Sep 25, 2013		Soil	S13-Se20503	X	X
2	Sep 25, 2013		Soil	S13-Se20504	X	X
3	Sep 25, 2013		Soil	S13-Se20505	X	X
4	Sep 25, 2013		Soil	S13-Se20506	X	X
5	Sep 25, 2013		Soil	S13-Se20507	X	X
6	Sep 25, 2013		Soil	S13-Se20508	X	X
7	Sep 25, 2013		Soil	S13-Se20509	X	X
8	Sep 25, 2013		Soil	S13-Se20510	X	X
9	Sep 25, 2013		Soil	S13-Se20511	X	X
10	Sep 25, 2013		Soil	S13-Se20512	X	X

Date Reported: Oct 04, 2013

Date Reported: Oct 04, 2013

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% Moisture
ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

1	Sep 25, 2013	Soil	S13-Se20513	X	X
2	Sep 25, 2013	Soil	S13-Se20514	X	X
3	Sep 25, 2013	Soil	S13-Se20515	X	X
4	Sep 25, 2013	Soil	S13-Se20516	X	X
5	Sep 25, 2013	Soil	S13-Se20517	X	X
6	Sep 25, 2013	Soil	S13-Se20518	X	X
7	Sep 25, 2013	Soil	S13-Se20519	X	X
8	Sep 25, 2013	Soil	S13-Se20520	X	X
9	Sep 25, 2013	Soil	S13-Se20521	X	X
10	Sep 25, 2013	Soil	S13-Se20522	X	X
11	Sep 25, 2013	Soil	S13-Se20523	X	X

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ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding

Laboratory where analysis is conducted							
Melbourne Laboratory - NATA Site # 1254 & 14271							
Sydney Laboratory - NATA Site # 18217						X	X
Brisbane Laboratory - NATA Site # 20794							
Internal Laboratory							
2		Sep 25, 2013		Soil	S13-Se20524	X	X
3		Sep 25, 2013		Soil	S13-Se20525	X	X
4		Sep 25, 2013		Soil	S13-Se20526	X	X
5		Sep 25, 2013		Soil	S13-Se20527	X	X
6		Sep 25, 2013		Soil	S13-Se20528	X	X
7		Sep 25, 2013		Soil	S13-Se20529	X	X
8		Sep 25, 2013		Soil	S13-Se20530	X	X
9		Sep 25, 2013		Soil	S13-Se20531	X	X
10		Sep 25, 2013		Soil	S13-Se20532	X	X
11		Sep 25, 2013		Soil	S13-Se20533	X	X
12		Sep 25, 2013		Soil	S13-Se20534	X	X

Date Reported: Oct 04, 2013

Date Reported: Oct 04, 2013



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mgt

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone: +61 3 9564 5000
NATA # 1261
Site # 1254 & 14271

Company Name: Robert Carr and Associates Pty Ltd
Address: PO Box 175
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NSW 2294
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Sample Detail

% Moisture
ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

13		Sep 25, 2013		Soil	S13-Se20535	X	X
14		Sep 25, 2013		Soil	S13-Se20536	X	X
15		Sep 25, 2013		Soil	S13-Se20537	X	X
16		Sep 25, 2013		Soil	S13-Se20538	X	X
17		Sep 25, 2013		Soil	S13-Se20539	X	X
18		Sep 25, 2013		Soil	S13-Se20540	X	X
19		Sep 25, 2013		Soil	S13-Se20541	X	X
20		Sep 25, 2013		Soil	S13-Se20542	X	X
21		Sep 25, 2013		Soil	S13-Se20543	X	X
22		Sep 25, 2013		Soil	S13-Se20544	X	X
23		Sep 25, 2013		Soil	S13-Se20545	X	X

Date Reported: Oct 04, 2013

Date Reported: Oct 04, 2013

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% Moisture
ENM Exemption 2012 - NSW Office of
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Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

14	Sep 25, 2013	Soil	S13-Se20546	X	X
15	Sep 25, 2013	Soil	S13-Se20547	X	X
16	Sep 25, 2013	Soil	S13-Se20548	X	X
17	Sep 26, 2013	Soil	S13-Se20549	X	X
18	Sep 26, 2013	Soil	S13-Se20550	X	X
19	Sep 26, 2013	Soil	S13-Se20551	X	X
20	Sep 26, 2013	Soil	S13-Se20552	X	X
21	Sep 26, 2013	Soil	S13-Se20553	X	X
22	Sep 26, 2013	Soil	S13-Se20554	X	X
23	Sep 26, 2013	Soil	S13-Se20555	X	X
24	Sep 26, 2013	Soil	S13-Se20556	X	X

Date Reported: Oct 04, 2013

Date Reported: Oct 04, 2013



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mgt

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone: +61 3 9564 5000
NATA # 1261
Site # 1254 & 14271

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Sample Detail

ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding
% Moisture

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

i5	Sep 26, 2013	Soil	S13-Se20557	X	X
i6	Sep 26, 2013	Soil	S13-Se20558	X	X
i7	Sep 26, 2013	Soil	S13-Se20559	X	X
i8	Sep 26, 2013	Soil	S13-Se20560	X	X
i9	Sep 26, 2013	Soil	S13-Se20561	X	X
i0	Sep 26, 2013	Soil	S13-Se20562	X	X
i1	Sep 26, 2013	Soil	S13-Se20563	X	X
i2	Sep 26, 2013	Soil	S13-Se20564	X	X
i3	Sep 26, 2013	Soil	S13-Se20565	X	X
i4	Sep 26, 2013	Soil	S13-Se20566	X	X
i5	Sep 26, 2013	Soil	S13-Se20567	X	X

Date Reported: Oct 04, 2013

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Sample Detail

ENM Exemption 2012 - NSW Office of
Environment and Heritage (excluding
% Moisture

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217				X	X
Brisbane Laboratory - NATA Site # 20794					
Internal Laboratory					
16	Sep 26, 2013		Soil	S13-Se20568	X X
17	Sep 26, 2013		Soil	S13-Se20569	X X
18	Sep 26, 2013		Soil	S13-Se20570	X X
19	Sep 26, 2013		Soil	S13-Se20571	X X
20	Sep 26, 2013		Soil	S13-Se20572	X X

Date Reported: Oct 04, 2013

Date Reported: Oct 04, 2013

Eurofins | mgt 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 PQLs are matrix dependant. Quoted PQLs 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 Acknowledgment.

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: 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 Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
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

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 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, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene 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 Arochlor 1260 in Matrix Spikes and LCS's.
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 RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Method Blank							
Total Recoverable Hydrocarbons - 1999 NEPM Fractions E004 Petroleum Hydrocarbons (TPH)							
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 E029/E016 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 LM-LTM-ORG2010							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH C6-C10 less BTEX (F1)	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
Method Blank							
Polycyclic Aromatic Hydrocarbons E007 Polyaromatic Hydrocarbons (PAH)							
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							
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury							
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 E004							

Test			Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Petroleum Hydrocarbons (TPH)									
TRH C6-C9			%	126			70-130	Pass	
TRH C10-C14			%	79			70-130	Pass	
LCS - % Recovery									
BTEX E029/E016 BTEX									
Benzene			%	123			70-130	Pass	
Toluene			%	114			70-130	Pass	
Ethylbenzene			%	104			70-130	Pass	
m&p-Xylenes			%	92			70-130	Pass	
o-Xylene			%	116			70-130	Pass	
Xylenes - Total			%	100			70-130	Pass	
LCS - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions LM-LTM-ORG2010									
Naphthalene			%	99			70-130	Pass	
TRH C6-C10			%	128			70-130	Pass	
TRH >C10-C16			%	87			70-130	Pass	
LCS - % Recovery									
Polycyclic Aromatic Hydrocarbons E007 Polyaromatic Hydrocarbons (PAH)									
Acenaphthene			%	98			70-130	Pass	
Acenaphthylene			%	97			70-130	Pass	
Anthracene			%	94			70-130	Pass	
Benz(a)anthracene			%	82			70-130	Pass	
Benzo(a)pyrene			%	77			70-130	Pass	
Benzo(b&j)fluoranthene			%	119			70-130	Pass	
Benzo(g,h,i)perylene			%	78			70-130	Pass	
Benzo(k)fluoranthene			%	83			70-130	Pass	
Chrysene			%	98			70-130	Pass	
Dibenz(a,h)anthracene			%	76			70-130	Pass	
Fluoranthene			%	97			70-130	Pass	
Fluorene			%	96			70-130	Pass	
Indeno(1,2,3-cd)pyrene			%	77			70-130	Pass	
Naphthalene			%	97			70-130	Pass	
Phenanthrene			%	94			70-130	Pass	
Pyrene			%	95			70-130	Pass	
LCS - % Recovery									
Metals M8 E022 Acid Extractable metals in Soils & E026 Mercury									
Arsenic			%	94			70-130	Pass	
Cadmium			%	94			70-130	Pass	
Chromium			%	103			70-130	Pass	
Copper			%	98			70-130	Pass	
Lead			%	101			70-130	Pass	
Mercury			%	86			70-130	Pass	
Nickel			%	96			70-130	Pass	
Zinc			%	97			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S13-Se20503	CP	%	73			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S13-Se20503	CP	%	81			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Acenaphthene	S13-Se20503	CP	%	108			70-130	Pass	
Acenaphthylene	S13-Se20503	CP	%	107			70-130	Pass	
Anthracene	S13-Se20503	CP	%	106			70-130	Pass	
Benz(a)anthracene	S13-Se20503	CP	%	88			70-130	Pass	
Benzo(a)pyrene	S13-Se20503	CP	%	91			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20503	CP	%	128			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20503	CP	%	86			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20503	CP	%	95			70-130	Pass	
Chrysene	S13-Se20503	CP	%	112			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20503	CP	%	89			70-130	Pass	
Fluoranthene	S13-Se20503	CP	%	103			70-130	Pass	
Fluorene	S13-Se20503	CP	%	105			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20503	CP	%	89			70-130	Pass	
Naphthalene	S13-Se20503	CP	%	108			70-130	Pass	
Phenanthrene	S13-Se20503	CP	%	101			70-130	Pass	
Pyrene	S13-Se20503	CP	%	104			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20503	CP	%	96			70-130	Pass	
Cadmium	S13-Se20503	CP	%	97			70-130	Pass	
Chromium	S13-Se20503	CP	%	103			70-130	Pass	
Copper	S13-Se20503	CP	%	96			70-130	Pass	
Lead	S13-Se20503	CP	%	97			70-130	Pass	
Mercury	S13-Se20503	CP	%	85			70-130	Pass	
Nickel	S13-Se20503	CP	%	87			70-130	Pass	
Zinc	S13-Se20503	CP	%	86			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S13-Se20513	CP	%	78			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S13-Se20513	CP	%	87			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20513	CP	%	107			70-130	Pass	
Acenaphthylene	S13-Se20513	CP	%	108			70-130	Pass	
Anthracene	S13-Se20513	CP	%	106			70-130	Pass	
Benz(a)anthracene	S13-Se20513	CP	%	82			70-130	Pass	
Benzo(a)pyrene	S13-Se20513	CP	%	95			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20513	CP	%	109			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20513	CP	%	94			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20513	CP	%	98			70-130	Pass	
Chrysene	S13-Se20513	CP	%	116			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20513	CP	%	96			70-130	Pass	
Fluoranthene	S13-Se20513	CP	%	100			70-130	Pass	
Fluorene	S13-Se20513	CP	%	106			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20513	CP	%	95			70-130	Pass	
Naphthalene	S13-Se20513	CP	%	109			70-130	Pass	
Phenanthrene	S13-Se20513	CP	%	104			70-130	Pass	
Pyrene	S13-Se20513	CP	%	101			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20513	CP	%	96			70-130	Pass	
Cadmium	S13-Se20513	CP	%	101			70-130	Pass	
Chromium	S13-Se20513	CP	%	112			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Copper	S13-Se20513	CP	%	101			70-130	Pass	
Lead	S13-Se20513	CP	%	102			70-130	Pass	
Mercury	S13-Se20513	CP	%	85			70-130	Pass	
Nickel	S13-Se20513	CP	%	91			70-130	Pass	
Zinc	S13-Se20513	CP	%	106			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se20523	CP	%	95			70-130	Pass	
TRH C10-C14	S13-Se20523	CP	%	71			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S13-Se20523	CP	%	111			70-130	Pass	
Toluene	S13-Se20523	CP	%	92			70-130	Pass	
Ethylbenzene	S13-Se20523	CP	%	86			70-130	Pass	
m&p-Xylenes	S13-Se20523	CP	%	81			70-130	Pass	
o-Xylene	S13-Se20523	CP	%	86			70-130	Pass	
Xylenes - Total	S13-Se20523	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se20523	CP	%	71			70-130	Pass	
TRH C6-C10	S13-Se20523	CP	%	93			70-130	Pass	
TRH >C10-C16	S13-Se20523	CP	%	79			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20523	CP	%	102			70-130	Pass	
Acenaphthylene	S13-Se20523	CP	%	106			70-130	Pass	
Anthracene	S13-Se20523	CP	%	98			70-130	Pass	
Benz(a)anthracene	S13-Se20523	CP	%	83			70-130	Pass	
Benzo(a)pyrene	S13-Se20523	CP	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20523	CP	%	99			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20523	CP	%	87			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20523	CP	%	92			70-130	Pass	
Chrysene	S13-Se20523	CP	%	106			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20523	CP	%	90			70-130	Pass	
Fluoranthene	S13-Se20523	CP	%	101			70-130	Pass	
Fluorene	S13-Se20523	CP	%	102			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20523	CP	%	89			70-130	Pass	
Naphthalene	S13-Se20523	CP	%	106			70-130	Pass	
Phenanthrene	S13-Se20523	CP	%	99			70-130	Pass	
Pyrene	S13-Se20523	CP	%	100			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20523	CP	%	85			70-130	Pass	
Cadmium	S13-Se20523	CP	%	97			70-130	Pass	
Chromium	S13-Se20523	CP	%	88			70-130	Pass	
Copper	S13-Se20523	CP	%	92			70-130	Pass	
Lead	S13-Se20523	CP	%	91			70-130	Pass	
Mercury	S13-Se20523	CP	%	77			70-130	Pass	
Nickel	S13-Se20523	CP	%	82			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se20533	CP	%	103			70-130	Pass	
TRH C10-C14	S13-Se20533	CP	%	77			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Benzene	S13-Se20533	CP	%	113			70-130	Pass	
Toluene	S13-Se20533	CP	%	97			70-130	Pass	
Ethylbenzene	S13-Se20533	CP	%	89			70-130	Pass	
m&p-Xylenes	S13-Se20533	CP	%	79			70-130	Pass	
o-Xylene	S13-Se20533	CP	%	94			70-130	Pass	
Xylenes - Total	S13-Se20533	CP	%	84			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se20533	CP	%	77			70-130	Pass	
TRH C6-C10	S13-Se20533	CP	%	101			70-130	Pass	
TRH >C10-C16	S13-Se20533	CP	%	85			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20533	CP	%	111			70-130	Pass	
Acenaphthylene	S13-Se20533	CP	%	108			70-130	Pass	
Anthracene	S13-Se20533	CP	%	108			70-130	Pass	
Benz(a)anthracene	S13-Se20533	CP	%	85			70-130	Pass	
Benzo(a)pyrene	S13-Se20533	CP	%	102			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20533	CP	%	120			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20533	CP	%	100			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20533	CP	%	99			70-130	Pass	
Chrysene	S13-Se20533	CP	%	113			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20533	CP	%	103			70-130	Pass	
Fluoranthene	S13-Se20533	CP	%	104			70-130	Pass	
Fluorene	S13-Se20533	CP	%	107			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20533	CP	%	101			70-130	Pass	
Naphthalene	S13-Se20533	CP	%	109			70-130	Pass	
Phenanthrene	S13-Se20533	CP	%	108			70-130	Pass	
Pyrene	S13-Se20533	CP	%	103			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20533	CP	%	101			70-130	Pass	
Cadmium	S13-Se20533	CP	%	98			70-130	Pass	
Chromium	S13-Se20533	CP	%	100			70-130	Pass	
Copper	S13-Se20533	CP	%	101			70-130	Pass	
Lead	S13-Se20533	CP	%	99			70-130	Pass	
Mercury	S13-Se20533	CP	%	70			70-130	Pass	
Nickel	S13-Se20533	CP	%	94			70-130	Pass	
Zinc	S13-Se20533	CP	%	99			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se20543	CP	%	109			70-130	Pass	
TRH C10-C14	S13-Se20543	CP	%	84			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S13-Se20543	CP	%	116			70-130	Pass	
Toluene	S13-Se20543	CP	%	99			70-130	Pass	
Ethylbenzene	S13-Se20543	CP	%	91			70-130	Pass	
m&p-Xylenes	S13-Se20543	CP	%	81			70-130	Pass	
o-Xylene	S13-Se20543	CP	%	98			70-130	Pass	
Xylenes - Total	S13-Se20543	CP	%	87			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se20543	CP	%	72			70-130	Pass	
TRH C6-C10	S13-Se20543	CP	%	109			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16	S13-Se20543	CP	%	92			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20543	CP	%	98			70-130	Pass	
Acenaphthylene	S13-Se20543	CP	%	94			70-130	Pass	
Anthracene	S13-Se20543	CP	%	101			70-130	Pass	
Benz(a)anthracene	S13-Se20543	CP	%	71			70-130	Pass	
Benzo(a)pyrene	S13-Se20543	CP	%	94			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20543	CP	%	72			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20543	CP	%	81			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20543	CP	%	88			70-130	Pass	
Chrysene	S13-Se20543	CP	%	100			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20543	CP	%	93			70-130	Pass	
Fluoranthene	S13-Se20543	CP	%	78			70-130	Pass	
Fluorene	S13-Se20543	CP	%	80			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20543	CP	%	93			70-130	Pass	
Naphthalene	S13-Se20543	CP	%	98			70-130	Pass	
Phenanthrene	S13-Se20543	CP	%	107			70-130	Pass	
Pyrene	S13-Se20543	CP	%	85			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20543	CP	%	98			70-130	Pass	
Cadmium	S13-Se20543	CP	%	90			70-130	Pass	
Chromium	S13-Se20543	CP	%	96			70-130	Pass	
Copper	S13-Se20543	CP	%	92			70-130	Pass	
Lead	S13-Se20543	CP	%	102			70-130	Pass	
Zinc	S13-Se20543	CP	%	88			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C10-C14	S13-Se20553	CP	%	83			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
TRH >C10-C16	S13-Se20553	CP	%	92			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20553	CP	%	100			70-130	Pass	
Acenaphthylene	S13-Se20553	CP	%	95			70-130	Pass	
Anthracene	S13-Se20553	CP	%	102			70-130	Pass	
Benz(a)anthracene	S13-Se20553	CP	%	84			70-130	Pass	
Benzo(a)pyrene	S13-Se20553	CP	%	90			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20553	CP	%	79			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20553	CP	%	80			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20553	CP	%	117			70-130	Pass	
Chrysene	S13-Se20553	CP	%	104			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20553	CP	%	90			70-130	Pass	
Fluoranthene	S13-Se20553	CP	%	77			70-130	Pass	
Fluorene	S13-Se20553	CP	%	83			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20553	CP	%	85			70-130	Pass	
Naphthalene	S13-Se20553	CP	%	100			70-130	Pass	
Phenanthrene	S13-Se20553	CP	%	113			70-130	Pass	
Pyrene	S13-Se20553	CP	%	84			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20553	CP	%	91			70-130	Pass	
Cadmium	S13-Se20553	CP	%	92			70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Chromium	S13-Se20553	CP	%	106			70-130	Pass	
Copper	S13-Se20553	CP	%	96			70-130	Pass	
Lead	S13-Se20553	CP	%	97			70-130	Pass	
Mercury	S13-Se20553	CP	%	76			70-130	Pass	
Nickel	S13-Se20553	CP	%	126			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1					
TRH C6-C9	S13-Se20563	CP	%	114			70-130	Pass	
TRH C10-C14	S13-Se20563	CP	%	78			70-130	Pass	
Spike - % Recovery									
BTEX				Result 1					
Benzene	S13-Se20563	CP	%	124			70-130	Pass	
Toluene	S13-Se20563	CP	%	106			70-130	Pass	
Ethylbenzene	S13-Se20563	CP	%	97			70-130	Pass	
m&p-Xylenes	S13-Se20563	CP	%	86			70-130	Pass	
o-Xylene	S13-Se20563	CP	%	104			70-130	Pass	
Xylenes - Total	S13-Se20563	CP	%	92			70-130	Pass	
Spike - % Recovery									
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1					
Naphthalene	S13-Se20563	CP	%	72			70-130	Pass	
TRH C6-C10	S13-Se20563	CP	%	114			70-130	Pass	
TRH >C10-C16	S13-Se20563	CP	%	85			70-130	Pass	
Spike - % Recovery									
Polycyclic Aromatic Hydrocarbons				Result 1					
Acenaphthene	S13-Se20563	CP	%	101			70-130	Pass	
Acenaphthylene	S13-Se20563	CP	%	94			70-130	Pass	
Anthracene	S13-Se20563	CP	%	90			70-130	Pass	
Benz(a)anthracene	S13-Se20563	CP	%	90			70-130	Pass	
Benzo(a)pyrene	S13-Se20563	CP	%	79			70-130	Pass	
Benzo(b&j)fluoranthene	S13-Se20563	CP	%	86			70-130	Pass	
Benzo(g,h,i)perylene	S13-Se20563	CP	%	88			70-130	Pass	
Benzo(k)fluoranthene	S13-Se20563	CP	%	90			70-130	Pass	
Chrysene	S13-Se20563	CP	%	96			70-130	Pass	
Dibenz(a,h)anthracene	S13-Se20563	CP	%	85			70-130	Pass	
Fluoranthene	S13-Se20563	CP	%	89			70-130	Pass	
Fluorene	S13-Se20563	CP	%	104			70-130	Pass	
Indeno(1,2,3-cd)pyrene	S13-Se20563	CP	%	84			70-130	Pass	
Naphthalene	S13-Se20563	CP	%	99			70-130	Pass	
Phenanthrene	S13-Se20563	CP	%	96			70-130	Pass	
Pyrene	S13-Se20563	CP	%	91			70-130	Pass	
Spike - % Recovery									
Metals M8				Result 1					
Arsenic	S13-Se20563	CP	%	93			70-130	Pass	
Cadmium	S13-Se20563	CP	%	98			70-130	Pass	
Chromium	S13-Se20563	CP	%	103			70-130	Pass	
Copper	S13-Se20563	CP	%	100			70-130	Pass	
Lead	S13-Se20563	CP	%	102			70-130	Pass	
Mercury	S13-Se20563	CP	%	92			70-130	Pass	
Nickel	S13-Se20563	CP	%	105			70-130	Pass	
Zinc	S13-Se20563	CP	%	95			70-130	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
Duplicate									
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD			
TRH C6-C9	S13-Se20503	CP	mg/kg	< 20	< 20	<1	30%	Pass	

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S13-Se20503	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20503	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20503	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20503	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S13-Se20503	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20503	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20503	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20503	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20503	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20503	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20503	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20503	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20503	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20503	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20503	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20503	CP	uS/cm	360	350	1.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20503	CP	mg/kg	4.5	4.6	2.0	30%	Pass
Cadmium	S13-Se20503	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20503	CP	mg/kg	6.7	8.7	25	30%	Pass
Copper	S13-Se20503	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S13-Se20503	CP	mg/kg	5.3	5.8	9.0	30%	Pass
Mercury	S13-Se20503	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20503	CP	mg/kg	6.9	5.9	15	30%	Pass
Zinc	S13-Se20503	CP	mg/kg	22	22	1.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S13-Se20513	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S13-Se20513	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C15-C28	S13-Se20513	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20513	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20513	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S13-Se20513	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20513	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20513	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20513	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20513	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20513	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20513	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20513	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20513	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20513	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20513	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20513	CP	uS/cm	390	380	2.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20513	CP	mg/kg	2.7	2.2	19	30%	Pass
Cadmium	S13-Se20513	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20513	CP	mg/kg	6.4	6.4	1.0	30%	Pass
Copper	S13-Se20513	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S13-Se20513	CP	mg/kg	7.0	6.1	13	30%	Pass
Mercury	S13-Se20513	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20513	CP	mg/kg	< 5	< 5	<1	30%	Pass
Zinc	S13-Se20513	CP	mg/kg	120	140	15	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S13-Se20523	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S13-Se20523	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20523	CP	mg/kg	< 50	< 50	<1	30%	Pass

Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C29-C36	S13-Se20523	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20523	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S13-Se20523	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20523	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20523	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20523	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20523	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20523	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20523	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20523	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20523	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20523	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20523	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20523	CP	uS/cm	1100	1000	1.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20523	CP	mg/kg	9.1	10	13	30%	Pass
Cadmium	S13-Se20523	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20523	CP	mg/kg	17	18	2.0	30%	Pass
Copper	S13-Se20523	CP	mg/kg	7.7	7.5	2.0	30%	Pass
Lead	S13-Se20523	CP	mg/kg	10	11	8.0	30%	Pass
Mercury	S13-Se20523	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20523	CP	mg/kg	19	20	2.0	30%	Pass
Zinc	S13-Se20523	CP	mg/kg	89	74	18	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S13-Se20533	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S13-Se20533	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20533	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20533	CP	mg/kg	< 50	< 50	<1	30%	Pass

Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20533	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S13-Se20533	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20533	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20533	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20533	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20533	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20533	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20533	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20533	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20533	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20533	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20533	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20533	CP	uS/cm	330	320	1.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20533	CP	mg/kg	3.0	2.7	11	30%	Pass
Cadmium	S13-Se20533	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20533	CP	mg/kg	10	8.2	24	30%	Pass
Copper	S13-Se20533	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S13-Se20533	CP	mg/kg	7.0	5.7	20	30%	Pass
Mercury	S13-Se20533	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20533	CP	mg/kg	6.5	5.1	24	30%	Pass
Zinc	S13-Se20533	CP	mg/kg	16	13	25	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S13-Se20543	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S13-Se20543	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20543	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20543	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20543	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass

Duplicate								
BTEX				Result 1	Result 2	RPD		
Toluene	S13-Se20543	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20543	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20543	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20543	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20543	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20543	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20543	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20543	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20543	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20543	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20543	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20543	CP	uS/cm	1200	1200	<1	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20543	CP	mg/kg	7.0	7.6	8.0	30%	Pass
Cadmium	S13-Se20543	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20543	CP	mg/kg	14	15	6.0	30%	Pass
Copper	S13-Se20543	CP	mg/kg	7.1	6.5	9.0	30%	Pass
Lead	S13-Se20543	CP	mg/kg	8.5	9.8	15	30%	Pass
Mercury	S13-Se20543	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20543	CP	mg/kg	21	27	25	30%	Pass
Zinc	S13-Se20543	CP	mg/kg	87	97	11	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C10-C14	S13-Se20553	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20553	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20553	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
TRH >C10-C16	S13-Se20553	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20553	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20553	CP	mg/kg	< 100	< 100	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20553	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20553	CP	uS/cm	450	460	1.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20553	CP	mg/kg	4.5	4.7	6.0	30%	Pass
Cadmium	S13-Se20553	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20553	CP	mg/kg	10	10	<1	30%	Pass
Copper	S13-Se20553	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S13-Se20553	CP	mg/kg	7.1	7.6	7.0	30%	Pass
Mercury	S13-Se20553	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20553	CP	mg/kg	12	13	13	30%	Pass
Zinc	S13-Se20553	CP	mg/kg	27	27	1.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S13-Se20563	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C10-C14	S13-Se20563	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C15-C28	S13-Se20563	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH C29-C36	S13-Se20563	CP	mg/kg	< 50	< 50	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S13-Se20563	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S13-Se20563	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S13-Se20563	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
m&p-Xylenes	S13-Se20563	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
o-Xylene	S13-Se20563	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Xylenes - Total	S13-Se20563	CP	mg/kg	< 0.3	< 0.3	<1	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S13-Se20563	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH C6-C10 less BTEX (F1)	S13-Se20563	CP	mg/kg	< 20	< 20	<1	30%	Pass
TRH >C10-C16	S13-Se20563	CP	mg/kg	< 50	< 50	<1	30%	Pass
TRH >C16-C34	S13-Se20563	CP	mg/kg	< 100	< 100	<1	30%	Pass
TRH >C34-C40	S13-Se20563	CP	mg/kg	< 100	< 100	<1	30%	Pass
Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthylene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(a)pyrene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(b&j)fluoranthene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(g,h,i)perylene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benzo(k)fluoranthene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Chrysene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Dibenz(a,h)anthracene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluorene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Naphthalene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Pyrene	S13-Se20563	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Duplicate								
				Result 1	Result 2	RPD		
Conductivity (1:5 aqueous extract at 25°C)	S13-Se20563	CP	uS/cm	590	580	1.0	30%	Pass
Duplicate								
Metals M8				Result 1	Result 2	RPD		
Arsenic	S13-Se20563	CP	mg/kg	< 2	2.1	21	30%	Pass
Cadmium	S13-Se20563	CP	mg/kg	< 0.4	< 0.4	<1	30%	Pass
Chromium	S13-Se20563	CP	mg/kg	< 5	5.7	16	30%	Pass
Copper	S13-Se20563	CP	mg/kg	< 5	< 5	<1	30%	Pass
Lead	S13-Se20563	CP	mg/kg	< 5	5.1	16	30%	Pass
Mercury	S13-Se20563	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Nickel	S13-Se20563	CP	mg/kg	5.9	6.7	13	30%	Pass
Zinc	S13-Se20563	CP	mg/kg	16	16	<1	30%	Pass

Comments

Sample Integrity

Custody Seals Intact (if used)	N/A
Attempt to Chill was evident	Yes
Sample correctly preserved	Yes
Organic samples had Teflon liners	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

Ruth Callander	Client Services
Bob Symons	Senior Analyst-Inorganic (NSW)
James Norford	Senior Analyst-Metal (NSW)
Ryan Hamilton	Senior Analyst-Organic (NSW)
Ryan Hamilton	Senior Analyst-Volatile (NSW)



Dr. Bob Symons

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

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

Sample Receipt Advice

Company name: **Robert Carr and Associates Pty Ltd**
Contact name: **Matt Clark**
Client job number: **PARENT: HEX ENM CLASS 10184**
COC number: **Not provided**
Turn around time: **5 Day**
Date/Time received: **Sep 27, 2013 8:30 AM**
Eurofins | mgt reference: **394296**

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 : 13 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.
- ☒ Organic samples had Teflon liners.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Foreign Materials placed on 10 day TAT in report 394304

Contact notes

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

Ruth Callander on Phone : (+61) (3) 8564 5000 or by e.mail: RuthCallander@eurofins.com.au

Results will be delivered electronically via e.mail to Matt Clark - mattc@rca.com.au.

Note: A copy of these results will also be delivered to the general Robert Carr and Associates Pty Ltd email address.

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concrush

Page 1 of 5

Company Name :	RCA Australia	Contact Name :	Carmen Rocher	Purchase Order :		COC Number :	
Office Address :	92 Hill St Carrington NSW	Project Manager :	Matt Clark	PROJECT Number :	10184	Eureflins mgt quote ID :	
		Email for results :	carmenr@rca.com.au; mattc@rca.com.au	PROJECT Name :	HEX ENM Class	Data output format:	

	Analytes														Some common holding times (with correct preservation). For further information contact the lab					
Special Directions & Comments :	ENM Suite															Waters		Soils		
																	BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
																	TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
																	Heavy Metals	6 months	Heavy Metals	6 months
																	Mercury, CrVI	28 days	Mercury, CrVI	28 days
																	Microbiological testing	24 hours	Microbiological testing	72 hours
																	BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
																	Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Eurofins mgt DI water batch number:																	Ferrous iron	7 days	ASLP, TCLP	7 days

[illegible]

Relinquished By: C. Rocher	Laboratory Staff Received By: Andrew Black	Turn around time	Method Of Shipment	Temperature on arrival: 13°
Date & Time:: 11 am 26-9-13	Date & Time: 26/9/13 11am	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered	Report number:
Signature:	Signature: <i>AB</i>	5 DAY ☐ 10 DAY ☒ Other:	☐ Postal Courier Consignment # :	*394296

27 SEP 2013

BY: Sano 830

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concrush

Page 2 of 5

Company Name :	RCA Australia
Office Address :	92 Hill St Carrington NSW

Contact Name:	Carmen Rocher

Purchase Order :

COC Number :

Project Manager : Matt Clark

PROJECT Number : 10184

Eurofins | met quota ID :

Email for results : carmenr@rca.com.au; mattc@rca.com.au

PROJECT Name : HEX ENM Class

Data output format:

Special Directions & Comments:

Analytics

Some common holding times (with correct preservation).
For further information contact the lab

Eurofins mgt DI water batch number:			
	Sample ID	Date	Matrix

Waters

Sells

BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous Iron	7 days	ASLP, TCLP	7 days

Containers:

Sample comments:

1	S17	25/09/2013	Soil	X
2	S18	25/09/2013	Soil	X
3	S19	25/09/2013	Soil	X
4	S20	25/09/2013	Soil	X
5	S21	25/09/2013	Soil	X
6	S22	25/09/2013	Soil	X
7	S23	25/09/2013	Soil	X
8	S24	25/09/2013	Soil	X
9	S25	25/09/2013	Soil	X
10	S26	25/09/2013	Soil	X
11	S27	25/09/2013	Soil	X
12	S28	25/09/2013	Soil	X
13	S29	25/09/2013	Soil	X
14	S30	25/09/2013	Soil	X
15	S31	25/09/2013	Soil	X
16	S32	25/09/2013	Soil	X

Laboratory Staff

Turn around time

Method Of Shipment

Temperature on arrival:

Relinquished By:

Received By:

Date & Time::

Date & Time:

Signature:

Signature: _____

1 DAY ☐ 2 DAY ☐ 3 DAY ☐

5 DAY ☐ 10 DAY ☒ Other ☐

☐ Courier
☐ Hand Delivered
☐ Postal

Courier Consignment # :

Report number:

394296

27 SEP 2013
BY: Sean O 830



mgt

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Email: enquiries.melb@mgllabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concruah

Page 3 of 5

Company Name : RCA Australia	Contact Name: Carmen Rocher	Purchase Order :	COC Number :
Office Address : 92 Hill St Carrington NSW	Project Manager : Matt Clark	PROJECT Number : 10184	Eurofins mgt quote ID :
	Email for results : carmen@rca.com.au; mattc@rca.com.au	PROJECT Name : HEX ENM Class	Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

				Analytes																Some common holding times (with correct preservation). For further information contact the lab			
																				Waters		Soils	
Eurofins mgt DI water batch number:	Sample ID	Date	Matrix	Combo ENM Suite																BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
																				TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
																				Heavy Metals	6 months	Heavy Metals	6 months
																				Mercury, CrVI	28 days	Mercury, CrVI	28 days
																				Microbiological testing	24 hours	Microbiological testing	72 hours
																				BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
																				Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
																				Ferrous iron	7 days	ASLP, TCLP	7 days
																				Containers:			
																				1LP	250P	125P	1LA
1	S33	25/09/2013	Soil	X																40mL vial	125mL A	Jar	
2	S34	25/09/2013	Soil	X																			
3	S36	25/09/2013	Soil	X																			
4	S36	25/09/2013	Soil	X																			
5	S37	25/09/2013	Soil	X																			
6	S38	25/09/2013	Soil	X																			
7	S39	25/09/2013	Soil	X																			
8	S40	25/09/2013	Soil	X																			
9	S41	25/09/2013	Soil	X																			
10	S42	25/09/2013	Soil	X																			
11	S43	25/09/2013	Soil	X																			
12	S44	25/09/2013	Soil	X																			
13	S45	25/09/2013	Soil	X																			
14	S46	25/09/2013	Soil	X																			
15	S47	26/09/2013	Soil	X																			
16	S48	26/09/2013	Soil	X																			

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time::	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	13°
Signature:	Date & Time:	6 DAY ☐ 10 DAY ☒ Other:	Courier Consignment # :	Report number:
	Signature:			394296

RECEIVED
27 SEP 2013
BY: Sean O 8:30



mgt

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Email: enquiries.melb@mgllabmark.com.au

CHAIN OF CUSTODY RECORD**CLIENT DETAILS** Concrush

Page 4 of 5

Company Name: RCA Australia	Contact Name: Carmen Rocher	Purchase Order:	COC Number:
Office Address: 92 Hill St Carrington NSW	Project Manager: Matt Clark	PROJECT Number: 10184	Eurofins mgt quote ID:
	Email for results: carmen@rca.com.au; mattc@rca.com.au	PROJECT Name: HEX ENM Class	Data output format:

Special Directions & Comments:

Eurofins | mgt DI water batch number:

Sample ID	Date	Matrix	Eurofins Suite	Analytes												Some common holding times (with correct preservation). For further information contact the lab							
																Waters				Soils			
1 S49	26/09/2013	Soil	X													BTEX, MAH, VOC	14 days			BTEX, MAH, VOC	14 days		
2 S60	26/09/2013	Soil	X													TRH, PAH, Phenols, Pesticides	7 days			TRH, PAH, Phenols, Pesticides	14 days		
3 S61	26/09/2013	Soil	X													Heavy Metals	6 months			Heavy Metals	6 months		
4 S62	26/09/2013	Soil	X													Mercury, CrVI	28 days			Mercury, CrVI	28 days		
5 S63	26/09/2013	Soil	X													Microbiological testing	24 hours			Microbiological testing	72 hours		
6 S64	26/09/2013	Soil	X													BOD, Nitrate, Nitrite, Total N	2 days			Anions	28 days		
7 S65	26/09/2013	Soil	X													Solids - TSS, TDS etc	7 days			SPOCAS, pH Field and FOX, CrS	24 hours		
8 S66	26/09/2013	Soil	X													Ferrous Iron	7 days			ASLP, TCLP	7 days		
9 S67	26/09/2013	Soil	X													Containers: 1LP 250P 125P 1LA 40mL vial 125mL A Jar							
10 S68	26/09/2013	Soil	X																				
11 S69	26/09/2013	Soil	X													Sample comments:							
12 S60	26/09/2013	Soil	X																				
13 S61	26/09/2013	Soil	X																				
14 S62	26/09/2013	Soil	X																				
15 S63	26/09/2013	Soil	X																				
16 S64	26/09/2013	Soil	X																				

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time::	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	13°
Signature:	Date & Time:	8 DAY ☐ 10 DAY ☒ Other:	☐ Hand Delivered	Report number:
	Signature:		☐ Postal	394296
			Courier Consignment #:	

27 SEP 2013

BY: Sean 8:30



mgt

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Email: enviro.bris@mgtlabmark.com.au☐ Melbourne2 Kingston Town Close, Oakleigh VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtlabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concursus

Page 5 of 5

Company Name : RCA Australia	Contact Name : Carmen Rocher	Purchase Order :	COC Number :
Office Address : 92 Hill St Carrington NSW	Project Manager : Matt Clark	PROJECT Number : 10184	Eurofins mgt quote ID :
	Email for results : carmen@rca.com.au; mattc@rca.com.au	PROJECT Name : HEX ENM Class	Data output format:

Special Directions & Comments :

Eurofins | mgt DI water batch number:

				Analytes										Some common holding times (with correct preservation). For further information contact the lab			
														Waters		Soils	
Eurofins mgt DI water batch number:	Sample ID	Date	Matrix	Combo ENM Suite										BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
	1 S65	26/09/2013	Soil											TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
	2 S66	26/09/2013	Soil											Heavy Metals	6 months	Heavy Metals	6 months
	3 S67	26/09/2013	Soil											Mercury, CrVI	28 days	Mercury, CrVI	28 days
	4 S68	26/09/2013	Soil											Microbiological testing	24 hours	Microbiological testing	72 hours
	5 S69	26/09/2013	Soil											BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
	6 S70	26/09/2013	Soil											Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
														Ferrous iron	7 days	ASLP, TCLP	7 days
	7													Containers:			
	8													1LP	250P	125P	1LA
9														40mL vial	125mL A	Jar	
10																	
11																	
12																	
13																	
14																	
15																	
16																	

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time:	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	13°
Signature:	Signature:	6 DAY ☐ 10 DAY ☒ Other:	Courier Consignment # :	Report number:

7 SEP 2013
BY: Sean O.

394296

Robert Carr and Associates Pty Ltd
PO Box 175
Carrington
NSW 2294

Attention: Matt Clark

Report 394304-S
Client Reference FORMAT: HEX ENM CLASS 10184
Received Date Sep 27, 2013



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.

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S1 Soil S13-Se20635 Sep 25, 2013	S2 Soil S13-Se20636 Sep 25, 2013	S3 Soil S13-Se20637 Sep 25, 2013	S4 Soil S13-Se20638 Sep 25, 2013
Initial Weight	0.01	kg	9.6	11	15	11
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	0.2	< 0.1
Stone*	0.1	%	6.8	2.7	2.3	2.9
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.8	1.0	2.9	0.6
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.13	< 0.05	0.06	0.19

Client Sample ID Sample Matrix Eurofins mgt Sample No. Date Sampled Test/Reference	LOR	Unit	S5 Soil S13-Se20639 Sep 25, 2013	S6 Soil S13-Se20640 Sep 25, 2013	S7 Soil S13-Se20641 Sep 25, 2013	S8 Soil S13-Se20642 Sep 25, 2013
Initial Weight	0.01	kg	12	11	9.4	9.4
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	6.0	6.3	7.9	1.6
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1

Client Sample ID			S5	S6	S7	S8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20639	S13-Se20640	S13-Se20641	S13-Se20642
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.0	1.5	1.1	0.6
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	1.6	< 0.05	< 0.05	< 0.05

Client Sample ID			S9	S10	S11	S12
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20643	S13-Se20644	S13-Se20645	S13-Se20646
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.5	11	8.8	9.9
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	1.0	2.1	3.9	1.9
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	0.7	0.7	4.3	4.7
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.36	0.28	0.51	0.97

Client Sample ID			S13	S14	S15	S16
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20647	S13-Se20648	S13-Se20649	S13-Se20650
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	12	12	9.4	11
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	1.9	1.2	5.2	4.8
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	3.2	1.7	1.6	1.8
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	0.08	< 0.05	0.55

Client Sample ID			S17	S18	S19	S20
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20651	S13-Se20652	S13-Se20653	S13-Se20654
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.3	9.5	8.1	11
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	3.4	3.7	4.2	5.6
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	2.5	3.2	3.0	4.6
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.38	< 0.05	0.65	< 0.05

Client Sample ID			S21	S22	S23	S24
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20655	S13-Se20656	S13-Se20657	S13-Se20658
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	10	8.8	10	11
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	0.2	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	3.5	3.8	5.1	1.5
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.5	2.2	3.3	1.5
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	< 0.05	< 0.05	2.3

Client Sample ID			S25	S26	S27	S28
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20659	S13-Se20660	S13-Se20661	S13-Se20662
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.5	12	9.7	9.5
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	1.1	0.2	1.0	2.0
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.4	0.6	0.8	1.3
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.10	0.14	0.18	< 0.05

Client Sample ID			S29	S30	S31	S32
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20663	S13-Se20664	S13-Se20665	S13-Se20666
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	8.5	9.7	9.4	9.6
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	1.5	3.2	2.5	0.7
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	0.9	2.1	1.7	2.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.05	0.95	0.10	0.12

Client Sample ID			S33	S34	S35	S36
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20667	S13-Se20668	S13-Se20669	S13-Se20670
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	10	7.7	8.0	9.6
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	2.0	0.9	1.9	2.2
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.2	1.0	0.9	1.6
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.31	< 0.05	0.12	< 0.05

Client Sample ID			S37	S38	S39	S40
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20671	S13-Se20672	S13-Se20673	S13-Se20674
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.7	9.9	7.4	8.6
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	3.1	1.9	1.9	5.2
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	2.7	1.9	1.7	2.3
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	2.2	< 0.05	< 0.05	< 0.05

Client Sample ID			S41	S42	S43	S44
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20675	S13-Se20676	S13-Se20677	S13-Se20678
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 25, 2013	Sep 25, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.9	9.9	10	10
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	4.4	0.8	2.3	3.2
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	2.7	1.1	1.6	1.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	0.07	< 0.05	0.07

Client Sample ID			S45	S46	S47	S48
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20679	S13-Se20680	S13-Se20681	S13-Se20682
Date Sampled			Sep 25, 2013	Sep 25, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	10	11	8.8	8.7
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	0.2	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	1.4	0.6	0.8	1.5
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	0.5	0.7	1.3	1.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	< 0.05	2.3	0.05

Client Sample ID			S49	S50	S51	S52
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20683	S13-Se20684	S13-Se20685	S13-Se20686
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	8.3	7.5	7.9	9.0
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	0.7	1.4	4.8	0.8
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.2	0.9	2.5	1.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	0.06	< 0.05	0.10

Client Sample ID			S53	S54	S55	S56
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20687	S13-Se20688	S13-Se20689	S13-Se20690
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	7.1	7.5	7.8	7.9
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	4.6	4.1	2.6	2.3
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	2.0	1.6	2.1	1.1
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.32	< 0.05	< 0.05	< 0.05

Client Sample ID			S57	S58	S59	S60
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20691	S13-Se20692	S13-Se20693	S13-Se20694
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.3	6.4	7.9	9.2
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	0.2
Stone*	0.1	%	2.8	5.2	1.8	2.2
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	2.2	6.9	2.5	2.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	0.12	0.18	< 0.05

Client Sample ID			S61	S62	S63	S64
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20695	S13-Se20696	S13-Se20697	S13-Se20698
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	10	8.4	9.3	11
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Stone*	0.1	%	2.6	1.8	0.1	0.2
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.3	2.3	0.8	0.2
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	< 0.05	0.78	< 0.05	< 0.05

Client Sample ID			S65	S66	S67	S68
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins mgt Sample No.			S13-Se20699	S13-Se20700	S13-Se20701	S13-Se20702
Date Sampled			Sep 26, 2013	Sep 26, 2013	Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit				
Initial Weight	0.01	kg	9.0	8.3	9.5	9.1
Foreign Material - Type I						
Metal*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	0.2	< 0.1	< 0.1
Stone*	0.1	%	1.9	3.6	4.1	2.4
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Foreign Material - Type II						
Plaster*	0.1	%	< 0.1	< 0.1	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.4	1.8	1.7	1.3
Foreign Material - Type III						
Rubber*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.21	< 0.05	0.22	0.66

Client Sample ID			S69	S70
Sample Matrix			Soil	Soil
Eurofins mgt Sample No.			S13-Se20703	S13-Se20704
Date Sampled			Sep 26, 2013	Sep 26, 2013
Test/Reference	LOR	Unit		
Initial Weight	0.01	kg	7.4	11
Foreign Material - Type I				
Metal*	0.1	%	< 0.1	< 0.1
Glass*	0.1	%	< 0.1	< 0.1
Asphalt*	0.1	%	< 0.1	< 0.1
Stone*	0.1	%	2.6	2.6
Ceramic and slag (other than blast furnace slag)*	0.1	%	< 0.1	< 0.1
Foreign Material - Type II				
Plaster*	0.1	%	< 0.1	< 0.1
Clay lumps and other friable material*	0.1	%	1.5	2.1
Foreign Material - Type III				
Rubber*	0.05	%	< 0.05	< 0.05
Plastic*	0.05	%	< 0.05	< 0.05
Bitumen*	0.05	%	< 0.05	< 0.05
Paper*	0.05	%	< 0.05	< 0.05
Cloth*	0.05	%	< 0.05	< 0.05
Paint*	0.05	%	< 0.05	< 0.05
Wood and other vegetable matter*	0.05	%	0.21	0.22

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).

Description	Testing Site	Extracted	Holding Time
Foreign Material - Type I - Method: RTA Method T276	Sydney	Sep 27, 2013	180 Day
Foreign Material - Type II - Method: RTA Method T276	Sydney	Sep 27, 2013	180 Day
Foreign Material - Type III - Method: RTA Method T276	Sydney	Sep 27, 2013	180 Day

Company Name: Robert Carr and Associates Pty Ltd
Address: PO Box 175
Carrington
NSW 2294
Client Job No.: FORMAT: HEX ENM CLASS 10184

Order No.:
Report #: 394304
Phone: 02 4902 9200
Fax: 02 4902 9299

Received: Sep 27, 2013 8:30 AM
Due: Oct 14, 2013
Priority: 10 Day
Contact Name: Matt Clark

Eurofins | mgt Client Manager: Ruth Callander

Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

Sample ID	Sample Date	Sampling Time	Matrix	LAB ID	
1	Sep 25, 2013		Soil	S13-Se20635	X
2	Sep 25, 2013		Soil	S13-Se20636	X
3	Sep 25, 2013		Soil	S13-Se20637	X
4	Sep 25, 2013		Soil	S13-Se20638	X
5	Sep 25, 2013		Soil	S13-Se20639	X
6	Sep 25, 2013		Soil	S13-Se20640	X
7	Sep 25, 2013		Soil	S13-Se20641	X
8	Sep 25, 2013		Soil	S13-Se20642	X
9	Sep 25, 2013		Soil	S13-Se20643	X
10	Sep 25, 2013		Soil	S13-Se20644	X

Date Reported: Oct 22, 2013

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Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

1	Sep 25, 2013	Soil	S13-Se20645	X
2	Sep 25, 2013	Soil	S13-Se20646	X
3	Sep 25, 2013	Soil	S13-Se20647	X
4	Sep 25, 2013	Soil	S13-Se20648	X
5	Sep 25, 2013	Soil	S13-Se20649	X
6	Sep 25, 2013	Soil	S13-Se20650	X
7	Sep 25, 2013	Soil	S13-Se20651	X
8	Sep 25, 2013	Soil	S13-Se20652	X
9	Sep 25, 2013	Soil	S13-Se20653	X
10	Sep 25, 2013	Soil	S13-Se20654	X
11	Sep 25, 2013	Soil	S13-Se20655	X

Date Reported: Oct 22, 2013

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Eurofins | mgt Client Manager: Ruth Callander

Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
Internal Laboratory					
2		Sep 25, 2013	Soil	S13-Se20656	X
3		Sep 25, 2013	Soil	S13-Se20657	X
4		Sep 25, 2013	Soil	S13-Se20658	X
5		Sep 25, 2013	Soil	S13-Se20659	X
6		Sep 25, 2013	Soil	S13-Se20660	X
7		Sep 25, 2013	Soil	S13-Se20661	X
8		Sep 25, 2013	Soil	S13-Se20662	X
9		Sep 25, 2013	Soil	S13-Se20663	X
10		Sep 25, 2013	Soil	S13-Se20664	X
11		Sep 25, 2013	Soil	S13-Se20665	X
12		Sep 25, 2013	Soil	S13-Se20666	X

Date Reported: Oct 22, 2013

Date Reported: Oct 22, 2013



eurofins

mgt

Melbourne
3-5 Kingston Town Close
Oakleigh VIC 3166
Phone: +61 3 9564 5000
NATA # 1261
Site # 1254 & 14271

Company Name: Robert Carr and Associates Pty Ltd
Address: PO Box 175
Carrington
NSW 2294
Client Job No.: FORMAT: HEX ENM CLASS 10184

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Eurofins | mgt Client Manager: Ruth Callander

Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted

Melbourne Laboratory - NATA Site # 1254 & 14271

Adelaide Laboratory - NATA Site # 18217

Sydney Laboratory - NATA Site # 20794

Internal Laboratory

13		Sep 25, 2013		Soil	S13-Se20667	X
14		Sep 25, 2013		Soil	S13-Se20668	X
15		Sep 25, 2013		Soil	S13-Se20669	X
16		Sep 25, 2013		Soil	S13-Se20670	X
17		Sep 25, 2013		Soil	S13-Se20671	X
18		Sep 25, 2013		Soil	S13-Se20672	X
19		Sep 25, 2013		Soil	S13-Se20673	X
20		Sep 25, 2013		Soil	S13-Se20674	X
21		Sep 25, 2013		Soil	S13-Se20675	X
22		Sep 25, 2013		Soil	S13-Se20676	X
23		Sep 25, 2013		Soil	S13-Se20677	X

Date Reported: Oct 22, 2013

Date Reported: Oct 22, 2013

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Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
Internal Laboratory					
14		Sep 25, 2013		Soil	S13-Se20678 X
15		Sep 25, 2013		Soil	S13-Se20679 X
16		Sep 25, 2013		Soil	S13-Se20680 X
17		Sep 26, 2013		Soil	S13-Se20681 X
18		Sep 26, 2013		Soil	S13-Se20682 X
19		Sep 26, 2013		Soil	S13-Se20683 X
20		Sep 26, 2013		Soil	S13-Se20684 X
21		Sep 26, 2013		Soil	S13-Se20685 X
22		Sep 26, 2013		Soil	S13-Se20686 X
23		Sep 26, 2013		Soil	S13-Se20687 X
24		Sep 26, 2013		Soil	S13-Se20688 X

Date Reported: Oct 22, 2013

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Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
Internal Laboratory					
i5		Sep 26, 2013		Soil	S13-Se20689 X
i6		Sep 26, 2013		Soil	S13-Se20690 X
i7		Sep 26, 2013		Soil	S13-Se20691 X
i8		Sep 26, 2013		Soil	S13-Se20692 X
i9		Sep 26, 2013		Soil	S13-Se20693 X
i0		Sep 26, 2013		Soil	S13-Se20694 X
i1		Sep 26, 2013		Soil	S13-Se20695 X
i2		Sep 26, 2013		Soil	S13-Se20696 X
i3		Sep 26, 2013		Soil	S13-Se20697 X
i4		Sep 26, 2013		Soil	S13-Se20698 X
i5		Sep 26, 2013		Soil	S13-Se20699 X

Date Reported: Oct 22, 2013

Date Reported: Oct 22, 2013

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Sample Detail

Foreign Materials - ENM

Laboratory where analysis is conducted					
Melbourne Laboratory - NATA Site # 1254 & 14271					
Sydney Laboratory - NATA Site # 18217					
Brisbane Laboratory - NATA Site # 20794					
Internal Laboratory					
16	Sep 26, 2013		Soil	S13-Se20700	X
17	Sep 26, 2013		Soil	S13-Se20701	X
18	Sep 26, 2013		Soil	S13-Se20702	X
19	Sep 26, 2013		Soil	S13-Se20703	X
20	Sep 26, 2013		Soil	S13-Se20704	X

Date Reported: Oct 22, 2013

Date Reported: Oct 22, 2013

Eurofins | mgt 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 PQLs are matrix dependant. Quoted PQLs 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 Acknowledgment.

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: 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 Environment Protection Authority
APHA	American Public Health Association
ASLP	Australian Standard Leaching Procedure (AS4439.3)
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

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 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, Toxophene & Chlordane are not added to the LCS.
4. Organochlorine Pesticide analysis - where reporting Spike data, Toxophene 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 Arochlor 1260 in Matrix Spikes and LCS's.
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 RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Comments

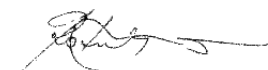
Sample Integrity

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

Authorised By

Ruth Callander

Client Services



Dr. Bob Symons

Laboratory Manager

Final report - this Report replaces any previously issued Report

- Indicates Not Requested

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

Uncertainty data is available on request

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

Sample Receipt Advice

Company name: **Robert Carr and Associates Pty Ltd**
Contact name: **Matt Clark**
Client job number: **FORMAT: HEX ENM CLASS 10184**
COC number: **Not provided**
Turn around time: **10 Day**
Date/Time received: **Sep 27, 2013 8:30 AM**
Eurofins | mgt reference: **394304**

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 : 13 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.
- ☒ Organic samples had Teflon liners.
- ☒ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

Notes

Parent report 394926

Contact notes

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

Ruth Callander on Phone : (+61) (3) 8564 5000 or by e.mail: RuthCallander@eurofins.com.au

Results will be delivered electronically via e.mail to Matt Clark - mattc@rca.com.au.

Note: A copy of these results will also be delivered to the general Robert Carr and Associates Pty Ltd email address.



mgt

☐ **Sydney**
Unit F3 - 6 Building F, 16 Mars Road, Lane Cove
Phone: +612 9900 8400
Email: enviro.syd@mgtilabmark.com.au

☐ **Brisbane**
Unit 1-21 Smallwood Place, Murrarie
Phone: +617 3902 4600
Email: enviro.bris@mgtilabmark.com.au

☐ **Melbourne**
2 Kingston Town Close, Oakleigh, VIC 3166
Phone: +613 8564 5000 Fax: +613 8564 5090
Email: enquiries.melb@mgtilabmark.com.au

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concrush

Page 1 of 5

Company Name : RCA Australia	Contact Name : Carmen Rocher	Purchase Order :	COC Number :
Office Address : 92 Hill St Carrington NSW	Project Manager : Matt Clark	PROJECT Number : 10184	Eurofins mgt quote ID :
	Email for results : carmenr@rca.com.au; mattc@rca.com.au	PROJECT Name : HEX ENM Class	Data output format:

Special Directions & Comments :	Analytes	Some common holding times (with correct preservation). For further information contact the lab			
		Waters		Soils	
		BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
		TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
		Heavy Metals	6 months	Heavy Metals	6 months
		Mercury, CrVI	28 days	Mercury, CrVI	28 days
		Microbiological testing	24 hours	Microbiological testing	72 hours
		BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
		Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
		Ferrous iron	7 days	ASLP, TCLP	7 days

Eurofins | mgt DI water batch number:

Sample ID	Date	Matrix	Combo ENM Suite	1LP	250P	125P	1LA	40mL vial	125mL A	Jar	Sample comments:
1 S1	25/09/2013	Soil	X								
2 S2	25/09/2013	Soil	X								
3 S3	25/09/2013	Soil	X								
4 S4	25/09/2013	Soil	X								
5 S5	25/09/2013	Soil	X								
6 S6	25/09/2013	Soil	X								
7 S7	25/09/2013	Soil	X								
8 S8	25/09/2013	Soil	X								
9 S9	25/09/2013	Soil	X								
10 S10	25/09/2013	Soil	X								
11 S11	25/09/2013	Soil	X								
12 S12	25/09/2013	Soil	X								
13 S13	25/09/2013	Soil	X								
14 S14	25/09/2013	Soil	X								
15 S15	25/09/2013	Soil	X								
16 S16	25/09/2013	Soil	X								

Relinquished By: C. Rocher	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time: 11 am 26-9-13	Received By: Andrew Black	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	13°
Signature:	Date & Time: 26/9/13 11am	5 DAY ☐ 10 DAY ☒ Other:	☐ Hand Delivered	Report number: 394296
	Signature: [Signature]		☐ Postal	
			Courier Consignment # :	

27 SEP 2013
BY: Sean 8:30

format
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CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concrush

Page 2 of 5

Company Name : RCA Australia	Contact Name: Carmen Rocher	Purchase Order :	COC Number :
Office Address : 92 Hill St Carrington NSW	Project Manager : Matt Clark	PROJECT Number : 10184	Eurofins mgt quote ID :
	Email for results : carmenr@rca.com.au; mattc@rca.com.au	PROJECT Name : HEX ENM Class	Data output format:

Special Directions & Comments :

	Analytes	Some common holding times (with correct preservation). For further information contact the lab			
		Waters		Soils	
		BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
		TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
		Heavy Metals	6 months	Heavy Metals	6 months
		Mercury, CrVI	28 days	Mercury, CrVI	28 days
		Microbiological testing	24 hours	Microbiological testing	72 hours
		BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
		Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
		Ferrous iron	7 days	ASLP, TCLP	7 days

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix	Combo																Containers:								Sample comments:
																				1LP	250P	125P	1LA	40mL vial	125mL A	Jar		
1	S17	25/09/2013	Soil	X																								
2	S18	25/09/2013	Soil	X																								
3	S19	25/09/2013	Soil	X																								
4	S20	25/09/2013	Soil	X																								
5	S21	25/09/2013	Soil	X																								
6	S22	25/09/2013	Soil	X																								
7	S23	25/09/2013	Soil	X																								
8	S24	25/09/2013	Soil	X																								
9	S25	25/09/2013	Soil	X																								
10	S26	25/09/2013	Soil	X																								
11	S27	25/09/2013	Soil	X																								
12	S28	25/09/2013	Soil	X																								
13	S29	25/09/2013	Soil	X																								
14	S30	25/09/2013	Soil	X																								
15	S31	25/09/2013	Soil	X																								
16	S32	25/09/2013	Soil	X																								

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time::	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier ☐ Hand Delivered ☐ Postal	13°
Signature:	Date & Time:	6 DAY ☐ 10 DAY ☒ Other: ☐	Courier Consignment # :	Report number: Parent 394296
	Signature:			

27 SEP 2013

BY: Sean O 830

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CLIENT DETAILS Concrush

Page 3 of 3

Company Name :	RCA Australia	Contact Name :	Carmen Rocher	Purchase Order :		COC Number :	
Office Address :	92 Hill St Carrington NSW	Project Manager :	Matt Clark	PROJECT Number :	10184	Eurofins mgt quote ID :	
		Email for results :	carmenr@rca.com.au; matto@rca.com.au	PROJECT Name :	HEX ENM Class	Data output format:	

[illegible]

		Laboratory Staff		Turn around time		Method Of Shipment		Temperature on arrival:	
Relinquished By:		Received By:		1 DAY ☐ 2 DAY ☐ 3 DAY ☐		☐ Courier ☐ Hand Delivered ☐ Postal		13°	
Date & Time::		Date & Time:		5 DAY ☐ 10 DAY ☒ Other:		Courier Consignment # :		Report number: <i>prant</i>	
Signature:		Signature:		<i>NEGATIVE</i>				<i>394296</i>	

DECEMBER

27 SEP 2013
BY: Sean Q 8:30

13°
Report number: Parent
394296

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CLIENT DETAILS Concrush

Page 4 of 6

Company Name : RCA Australia	Contact Name: Carmen Rocher	Purchase Order :	COC Number :
Office Address : 92 Hill St Carrington NSW	Project Manager : Matt Clark	PROJECT Number : 10184	Eurofins mgt quote ID :
	Email for results : carmenr@rca.com.au; mattc@rca.com.au	PROJECT Name : HEX ENM Class	Data output format:

	Analytes	Some common holding times (with correct preservation). For further information contact the lab.			
Special Directions & Comments :		Waters		Soils	
		BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
		TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
		Heavy Metals	6 months	Heavy Metals	6 months
		Mercury, CrVI	28 days	Mercury, CrVI	28 days
		Microbiological testing	24 hours	Microbiological testing	72 hours
		BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
		Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
		Ferrous Iron	7 days	ASLP, TCLP	7 days
Eurofins I mat DI water batch number:					

[illegible]

Relinquished By:	Laboratory Staff	Turn around time	Method Of Shipment	Temperature on arrival:
Date & Time::	Received By:	1 DAY ☐ 2 DAY ☐ 3 DAY ☐	☐ Courier	13°
Signature:	Date & Time:	6 DAY ☐ 10 DAY ☒ Other:	☐ Hand Delivered	Report number:
	Signature:		☐ Postal	394296
			Courier Consignment # :	

CHAIN OF CUSTODY RECORD

CLIENT DETAILS Concrush

Page 5 of 5

Company Name : RCA Australia

Contact Name:	Carmen Rocher

Purchase Order :

COC Number :

Office Address : 92 Hill St Carrington NSW

Project Manager :	Matt Clark

PROJECT Number : 10184

Euroflora | mat quote ID :

Email for results : carmenr@rca.com.au; mattc@rca.com.au

PROJECT Name : **HEX ENM Class**

Data output format:

Special Directions & Comments :

Analytes

Some common holding times (with correct preservation).
For further information contact the lab

Eurofins | mgt DI water batch number:

	Sample ID	Date	Matrix
1	s65	26/09/2013	Soil
2	s66	26/09/2013	Soil
3	s67	26/09/2013	Soil
4	s68	26/09/2013	Soil
5	s69	26/09/2013	Soil
6	s70	26/09/2013	Soil
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			

Combo ENM Suite

Waters

Soils

BTEX, MAH, VOC	14 days	BTEX, MAH, VOC	14 days
TRH, PAH, Phenols, Pesticides	7 days	TRH, PAH, Phenols, Pesticides	14 days
Heavy Metals	6 months	Heavy Metals	6 months
Mercury, CrVI	28 days	Mercury, CrVI	28 days
Microbiological testing	24 hours	Microbiological testing	72 hours
BOD, Nitrate, Nitrite, Total N	2 days	Anions	28 days
Solids - TSS, TDS etc	7 days	SPOCAS, pH Field and FOX, CrS	24 hours
Ferrous iron	7 days	ASLP, TCLP	7 days

Containers:

Sample comments:

[illegible]

Relinquished By:

Laboratory Staff

Turn around time

Method Of Shipment

Temperature on arrival:

Date & Time::

Date & Time:

1 DAY ☒ 2 DAY ☐ 3 DAY ☐

☐ Courier
☐ Hand Delivered
☐ Postal

Report number:

Signature:

Signature: _____

5 DAY ☐ 10 DAY ☒ Other: _____

Courier Consignment # :

Appendix H

Hazardous Materials Audit



Hazardous Materials Audit Parcel 4

Prepared for:
Hydro Aluminium Kurri Kurri Pty Limited

Prepared by:
ENVIRON Australia Pty Ltd

Date:
April 2015

Project Number:
AS130348

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VERSION CONTROL RECORD

Document File Name	Date Issued	Version	Author	Reviewer
Hydro Parcel 4 Hazardous Materials Audit Report	April 2015	Final	S Taylor	F Robinson

Contents

	Page
1.1 Objectives and Scope of Work	1
1.2 Legislative Requirements, Standards and Codes of Practice	1
1.3 Survey Methodology	1
1.4 Survey Limitations	2
2 Surveys Details	3
2.1 Buildings Descriptions	3
2.2 Survey Methodology	3
2.3 Sample Collection and Laboratory Analysis	4
3 Findings	7
3.1 Hazardous Materials Register	7
3.2 Asbestos Containing Materials	7
3.3 Synthetic Mineral Fibre Materials	7
3.4 Polychlorinated Biphenyls	7
3.5 Lead Based Paint	7
3.6 Other Observations	8
4 Recommendations	9
4.1 Asbestos Containing Materials	9
4.1.1 Building Maintenance/ Retention	9
4.1.2 Building Demolition	9
4.2 Synthetic Mineral Fibre Materials	10
4.3 Polychlorinated Biphenyls	10
4.4 Lead Based Paint	10
5 References	11
6 Limitations	12
6.1 General Limitations regarding Sampling	12
6.2 User Reliance	12

List of Figures

- Figure 1: Part of Parcel 4 (12 Horton Road to the east, 12 Horton Road (Residential) central, and 14 Horton Road to the west)
- Figure 2: Part of Parcel 4 (residential property on Scales Avenue)
- Figure 3: Part of Parcel 4 (sheds within former smelter car park)

List of Appendices

- Appendix A: Photographs
- Appendix B: Hazardous Materials Register
- Appendix C: Laboratory Certificates

Acronyms and Abbreviations

ACM:	Asbestos containing material
EMP:	Employment Parcel
LBP:	Lead based paint
PCB:	Polychlorinated biphenyl compounds
SMF:	Synthetic mineral fibre

1 Introduction

ENVIRON Australia Pty Ltd (ENVIRON) was engaged by Hydro Aluminium Kurri Kurri Pty Ltd (Hydro) to undertake a hazardous materials audit of the buildings located within Parcel 18, within the buffer zone of the former Hydro Aluminium smelter at Kurri Kurri, NSW.

1.1 Objectives and Scope of Work

The survey was undertaken in order for Hydro Aluminium to effectively manage its compliance obligations with respect to asbestos containing materials (ACM), and to identify and manage risks associated with other hazardous materials potentially present in the buildings to an acceptable level.

Hazardous materials other than ACM were polychlorinated biphenyl compounds (PCB), synthetic mineral fibre (SMF), and lead based paint (LBP).

1.2 Legislative Requirements, Standards and Codes of Practice

In NSW, management of asbestos is governed by the following principal legislation and guidance documents:

- Workplace Health and Safety Regulation 2011 (Part 8).
- *Code of Practice for the Management and Control of Asbestos in Workplace* (NOHSC, 2005a).
- *NOHSC Code of Practice for the Safe Removal of Asbestos 2nd Edition* (NOHSC, 2005b).

The following codes of practice and standards apply to the other hazardous materials:

- *National Code of Practice for the Safe Use of Synthetic Mineral Fibres* (NOHSC, 1990).
- *Identification Of PCB-Containing Capacitors* (ANZECC, 1997).
- Australian Standard AS4361.2 *Guide to Lead Paint Management – Residential and Commercial Buildings*.

1.3 Survey Methodology

The hazardous materials survey was undertaken of structures within EMP 2.

The survey methodology involved the following:

- An inspection of the accessible sections of the outside and inside of all buildings, as well as any accessible power boxes on power poles within the properties.
- Wherever possible, confirmation of the presence or absence of asbestos in a material was via identification in the field.
- Where the presence or absence of asbestos could not be determined in the field, a sample was taken for laboratory analysis.
- The age of the building and the condition of any fluorescent lights was observed and the likelihood for them to contain PCB noted.
- Visual confirmation of SMF.
- The age of the building and the condition of the paint was observed and the likelihood of lead-based paint being present noted.

- While the audit focussed on structures within the parcel, any confirmed or potential hazardous materials identified in soils or outside of structures were also noted.

1.4 Survey Limitations

Any restrictions or limitations on the survey, such as access not gained to areas or areas not accessible due to safety restrictions, are outlined in Section 2.2 of this report. The reader is also referred to ENVIRON's limitations in Appendix Section 6.

2 Surveys Details

2.1 Buildings Descriptions

The hazardous materials survey was undertaken on 26 November 2013, 26 May 2014 and 16 June 2014 by ENVIRON Senior Environmental Scientist Shaun Taylor.

Table 1 describes the following:

- The building type (such as residential home, shed, garage).
- Main construction materials used in construction of the building.
- An estimate as to whether the structure was build prior to 1990 (1990 is commonly regarded as a 'cut-off date' for asbestos in construction materials. It is also a good indicator as to the likelihood of PCBs being used in fluorescent lighting capacitors).
- Any areas not accessible within the building.

A total of 14 buildings within four properties were inspected for hazardous materials.

2.2 Survey Methodology

The methodology undertaken for the survey is described as follows.

Develop Project OHS Plan, and Survey Protocol and Survey Templates

A Health and Safety Plan was developed for the contamination and hazardous materials investigations within the buffer zone in advance of the works commencing and endorsed internally.

A hazardous materials protocol and data collection template specific to the project was developed, to ensure a consistent approach to the surveys and data collection.

Project Scheduling and Communications

Tenants' contact details were provided by Hydro and a scheduled date for the survey agreed to between ENVIRON and the tenant. Each tenant was notified of the survey program and process by Hydro (via the real estate agent) in advance. Prior to the scheduled date, ENVIRON contacted the tenant to confirm the date, arrival time, and any likely access issues or restricted areas.

Conduct Hazardous Materials Survey

The survey included a thorough visual inspection of all accessible areas of the buildings and structures, and collection of representative samples for the purpose of analytical confirmation where materials could not be visually identified.

As the majority of houses were inhabited by tenants, some areas (such as the ceiling cavity) were inaccessible due to the location of furniture and appliances. For this reason sampling of some material was also not appropriate as it would require disturbance of material that was not damaged.

Data Collection

Survey data collected included the type, form, location, extent/ quantity, condition and accessibility of ACM and synthetic mineral fibre products, the likely presence of PCB in fluorescent light fittings, and the likely presence of LBP. Photographs were also taken of the observed potential/ confirmed hazardous materials.

In addition, any other observations of concern (such as potential for contamination in the surrounding area) were documented.

Sample Analysis

Any asbestos sample analysis was undertaken using polarised light microscopy, in conjunction with dispersion staining techniques. Where possible, the presence of asbestos (but not the type of asbestos) was confirmed in the field.

SMF was visually identified during the surveys. The presence of lead in paint and PCB in the capacitor to fluorescent lights was assumed based on the likely age of the building and the condition of painted surfaces and the lights.

Areas not Accessed

During the audit, all areas of the buildings and structures within the area which were both readily accessible and safe to access were inspected. Where access was not available to areas which could potentially hazardous materials, the locations and the reasons inaccessibility were noted. Any areas not accessed are documented within Section 2 of this report.

Other Observations

In addition to the survey of structures within the property, the surveyor also noted potential issues of concern, such as:

- Evidence of subsurface hazardous materials (such as ACM service conduits).
- Evidence of hazardous material fragments/ waste in soils or elsewhere within the property.
- Other potential issues of concern (such as possible soil contamination).

2.3 Sample Collection and Laboratory Analysis

During the survey one sample was collected and analysed for the presence of asbestos (all forms) at a NATA accredited asbestos identification facility. The results of the analysis is summarised in Section 3, with the supporting laboratory analytical certificate contained in Appendix C.

The remaining ACM were confirmed through visual confirmation of the presence of asbestos (but not the type of asbestos) in the field.

Table 1: Hazardous Materials Audit Building Details				
Property	Building Type/s	Main Construction Materials	Estimated Pre or Post 1990 construction	Any Inaccessible Areas
12 Horton Road (residence)	House	Cement sheeting Timber Brick Compressed Timber Sheeting Corrugated iron	Pre-1990	Ceiling and wall cavity
	Shed	Corrugated iron	Pre-1990	Internal
12 Horton Road (business)	Large shed	Corrugated iron Metal Concrete	Pre-1990	N/A
	Small shed (including carport)	Corrugated iron Metal Concrete Timber	Pre-1990	N/A
	Toilet/ Outhouse	Timber Corrugated iron Concrete	Pre-1990	N/A
14 Horton Road	House	Cement sheeting Timber Brick Compressed Timber Sheeting Corrugated iron	Pre-1990	Ceiling and wall cavity
	Garage	Cement sheeting (flat and corrugated) Timber Brick Concrete Corrugated iron	Pre-1990	Wall cavity
	Laundry	Cement sheeting	Pre-1990	Ceiling cavity

Table 1: Hazardous Materials Audit Building Details				
Property	Building Type/s	Main Construction Materials	Estimated Pre or Post 1990 construction	Any Inaccessible Areas
		Timber Concrete Corrugated iron		
	Former Outhouse	Cement sheeting Timber Concrete	Pre-1990	N/A
Scales Avenue	House	Brick Timber Plasterboard Cement sheeting Concrete Corrugated iron	Pre-1990	Ceiling and wall cavity Under house
	Shed	Corrugated iron	Pre and Post-1990	Internal
Hart Road (former employees car park)	Carports	Corrugated iron Metal	Pre-1990	N/A

3 Findings

3.1 Hazardous Materials Register

The results of the survey are presented in **Appendix B**.

The following provides a summary of the hazardous materials identified. Representative photographs of the identified hazardous materials are provided in **Appendix A**.

3.2 Asbestos Containing Materials

Asbestos cement sheeting was found in the following locations:

- 12 Horton Road (residence): at various locations to the exterior and interior of the house.
- 12 Horton Road (business): no ACM was identified.
- 14 Horton Road: at various locations to the exterior and interior of the house; to the exterior and interior of the garage; to the exterior and interior of the laundry; and the walls of a former outside toilet.
- Scales Avenue: within the eaves and front awning to the exterior and wall linings to the bathroom, toilet and laundry in the interior of the house.

ACM (zelemite) was also used as the backing board in the electrical box at these properties.

Four samples were collected for laboratory analysis: from the wall to the front door landing at 14 Horton Road; from the ceiling of the garage at 14 Horton Road; the exterior panels to the house at 12 Horton Road; and the front awning at Scales Avenue. The results all confirmed the presence of asbestos. The laboratory certificates are presented in Appendix C.

3.3 Synthetic Mineral Fibre Materials

SMF were observed in the ceiling cavity to part of the garage at 14 Horton Road.

There is potential that SMF was used as insulation to wall and ceiling cavities in other buildings that were inaccessible.

3.4 Polychlorinated Biphenyls

There is potential that the fluorescent light fittings may also have capacitors containing PCBs due to their apparent age.

3.5 Lead Based Paint

Due to the expected age of most structures lead based paint is likely to be present. Lead based paint is most likely to have been used, however, on the asbestos containing materials to the exterior of the buildings at Horton Road and Scales Avenue.

AS4361.2 Guide to Lead Paint Management – Residential and Commercial Buildings notes that lead based paint was used mainly on exterior surfaces and to a lesser extent on interior doors and architraves, especially in undercoats and primers where concentrations of up to 20% lead were commonly used. It also notes that while paints produced for Australian dwellings from the 1970s onwards (and therefore applicable for this property) contain less than 1% lead, it is possible that industrial paints, having higher concentrations of lead, may have been applied to housing and commercial buildings.

3.6 Other Observations

In addition to the hazardous materials observed in the buildings within the parcel, the following potential issues of concern were also identified:

- Various mechanical items (including four cars that appeared to have been unused for an extended period) were located throughout the backyard of 14 Horton Road. An old excavator was also present.
- Overgrown soil stockpiles and an old storage tank were also present at the rear of the backyard to 14 Horton Road.

4 Recommendations

The following are general management measures to be implemented for hazardous materials management, either in the event that the building is to be retained and occupied, or the building is to be demolished.

4.1 Asbestos Containing Materials

4.1.1 Building Maintenance/ Retention

- Much of the ACM identified within Parcel 4 generally does not pose a health risk due to their condition and location. However, much of the ACM (sheeting) within the garage, laundry and former outside toilet shed at 14 Horton Road are in poor condition and could pose a health risk.
- Damaged ACM should be removed and replaced. Where damage is minor (such as minor cracks, drilled holes or worn edges to sections of the walls and ceilings within the former dairy shed and to laundry walls to the house) any cracks should be sealed with a PVA glue and painted (no sanding of materials prior to painting) as a temporary measure. However it is recommended that a program for removal of these materials also be developed and implemented.
- A copy of the asbestos and hazardous materials register is to be kept at the Hydro Aluminium Smelter and made available to employees or contractors undertaking work on the buildings.
- No sanding, blasting, drilling, or similar abrasive activity is to be undertaken on any identified ACMs.
- The *National Code of Practice for the Management and Control of Asbestos in Workplaces* recommends, and the Work Health and Safety Regulation 2011 requires, labelling of any identified ACM in the workplace where practicable.

While such labelling is not required in a rental property under the regulation (and notification of tenants on the presence of asbestos is not required by the NSW Department of Fair Trading), Hydro should consider labelling the ACM, or advising tenants of the presence of ACM, particularly those in locations where it is easily accessible and more likely to be damaged or impacted (such as the walls).

- If installed, periodically reinspect asbestos warning labels so that they are legible and in good condition.
- In the event that any of the ACM is damaged while the buildings are still occupied by tenants, the material should be immediately removed.

4.1.2 Building Demolition

- If demolition or refurbishment works are to be undertaken, samples should be taken for analysis of those materials noted as “assumed” as ACM in the register (refer to Section 2.2 as to why some materials were not sampled). Areas that were inaccessible should also be examined to confirm if any ACM is present.

- If demolition or refurbishment works are to be undertaken, remove identified ACMs under controlled conditions using an appropriately licensed removal contractor.
- Any asbestos work is carried out in accordance with the *Code of Practice for the Management and Control of Asbestos in the Workplace [NOHSC: 2018 (2005)]*.
- Appropriately licenced removalists are to be used for any planned removal, and that any removal works are undertaken in accordance with the *NOHSC Code of Practice for the Safe Removal of Asbestos 2nd Edition [NOHSC:2002(2005)]* and *How to Safely Remove Asbestos: Code of Practice* (WorkCover NSW, 2011).

4.2 Synthetic Mineral Fibre Materials

- Apply caution when entering ceiling voids and ensure contractors or persons entering ceiling voids or performing work on synthetic mineral fibre materials wear appropriate PPE, particularly if they have breathing disorders such as asthma.
- Remove any SMF debris as part of routine site housekeeping.
- Ensure contractors or persons performing work on SMF materials adhere to the guidelines outlined in the *National Code of Practice for Synthetic Mineral Fibres [NOHSC 1004 (1990)], May 1990*; and the *Industry code of Practice for the Safe Use of Glass Wool and Rock Wool Insulation Products, April, 2003*.

4.3 Polychlorinated Biphenyls

- Undamaged capacitors (containing PCBs) are unlikely to pose a health risk. Therefore they are unlikely to pose a risk if they remain in-situ.
- In the event that the light fittings are to be removed, and it is confirmed that the capacitors contain PCBs, the requirements of the *Identification Of PCB-Containing Capacitors* should be implemented for removal, temporary storage, transportation and disposal.

4.4 Lead Based Paint

- The majority of the exterior paints (which are the most likely to be LBP) were applied to ACM. Therefore:
 - In the event that the building is to be demolished, these materials would be managed in accordance with Section 4.1.2 as asbestos containing materials.
 - If the building is to be retained and surfaces repainted, no abrasion (mechanical or manual) should be applied to these surfaces. This is required to avoid both the generation of airborne asbestos fibres and potentially lead bearing particles.
- Abrasion should not be used on any of the remaining paint on non-asbestos containing material surfaces to avoid the potential generation of lead bearing particles without previously testing to confirm that LBP are absent.
- In the event that the building is demolished, the PPE to be worn when managing ACM and SMF would be appropriately protect demolition personnel from LBP.

5 References

Australian and New Zealand Council Environment Conservation Council (ANZECC). 1997. "Identification of PCB-Containing Capacitors".

National Occupational Health and Safety Council. (NOHSC). 1990. "National Code of Practice for the Safe Use of Synthetic Mineral Fibres".

National Occupational Health and Safety Council. (NOHSC). 2005a. "Code of Practice for the Management and Control of Asbestos in Workplace.

National Occupational Health and Safety Council. (NOHSC). 2005b. "Code of Practice for the Safe Removal of Asbestos 2nd Edition".

Standards Australia. 1998. "AS4361.2 Guide to Lead Paint Management – Residential and Commercial Buildings"

WorkCover NSW. 2011. "How to Safely Remove Asbestos: Code of Practice"

6 Limitations

ENVIRON Australia prepared this report in accordance with the scope of work as outlined in our proposal to Hydro Aluminium Kurri Kurri Pty Limited dated 18 September 2013 and in accordance with our understanding and interpretation of current regulatory standards.

A representative program of sampling and laboratory analyses was undertaken as part of this investigation, based on past and present known uses of the site. While every care has been taken, concentrations of contaminants measured may not be representative of conditions between the locations sampled and investigated. We cannot therefore preclude the presence of materials that may be hazardous.

Site conditions may change over time. This report is based on conditions encountered at the site at the time of the report and ENVIRON disclaims responsibility for any changes that may have occurred after this time.

The conclusions presented in this report represent ENVIRON's professional judgement based on information made available during the course of this assignment and are true and correct to the best of ENVIRON's knowledge as at the date of the assessment.

This report does not purport to give legal advice. This advice can only be given by qualified legal advisors.

6.1 General Limitations regarding Sampling

It is not always possible to locate all hazardous materials in the course of an inspection, due to factors such as:

- Restrictions on access to internal construction components and other inaccessible parts of structures.
- Restrictions to access due to presence of tenant's belongings.
- The need to avoid damage in occupied buildings, such as when attempting to inspect behind wall panels or under carpets.
- Minimising inconvenience when premises are occupied or are in use whilst an inspection is being conducted.
- The availability of building/plant construction plans.

6.2 User Reliance

This report has been prepared exclusively for Hydro Aluminium Kurri Kurri Pty Ltd and may not be relied upon by any other person or entity without ENVIRON's express written permission.

Figures



Figure 1. Part of Parcel 4 (14 Horton Road to the east, 12 Horton Road (Residential) central, and 12 Horton Road to the west)



Figure 2. Part of Parcel 4 (residential property on Scales Avenue)



Figure 3. Part of Parcel 4 (sheds within former smelter car park)

Appendix A

Photographs



Photo 1: 14 Horton Road - Section of the ACM sheeting used in the walls and ceiling to the front door landing



Photo 2: 14 Horton Road: An example of one of the interior fluorescent lights that may have a PCB-containing capacitor.

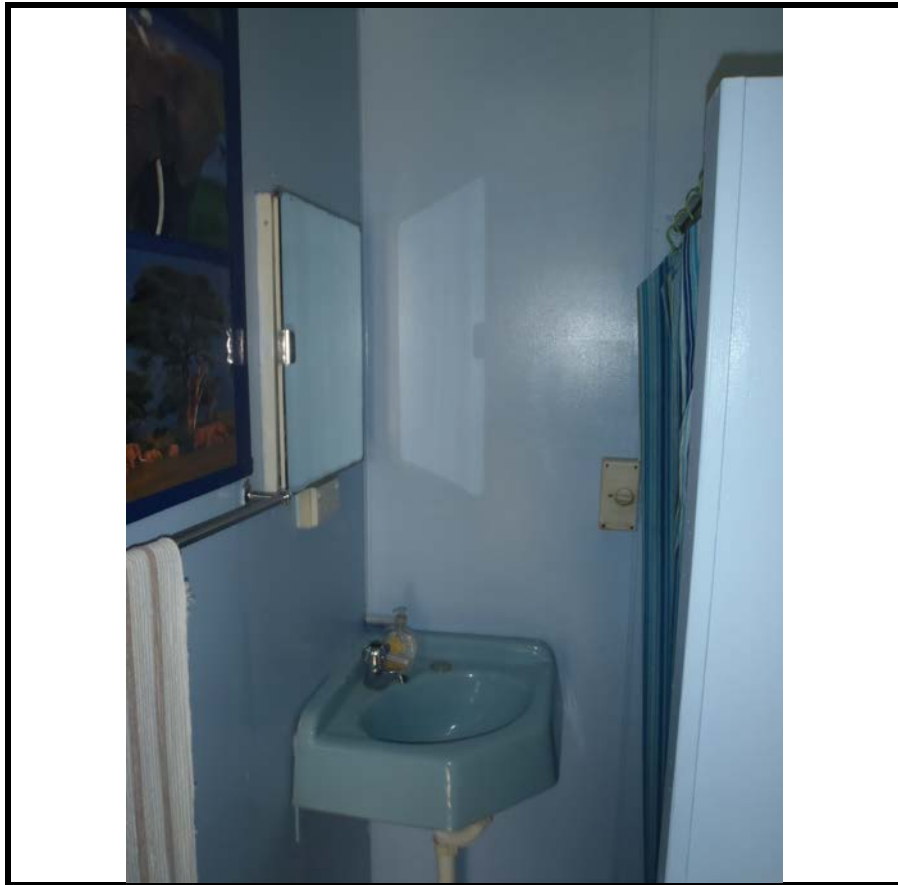


Photo 3: 14 Horton Road: The bathroom walls and ceiling with ACM sheeting.



Photo 4: 14 Horton Road: An example of the eaves and one of the gable ends assumed to be constructed of ACM sheeting.



Photo 5: 14 Horton Road: An example of the damaged ACM sheeting within the laundry



Photo 6: 14 Horton Road: The gable ends and exterior walls to the shed/ laundry lined with ACM sheeting/ panelling



Photo 7: 14 Horton Road: A section of the southern wall to the garage lined with ACM sheeting.



Photo 8: 14 Horton Road: the corner moulding to the southwest corner to the garage comprised of ACM



Photo 9: 14 Horton Road: An example of one of the fluorescent lights in the garage that may have a PCB-containing capacitor



Photo10: 14 Horton Road: An example of ACM sheeting lining the walls in the rear of the garage. Other sections have been wallpapered.



Photo 11: 14 Horton Road: This photo in the garage shows some of the exposed SMF, a section of broken ACM sheeting attached to the beam, and ACM sheeting used to line the ceiling.

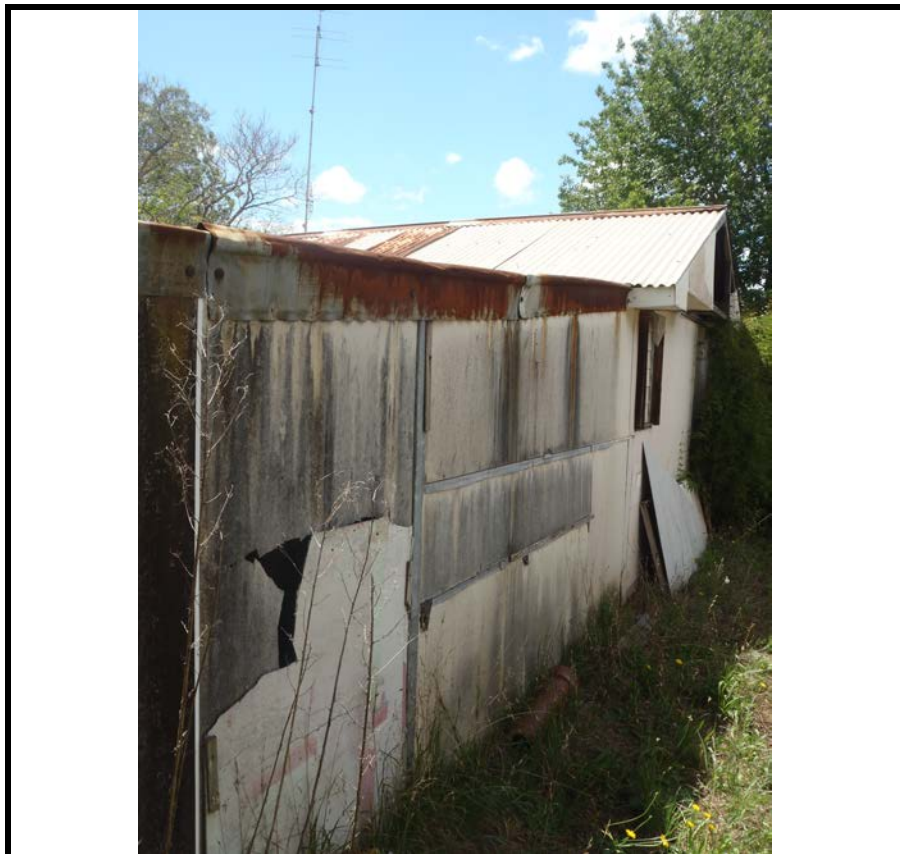


Photo 12: 14 Horton Road: A section of the ACM sheeting used to the exterior of the garage.



Photo 13: 14 Horton Road: A section of the corrugated ACM sheeting used to the exterior of the garage.



Photo 14: 14 Horton Road: The former outhouse with walls and gable ends lined with ACM sheeting.



Photo 15: 12 Horton Road (residence): ACM sheet panels used to the exterior walls.



Photo 16: 12 Horton Road (residence): The gable end and the eaves constructed of ACM sheeting located on the northwestern end of the house.



Photo 17: 12 Horton Road (residence): Photo showing the ACM panelling present within and ACM sheeting used in the ceiling lining to the extension.

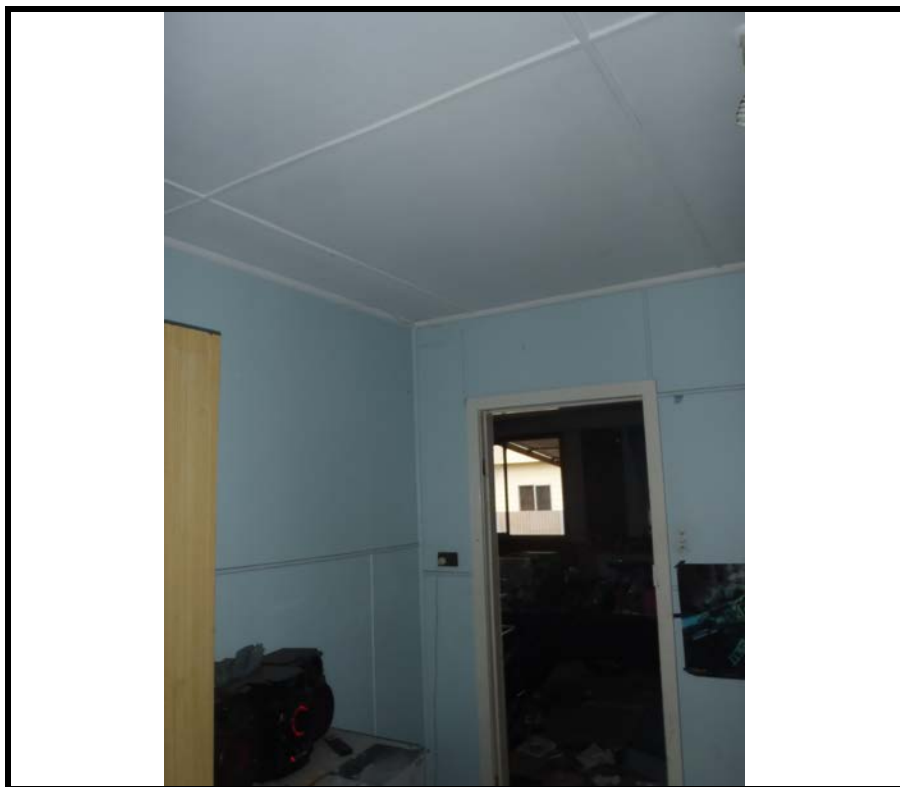


Photo 18: 12 Horton Road (residence): ACM sheeting used to line the walls and ceiling in the rear bedroom.



Photo 19: 12 Horton Road (residence): A section of the laundry/ bathroom with the walls and ceiling lined with ACM sheeting.



Photo 20: Scales Avenue: A section of the eaves lined with ACM sheeting.



Photo 21: Scales Avenue: The bathroom with walls lined with ACM sheeting.



Photo 22: Scales Avenue: The laundry with walls and ceiling lined with ACM sheeting.



Photo 23: Scales Avenue: The zelemite backing board to the electrical switchboard.



Photo 24: 12 Horton Road (Business): Fluorescent lights fitted to metal frame in large shed

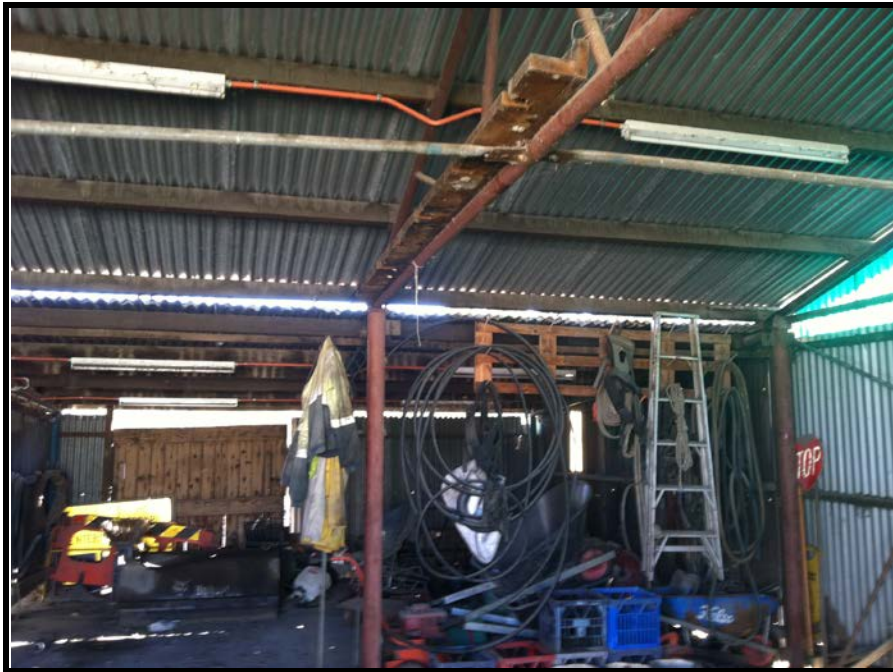


Photo 25: 12 Horton Road (Business): Fluorescent lights fitted to timber frame in small shed



Photo 26: 12 Horton Road (Business): Fluorescent light fitted to metal frame in carport to small shed

Appendix B

Hazardous Materials Register

Glossary of Terms and Abbreviations Used in Registers

The following provides an explanation of terms and abbreviations used in the registers.

Location	The location within the building (e.g bathroom) and the use of the material (e.g. floor covering, soffit lining, pipe lagging)
ACM	Asbestos containing material
Bonded	Refers to ACM with its fibres firmly bound within the host media.
AC sheeting	Asbestos cement sheeting
Condition	Refers to the physical state or condition of the material in accordance with the following: • Good – material shows no, or very minor damage and/or deterioration • Fair – material shows signs of minor damage and/or deterioration • Poor – material shows sign of significant damaged and/or deterioration or the material is partly or wholly unserviceable for its intended use.
Description	Description of the material identified e.g. vinyl tile, fibre cement sheeting etc.
Friable	ACM that may be crumbled pulverised or reduced to powder by hand pressure.
LBP	Lead based paint:
Result	Refers to result of ACM or LBP analysis. • For asbestos, this is the type identified during laboratory analysis. The three main commercial asbestos types found in Australia area: chrysotile (CH-white), amosite (A-brown or grey), and crocidolite (C-blue). • NAD means no asbestos was detected during laboratory analysis. • Materials shown as 'Refer to.....' have not been sampled but visually appear the same as other material previously sampled. • 'Assumed' refers to those materials not sampled (e.g. for safety reasons or restricted access) and which are not similar to previously sampled materials; or refers to paint that is assumed to be LBP due to building age and paint condition. • 'Field' means ACM where asbestos fibres identified in field but the type of asbestos not confirmed. • 'Potential' refers to fluorescent lights where it is assumed that PCBs are present due to their apparent age.
PCB	Polychlorinated Biphenyls
Risk	Refers to the level of risk posed by the material based on its condition, friability, accessibility and other factors such as exposure to disturbance. The levels of risk adopted for the survey are Urgent (U), High (H), Medium (M) and low (L) as defined in Appendix C of this report.
SMF	Synthetic mineral fibre
Type of Material	The type of hazardous material (ACM, SMF, PCB or LBP).

Appendix C

Laboratory Certificates



CHAIN OF CUSTODY

ALS Laboratory: please tick →

DADELAIDE 21 Burns Road Pooraka SA 5095
Ph: 08 8359 0890 E: adelaide@alsglobal.com
DPERBANE 2 Byn Street Stirling QLD 4053
Ph: 07 3240 7222 E: samples.perbane@alsglobal.com
DGLADSTONE 46 Callenderah Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

DMACKAY 78 Highbury Road Mackay QLD 4740
Ph: 07 4944 0177 E: mackay@alsglobal.com
DMEI BOURNE 24 Westall Road Springvale VIC 3171
Ph: 03 8540 9600 E: samples.melbourne@alsglobal.com
DMWDGEE 1728 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee.mal@alsglobal.com

DNEWCASTLE 5 Rose Gum Road Warabrook NSW 2304
Ph: 02 4968 9433 E: samples.newcastle@alsglobal.com
DNOOWRA 413 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com
DPERTH 10 Hod Way Kalga WA 6100
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

DSYDNEY 277-288 Woodpark Road Smithfield NSW 2164
Ph: 02 8784 8555 E: samples.sydney@alsglobal.com
DTONNSVILLE 14-15 Desma Court Balke QLD 4818
Ph: 07 4796 0600 E: townsville.environment@alsglobal.com
DWOILONGONG 99 Kenny Street Wodonga NSW 2500
Ph: 02 4226 3125 E: wodongong@alsglobal.com

CLIENT: ENVIRON Australia Pty Ltd

OFFICE: Newcastle

PROJECT: Hydro Aluminium Buffer Zone

ORDER NUMBER:

PROJECT MANAGER: Fiona Robinson

SAMPLER: Shaun Taylor

COC Emailed to ALS? (YES / NO)

Email Reports to (will default to PM if no other addresses are listed): staylor@environcorp.com

Email Invoice to (will default to PM if no other addresses are listed): kewis@environcorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS: ☐ Standard TAT (List due date): ☐ Non Standard or Urgent TAT (List due date):

(Standard TAT may be longer for some tests e.g. Ultra Trace Organics)

ALS QUOTE NO.:

COUNTRY OF ORIGIN: Australia

CONTRACT PH: 02 4962 5444

SAMPLER MOBILE: 0408 386 663

EDD FORMAT (or default):

RELINQUISHED BY:

DATE/TIME:

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A

Free Ice / frozen ice bricks present upon receipt? Yes No N/A

Random Sample Temperature on Receipt: °C

Other comment:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

DATE/TIME:

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DATE/TIME:

CERTIFICATE OF ANALYSIS

Work Order	: EN1400843	Page	: 1 of 3
Client	: ENVIRON	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO Box 435 THE JUNCTION NSW 2291	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 4962 5444	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 4962 5888	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 13-MAR-2014
Sampler	: SHAUN TAYLOR	Issue Date	: 20-MAR-2014
Site	: ----		
Quote number	: SY/433/13	No. of samples received	: 3
		No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



Analytical Results

Sub-Matrix: **SOLID** (Matrix: **SOIL**)

Client sample ID

				EMP4-ACM-01	EMP4-ACM-02	EMP4-ACM-03	----	----
Client sampling date / time				04-MAR-2014 00:00	04-MAR-2014 00:00	04-MAR-2014 00:00	----	----
Compound	CAS Number	LOR	Unit	EN1400843-001	EN1400843-002	EN1400843-003	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	Yes	Yes	----	----
Asbestos Type	1332-21-4	-	--	Ch + Am	Ch	Ch	----	----
Sample weight (dry)	----	0.01	g	11.0	1.03	1.00	----	----
APPROVED IDENTIFIER:	----	-	--	C.OWLER	C.OWLER	C.OWLER	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	EMP4-ACM-01 - 04-MAR-2014 00:00	Several pieces of bonded asbestos fibre board approximately 50 x 20 x 4mm
EA200: Description	EMP4-ACM-02 - 04-MAR-2014 00:00	Several pieces of heavily degraded and friable asbestos cement sheeting approximately 15 x 10 x 2mm
EA200: Description	EMP4-ACM-03 - 04-MAR-2014 00:00	Two pieces of degraded and friable asbestos cement sheeting approximately 20 x 15 x 2mm

QUALITY CONTROL REPORT

Work Order	: EN1400843	Page	: 1 of 4
Client	: ENVIRON	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO Box 435 THE JUNCTION NSW 2291	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 4962 5444	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 4962 5888	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 13-MAR-2014
Sampler	: SHAUN TAYLOR	Issue Date	: 20-MAR-2014
Order number	: ----		
Quote number	: SY/433/13	No. of samples received	: 3
		No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



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

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

- **No Method Blank (MB) or Laboratory Control Spike (SCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**



Environmental

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EN1400843	Page	: 1 of 5
Client	: ENVIRON	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO Box 435 THE JUNCTION NSW 2291	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 4962 5444	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 4962 5888	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 13-MAR-2014
Sampler	: SHAUN TAYLOR	Issue Date	: 20-MAR-2014
Order number	: ----		
Quote number	: SY/433/13	No. of samples received	: 3
		No. of samples analysed	: 3

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: SOIL

Evaluation: ✖ = Holding time breach ; ✔ = Within holding time.

Method	Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples							
Snap Lock Bag (EA200)							
EMP4-ACM-01, EMP4-ACM-03	EMP4-ACM-02, 04-MAR-2014	---	31-AUG-2014	----	20-MAR-2014	16-SEP-2014	✔

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.



CHAIN OF CUSTODY

ALS Laboratory, please tick →

CLADELIDE 21 Burns Road Pooraka SA 5095
Ph: 08 8358 0890 E: aadelide@alsglobal.com
DURISBANE 2 Bvth Street Stifford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
DGLADSTONE 44 Callomon Drive Clinton QLD 4680
Ph: 07 7471 5600 E: gledstone@alsglobal.com

DIKKEY 78 Harbour Road Murrumbidgee QLD 7470
Ph: 07 4644 0717 E: murray@alsglobal.com
DNEELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9800 E: samples.melbourne@alsglobal.com
DMLIDGE 1729 Sydney Road Mudgee NSW 2850
Ph: 02 6372 6735 E: mudgee@mail@alsglobal.com

DNEWCASTLE 5 Rose Gum Road Warabrook NSW 2304
Ph: 02 4668 9435 E: samples.newcastle@alsglobal.com
DNOOWRA 413 Geary Place North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com
DPERTH 10 Had Way Malaga WA 6090
Ph: 08 9208 7655 E: samples.perth@alsglobal.com

DSYDNEY 277288 Woodpark Road Smithfield NSW 2164
Ph: 02 6784 6550 E: samples.sydney@alsglobal.com
DTOWNSVILLE 14-15 Desma Court Bole QLD 4818
Ph: 07 4786 0600 E: townsville.environment@alsglobal.com
DWOLLONGONG 99 Kenny Street Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: ENVIRON Australia Pty Ltd

OFFICE: Newcastle

PROJECT: Hydro Aluminium Buffer Zone

PROJECT NO.: AS130348

ORDER NUMBER:

PURCHASE ORDER NO.:

PROJECT MANAGER: Fiona Robinson

CONTACT PH: 02 4962 5444

SAMPLER: Shaun Taylor

SAMPLER MOBILE: 0408 386 663

COC emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): stayor@environcorp.com

Email Invoice to (will default to PM if no other addresses are listed): klemis@environcorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS:
(Standard TAT may be longer for some tests
e.g. Ultra Trace Organics)

☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact? Yes No N/A
Free Ice / frozen Ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

RECEIVED BY: DATE/TIME: RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

RELINQUISHED BY: *Shireyfield*
DATE/TIME: *18/6/14 5pm*

RECEIVED BY: *us*
DATE/TIME: *18/6/14 1200*

RELINQUISHED BY: DATE/TIME:

RECEIVED BY: DATE/TIME:

ALS USE ONLY

SAMPLE DETAILS
MATRIX: Solid(s) Water(W)

CONTAINER INFORMATION

ANALYSIS REQUIRED including SUTES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Additional Information
Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

LAB ID

SAMPLE ID

DATE / TIME

MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

1

LP4-ACM-01

S

B

1

X

Asbestos

Telephone: +61 2 4014 2500



Environmental Division
Newcastle
Work Order
EN1402086

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airtight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airtight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass.
Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; L = Lugsol Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CHAIN OF CUSTODY

ALS Laboratory, please tick ->

LABORATORY: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com

LABORATORY: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
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DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com

LABORATORY: 21 Burna Road, Portlanka SA 5095
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DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
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Ph: 08 8359 0850 E: lab@alsglobal.com
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Ph: 08 8359 0850 E: lab@alsglobal.com

LABORATORY: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com
DUNEDIN: 21 Burna Road, Portlanka SA 5095
Ph: 08 8359 0850 E: lab@alsglobal.com

CLIENT: ENVIRON Australia Pty Ltd	TURNAROUND REQUIREMENTS:	☐ Standard TAT (List due date):	☐ Non Standard or urgent TAT (List due date):	FOR LABORATORY USE ONLY (Circle)
OFFICE: Newcastle	(Standard TAT may be longer for some tests)			Custody Seal intact? Yes No

PROJECT: Hydro Aluminium Buffer Zone	PROJECT NO.: AS130348	ALS QUOTE NO.:	COC SEQUENCE NUMBER (Circle)	Free ice / frozen ice bricks present upon receipt? Yes No

ORDER NUMBER:	PURCHASE ORDER NO.:	COUNTRY OF ORIGIN: Australia	COC: 1 2 3 4 5 6 7	Random Sample Temperature on Receipt: °C

PROJECT MANAGER: Fiona Robinson	CONTACT PH: 02 4962 5444	SAMPLER MOBILE: 0408 386 663	RECEIVED BY: <i>Shreenfield</i>	DATE/TIME: 18/6/14 1700

SAMPLER: Shaun Taylor	EDD FORMAT (or default):	RELINQUISHED BY: <i>Shreenfield</i>	DATE/TIME: 18/6/14	DATE/TIME:

COC Emailed to ALS? (YES / NO)	Email Reports to (will default to PM if no other addresses are listed): staylor@environcorp.com	DATE/TIME: 18/6/14	DATE/TIME:	DATE/TIME:

Email Invoice to (will default to PM if no other addresses are listed): kewis@environcorp.com	DATE/TIME: 18/6/14	DATE/TIME:	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(s) Water(W)	CONTAINER INFORMATION	ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).	Additional Information

LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	Asbestos	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

1	LP12-ACM-01		S	B	1	X	
2	LP12-ACM-02		S	B	1	X	
3	LP12-ACM-03		S	B	1	X	



Telephone : + 61 2 4014 2500

Environmental Division
Newcastle
Work Order
EN1402087

TOTAL

V Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Ca Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; A = Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl Preserved Plastic; HS = HCl Preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; C Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lignite Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CHAIN OF CUSTODY

ALS Laboratory please tick →

DADELAIDE 21 Burns Road Footsda SA 5095
Ph: 08 8389 0880 E: adelaide@alsglobal.com
CBERISBAE 2 Bm Street Stairford QLD 4053
Ph: 07 9243 7222 E: samples.brisbane@alsglobal.com
DGLASTONE 46 Calamondin Drive Chiron QLD 4680
Ph: 07 7471 5600 E: gladstone@alsglobal.com

DMACKAY 78 Harbour Road Mackay QLD 4740
Ph: 07 4644 0177 E: mackay@alsglobal.com
DMELBOURNE 2-4 Westall Road Springvale VIC 3171
Ph: 03 8549 9600 E: samples.melbourne@alsglobal.com
DMIDJEE 1120 Sydney Road Midjess NSW 2850
Ph: 02 6372 6735 E: midjess.mel@alsglobal.com

DNEWCASTLE 5 Rose Gum Road Warabrook NSW 2304
Ph: 02 4666 5435 E: samples.newcastle@alsglobal.com
DMOIRA 4/13 Geary Place North Mores NSW 2541
Ph: 02 4423 2063 E: norwa@alsglobal.com
DPEETH 10 Red Way Mudgea WA 6090
Ph: 08 9200 7655 E: samples.perth@alsglobal.com

DSYDNEY 277-280 Woodcraft Road Smithfield NSW 2164
Ph: 02 8764 8555 E: samples.sydney@alsglobal.com
DOWNSVILLE 14-15 Deana Court Bohl QLD 4818
Ph: 07 4796 0600 E: downsville.environmental@alsglobal.com
DMOULONGONG 99 Kerry Street Wollongong NSW 2500
Ph: 02 4225 3125 E: wollongong@alsglobal.com

CLIENT: ENVIRON Australia Pty Ltd

OFFICE: Newcastle

PROJECT: Hydro Aluminium Buffer Zone

PROJECT NO.: AS130348

ORDER NUMBER:

PURCHASE ORDER NO.:

PROJECT MANAGER: Fiona Robinson

COUNTRY OF ORIGIN: Australia

SAMPLER: Shaun Taylor

CONTACT PH: 02 4962 5444

COC Emailled to ALS? (YES / NO)

SAMPLER MOBILE: 0408 386 663

Email Reports to (will default to PM if no other addresses are listed): staylor@environcorp.com

Email Invoice to (will default to PM if no other addresses are listed): kewis@environcorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):
☐ Non Standard or urgent TAT (List due date):

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes No

Free ice / frozen ice bricks present upon receipt?

Yes No N/A

Random Sample Temperature on Receipt:

°C

Other comment:

RECEIVED BY:

RECEIVED BY:

DATE/TIME:

DATE/TIME:

18/6/14 5pm

18/6/14 1700

SAMPLE DETAILS
MATRIX: Solid(S) Water(W)

CONTAINER INFORMATION

ANALYSIS REQUIRED including SUITES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific OC analysis etc.

LAB ID

SAMPLE ID

DATE / TIME

MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

LP13-ACM-20

S

B

1

X

Asbestos



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Environmental Division
Newcastle
Work Order
EN1402089

TOTAL

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; SH = Sodium Hydroxide/Ca Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialization bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lungs Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.



CHAIN OF CUSTODY

ALS Laboratory, please tick →

DADELADE 21 Burns Road, Portlaurie SA 5095
Ph: 08 8359 0800 E: adelaide@alsglobal.com
CHROSBANE 2 Bth Street, Sturtford QLD 4053
Ph: 07 3243 7222 E: samples.brisbane@alsglobal.com
DGLDSTONE 46 Calverton Drive, Clinton QLD 4650
Ph: 07 7471 5600 E: glenstone@alsglobal.com

DIMCKAY 78 Harbour Road, Mackay QLD 4740
Ph: 07 4644 0177 E: mackay@alsglobal.com
CAMEBOURNE 2-4 Westall Road, Springvale VIC 3171
Ph: 03 8549 8600 E: samples.melbourne@alsglobal.com
DUNDEE 129 Sydney Road, Mudgee NSW 2850
Ph: 02 6372 4730 E: mudgee@alsglobal.com

DNEWCASTLE 5 Rose Gum Road, Warbrook NSW 2304
Ph: 02 4668 6433 E: samples.newcastle@alsglobal.com
DUNOWRA 413 Geary Place, North Nowra NSW 2541
Ph: 02 4423 2063 E: nowra@alsglobal.com
DPERTH 10 Head Way, Wangara WA 6009
Ph: 08 9209 7655 E: samples.perth@alsglobal.com

DSYDNEY 277-289 Woodpark Road, Smithfield NSW 2164
Ph: 02 8764 6555 E: samples.sydney@alsglobal.com
DJOHNSVILLE 14-16 Desma Court, Bottle QLD 4818
Ph: 07 4706 0600 E: johnsville.environmental@alsglobal.com
DNOOLONGONG 90 Kenny Street, Wodlongong NSW 2500
Ph: 02 4223 3125 E: wodlongong@alsglobal.com

CLIENT: ENVIRON Australia Pty Ltd

OFFICE: Newcastle

PROJECT: Hydro Aluminium Buffer Zone

PROJECT NO.: AS130348

ORDER NUMBER:

PURCHASE ORDER NO.:

PROJECT MANAGER: Fiona Robinson

CONTACT PH: 02 4962 5444

SAMPLER: Shaun Taylor

SAMPLER MOBILE: 0408 386 663

COC Emailed to ALS? (YES / NO)

EDD FORMAT (or default):

Email Reports to (will default to PM if no other addresses are listed): staylor@environcorp.com

Email Invoice to (will default to PM if no other addresses are listed): kewis@environcorp.com

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

TURNAROUND REQUIREMENTS : ☐ Standard TAT (List due date):
(Standard TAT may be longer for some tests
e.g. Ultra Trace Organics)

☐ Non Standard or urgent TAT (List due date):

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact?

Yes

No

N/A

Free ice / frozen ice bricks present upon receipt?

Yes

No

N/A

Random Sample Temperature on Receipt:

°C

Other comment:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RELINQUISHED BY:

DATE/TIME:

RECEIVED BY:

DATE/TIME:

RECEIVED BY:

ALS USE ONLY

SAMPLE DETAILS
MATRIX: Solid(S) Water(W)

CONTAINER INFORMATION

ANALYSIS REQUIRED including SUTTES (NB: Suite Codes must be listed to attract suite price)
Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (filtered bottle required).

Additional Information

Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.

LAB ID

SAMPLE ID

DATE / TIME

MATRIX

TYPE & PRESERVATIVE
(refer to codes below)

TOTAL BOTTLES

Asbestos

1

LP14-ACM-01

S

B

1

X

Environmental Division
Newcastle
Work Order

EN1402090



Telephone : +61 2 4014 2500

TOTAL

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Specialisation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag; LI = Lungs Iodine Preserved Bottles; STT = Sterile Sodium Thiosulfate Preserved Bottles.

CERTIFICATE OF ANALYSIS

Work Order	: EN1402086	Page	: 1 of 3
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO BOX 564 MAITLAND NSW, AUSTRALIA 2320	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com.au	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 49344354	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 49344359	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMINIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 18-JUN-2014
Sampler	: SHAUN TAYLOR	Issue Date	: 25-JUN-2014
Site	: ----		
Quote number	: SY/578/14	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Descriptive Results



NATA Accredited Laboratory 825

Accredited for compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **EA200 Legend**
- **EA200 'Am' Amosite (brown asbestos)**
- **EA200 'Ch' Chrysotile (white asbestos)**
- **EA200 'Cr' Crocidolite (blue asbestos)**
- **EA200 'Trace' - Asbestos fibres detected by trace analysis per AS4964. The result can be interpreted that the sample contains detectable 'respirable' asbestos fibres**
- **EA200: 'UMF' Unknown Mineral Fibres. "-" indicates fibres detected may or may not be asbestos fibres. Confirmation by alternative techniques is recommended.**
- **EA200: Asbestos Identification Samples were analysed by Polarised Light Microscopy including dispersion staining.**
- **EA200: Negative results for vinyl tiles should be confirmed by an independent analytical technique.**



Analytical Results

Sub-Matrix: **SOLID** (Matrix: **SOIL**)

Client sample ID

Sub-Matrix: SOLID (Matrix: SOIL)				Client sample ID	LP4-ACM-01	----	----	----	----
				Client sampling date / time	26-MAY-2014 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EN1402086-001	----	----	----	----	----
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples									
Asbestos Detected	1332-21-4	0.1	g/kg	Yes	----	----	----	----	----
Asbestos Type	1332-21-4	-	--	Ch	----	----	----	----	----
Sample weight (dry)	----	0.01	g	0.04	----	----	----	----	----
APPROVED IDENTIFIER:	----	-	--	S.SPOONER	----	----	----	----	----

Analytical Results

Descriptive Results

Sub-Matrix: **SOLID**

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples		
EA200: Description	LP4-ACM-01 - 26-MAY-2014 15:00	Several small fragments of bonded asbestos fibre board approx 2 x 2 x 1 mm.



Environmental

QUALITY CONTROL REPORT

Work Order	: EN1402086	Page	: 1 of 4
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO BOX 564 MAITLAND NSW, AUSTRALIA 2320	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com.au	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 49344354	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 49344359	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMINIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----		
C-O-C number	: ----	Date Samples Received	: 18-JUN-2014
Sampler	: SHAUN TAYLOR	Issue Date	: 25-JUN-2014
Order number	: ----		
Quote number	: SY/578/14	No. of samples received	: 1
		No. of samples analysed	: 1

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Method Blank (MB) and Laboratory Control Spike (LCS) Report; Recovery and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits



NATA Accredited
Laboratory 825

Accredited for
compliance with
ISO/IEC 17025.

Signatories

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

Signatories	Position	Accreditation Category
Shaun Spooner	Asbestos Identifier	Newcastle - Asbestos



General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Key : Anonymous = Refers to samples which are not specifically part of this work order but formed part of the QC process lot
 CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.
 LOR = Limit of reporting
 RPD = Relative Percentage Difference
 # = Indicates failed QC



Laboratory Duplicate (DUP) Report

The quality control term Laboratory Duplicate refers to a randomly selected intralaboratory split. Laboratory duplicates provide information regarding method precision and sample heterogeneity. The permitted ranges for the Relative Percent Deviation (RPD) of Laboratory Duplicates are specified in ALS Method QWI-EN/38 and are dependent on the magnitude of results in comparison to the level of reporting: Result < 10 times LOR:- No Limit; Result between 10 and 20 times LOR:- 0% - 50%; Result > 20 times LOR:- 0% - 20%.

- **No Laboratory Duplicate (DUP) Results are required to be reported.**



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

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

- **No Method Blank (MB) or Laboratory Control Spike (SCS) Results are required to be reported.**

Matrix Spike (MS) Report

The quality control term Matrix Spike (MS) refers to an intralaboratory split sample spiked with a representative set of target analytes. The purpose of this QC parameter is to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) Results are required to be reported.**

Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report

The quality control term Matrix Spike (MS) and Matrix Spike Duplicate (MSD) refers to intralaboratory split samples spiked with a representative set of target analytes. The purpose of these QC parameters are to monitor potential matrix effects on analyte recoveries. Static Recovery Limits as per laboratory Data Quality Objectives (DQOs). Ideal recovery ranges stated may be waived in the event of sample matrix interference.

- **No Matrix Spike (MS) or Matrix Spike Duplicate (MSD) Results are required to be reported.**

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EN1402086	Page	: 1 of 5
Client	: ENVIRON AUSTRALIA PTY LTD	Laboratory	: Environmental Division Newcastle
Contact	: FIONA ROBINSON	Contact	: Peter Keyte
Address	: PO BOX 564 MAITLAND NSW, AUSTRALIA 2320	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
E-mail	: frobinson@environcorp.com.au	E-mail	: peter.keyte@als.com.au
Telephone	: +61 02 49344354	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 49344359	Facsimile	: +61-2-4968 0349
Project	: AS130348 HYDRO ALUMINIUM BUFFER ZONE	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: ----	Date Samples Received	: 18-JUN-2014
C-O-C number	: ----	Issue Date	: 25-JUN-2014
Sampler	: SHAUN TAYLOR	No. of samples received	: 1
Order number	: ----	No. of samples analysed	: 1
Quote number	: SY/578/14		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Interpretive Quality Control Report contains the following information:

- Analysis Holding Time Compliance
- Quality Control Parameter Frequency Compliance
- Brief Method Summaries
- Summary of Outliers



Analysis Holding Time Compliance

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

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

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

Matrix: **SOIL**

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

Method		Sample Date	Extraction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA200: AS 4964 - 2004 Identification of Asbestos in bulk samples								
Snap Lock Bag (EA200) LP4-ACM-01		26-MAY-2014	---	22-NOV-2014	----	25-JUN-2014	22-DEC-2014	✓

The following report summarises the frequency of laboratory QC samples analysed within the analytical lot(s) in which the submitted sample(s) was(where) processed. Actual rate should be greater than or equal to the expected rate. A listing of breaches is provided in the Summary of Outliers.

Evaluation: ✖ = Quality Control frequency not within specification ; ✔ = Quality Control frequency within specification.

Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Regular	Actual	Expected	Evaluation	



Brief Method Summaries

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the US EPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request. The following report provides brief descriptions of the analytical procedures employed for results reported in the Certificate of Analysis. Sources from which ALS methods have been developed are provided within the Method Descriptions.

Analytical Methods	Method	Matrix	Method Descriptions
Asbestos Identification in bulk solids	EA200	SOIL	AS 4964 - 2004 Method for the qualitative identification of asbestos in bulk samples



Summary of Outliers

Outliers : Quality Control Samples

The following report highlights outliers flagged in the Quality Control (QC) Report. Surrogate recovery limits are static and based on USEPA SW846 or ALS-QWI/EN/38 (in the absence of specific USEPA limits). This report displays QC Outliers (breaches) only.

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

- For all matrices, no Method Blank value outliers occur.
- For all matrices, no Duplicate outliers occur.
- For all matrices, no Laboratory Control outliers occur.
- For all matrices, no Matrix Spike outliers occur.

Regular Sample Surrogates

- For all regular sample matrices, no surrogate recovery outliers occur.

Outliers : Analysis Holding Time Compliance

This report displays Holding Time breaches only. Only the respective Extraction / Preparation and/or Analysis component is/are displayed.

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

The following report highlights breaches in the Frequency of Quality Control Samples.

- No Quality Control Sample Frequency Outliers exist.

Date of Audit	Sector/ Area	Property Address	Building Name/ No.	Type of Haz Mat	Form of Haz Mat	Location	Description/ Condition	Accessibility	Est. Quantity	Photo Ref	Sample No.	Result/ Type of Material
26/11/2013	Parcel 4	14 Horton Road	House	ACM	Sheet	Walls and ceiling to landing to front door	Good, painted	At ground level	12m ²	1	EMP4-ACM-02	ACM
26/11/2013	Parcel 4	14 Horton Road	House	PCB	Fluoro light	Fluorescent lighting to front storage room, lounge and main bedroom	Older light fittings	On ceilings	2	2	Assumed	PCB
26/11/2013	Parcel 4	14 Horton Road	House	ACM	Sheet	Walls and ceiling to bathroom	Good, fresh paint, no damage	At ground level	30m ²	3	Assumed	ACM
26/11/2013	Parcel 4	14 Horton Road	House	ACM	Sheet	Eaves to all sides	Good, painted	3.5m above ground level	30m ²	4	Assumed	ACM
26/11/2013	Parcel 4	14 Horton Road	House	ACM	Sheet	Gables ends to eastern and western sides of house	Generally good, painted, minor damage	3.5m above ground level	20m ²	4	Assumed	ACM
26/11/2013	Parcel 4	14 Horton Road	Shed/laundry	ACM	Sheet	Wall and ceiling internal to laundry section	Poor: painted but damaged. Indication of fire damage	At ground level	20m ²	5	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Shed/laundry	ACM	Sheet	Exterior wall lining	Good, painted, some edges exposed	At ground level	40m ²	6	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Shed/laundry	ACM	Sheet	Eaves all sides and gable ends eastern and western ends	Fair, painted and some damage	2m above ground level	30m ²	6	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Zelemité	Power backing board	Good, however drilled holes	1.5m above ground level	1m ²	N/A	Assumed	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet	Exterior southern wall and eaves to garage	Fair, painted and (worn) and some damage	At ground level	200m ²	7	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet	Corner moulding at western end of garage	Fair, painted and (worn) and some damage	At ground level	2m ²	8	Field	ACM
	Parcel 4	14 Horton Road	Garage		Fluoro light	To ceiling of garage	Older light fittings	On ceiling	2	9	Assumed	PCB
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet	Internal lining to garage	Most good, with paint or wallpaper.	At ground elvel	250m ²	10	Assumed	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet	Broken sections attached to internal beam	Poor: exposed edges	2m above ground level	2m ²	11	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	SMF	Insulation	To section of garage with a ceiling	Uncovered and exposed	2m above ground level	TBC	11	Assumed	SMF
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet	Ceiling to rear section of garage, 2 panels	Poor: damaged and worn paint	2m above ground level	40m ²	11	EMP-ACM-03	ACM
26/11/2013	Parcel 4	14 Horton Road	Garage	ACM	Sheet (Corrugated and flat)	North exterior and western walls to garage	Poor: damaged and worn paint	At ground level	20m ²	12 and 13	Field	ACM
26/11/2013	Parcel 4	14 Horton Road	Outhouse	ACM	Sheet	Walls and gable ends	Poor: damaged and worn paint	At ground level	15m ²	14	Field	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet (Hardiplank)	Exterior walls (all sides)	Fair: Some edge damage, painted, holes cut into it at various locations	Easy	350m ²	15	EMP4-ACM-01	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet	Eaves and gable, northwestern end	Good: Painted and only minor damage	3m above ground level	10m ²	16	Assumed	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet (Hardiplank)	internal wall linings to original external wall to the house, within large back room	Good: Painted and only minor damage	Easy	150m ²	17	Refer to EMP4-ACM-01	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet	internal walls and ceiling to rear bedroom	Good: Painted, with timber strips to sheeting edges	Walls easy	120m ²	18	Field	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet	Ceiling to the extension/ rear large room	Fair: Unpainted, some damage	3m above ground level	120m ²	17	Assumed	ACM
22/11/2013	Parcel 4	12 Horton Road (Residential)	House	ACM	Sheet	Bathroom/ laundry walls and ceiling	Good: Painted and only minor damage	Walls easy	120m ²	19	Assumed	ACM
	Parcel 4	Scales Avenue	House	ACM	Sheet	Eaves to all sides, including front awning	Good: painted and undamaged	4m above ground level	30m ²	20	LP4-ACM-01	ACM
	Parcel 4	Scales Avenue	House	ACM	Sheet	Bathroom walls	Fair: painted, some minor damage	At ground to 3m height	40m ²	21	Assumed	ACM
	Parcel 4	Scales Avenue	House	ACM	Sheet	Walls and ceiling to laundrv	Fair: painted, some minor damage	At ground to 3m height	20m ²	22	Assumed	ACM
	Parcel 4	Scales Avenue	House	ACM	Sheet	Walls to toilet room	Fair: painted, some minor damage	At ground to 3m height	15m ²	N/A	Assumed	ACM
	Parcel 4	Scales Avenue	House	PCB	PCB	Fluorescent lights at various locations inside the house	Fair	3m above ground level	6	N/A	Assumed	PCB
	Parcel 4	Scales Avenue	House	ACM	Zelemité	Backing board to power box	Fair, drilled holes	1.6m above ground level in power box	1m ²	23	Assumed	ACM
	Parcel 4	12 Horton Road (Business)	Large Shed	PCB	PCB	Fluorescent lights fitted to metal frame	Fair to good	4m above ground level	10	24	Assumed	PCB
	Parcel 4	12 Horton Road (Business)	Small Shed	PCB	PCB	Fluorescent lights fitted to timber frame	Fair to good	3m above ground level	12	25	Assumed	PCB
	Parcel 4	12 Horton Road (Business)	Carport attached to Small Shed	PCB	PCB	Fluorescent light fitted to metal frame	Fair, some minor damage to light frame	2.4m above ground level	1	26	Assumed	PCB</

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