

DSI - DETAILED SITE INVESTIGATION

Former Port Kembla Primary School, Military Road, Port Kembla, NSW



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REPORT





Executive Summary

Introduction

Golder Associates Pty Ltd (Golder) was engaged by Port Kembla Copper Pty Ltd (PKC) to complete a Detailed Site Investigation (DSI) at the former Port Kembla Primary School, located on Military Road, Port Kembla, New South Wales (the site). The objective of the DSI was to assess for the presence and extent of the soil and groundwater contamination resulting from historical activities which occurred at the site and surrounding properties. PKC wishes to support divest the site for potential future mixed business and medium density residential land use.

Scope of work

The scope of work completed as part of the DSI consisted of the following tasks:

- Collection of soil samples from 30 (grid based) locations on site and two locations off site. The purpose
 of the off-site sampling was to assess background soil quality and support development of site specific
 ecological assessment criteria for soil.
- Installation of four shallow monitoring wells and sampling groundwater from two existing deep monitoring wells installed on site.
- Analysis of the chemicals of interest for the site identified during a preceding Phase 1 environmental site assessment for the property (Golder, November 2012), which included a suite of organic and inorganic chemicals.

Results

Soil

- The investigation indicates the site is underlain by a generally thin layer of fill material, typically consisting of silty clay and sandy clay. Coal washery reject was reported to be present in approximately one-third of the locations, whilst asbestos was positively identified at seven locations, situated in the northern and central portions of the site.
- Natural soils typically comprising gravely silty clay and clay underlie the fill, under which is volcanic bedrock generally encountered at approximately 1 mbgl.
- The concentrations of the chemicals of interest were not reported greater than the limits of reporting and/or health investigations levels adopted for the proposed mixed business and medium density residential land use. Nutrients reported at concentrations greater than the limit of reporting are considered to represent ambient background soil conditions.
- The concentrations of arsenic (3 samples), copper (22 samples) and zinc (7 samples) exceeded the adopted ecological investigation levels (EILs).
- The concentrations of total recoverable hydrocarbons (TRH) F3 (>C₁₆ C₃₄) in samples from test pits TP25 and TP28 located near to the Electrolytic Street were greater than the residential ecological screening levels (ESLs).
- Asbestos containing material was detected in samples collected from the test pits TP10, TP11, TP12A, TP15, TP16A, TP16B and TP20 located in the central and northern portion of the site. Analysis indicated that one sample (TP10_0.0_0.1) had a concentration of non-friable asbestos above the investigation value for residential B (0.04%) and commercial/industrial D (0.05% w/w) land use scenarios.





The presence of the chemicals of interest greater than the ecological assessment criteria, asbestos and general fill material may require future management in residential portions of the site (if redeveloped for this purpose), which could include on site retention (eg placement under road reserves/pavements) and management through the implementation of an environmental management plan (EMP).

Groundwater

- Shallow monitoring wells were installed near locations where water seepage was reported during soil investigations. However, groundwater did not accumulate in these wells and consequently were not sampled. This tends to suggest that any shallow groundwater under the site (including that observed by Golder (November 2012)) is likely to be perched, of limited extent, potentially ephemeral and will therefore have limited potential uses.
- Groundwater levels in two deep (fractured rock) monitoring wells installed at the site ranged from 0.450 (D4) to 1.70 (D1) m below top of casing (btoc). Inferred groundwater flow based on previous investigations is towards the north (URS, 2007). Since the site is located on a ridge and is likely to represent a recharge zone and groundwater divide, groundwater movement in other directions (including south towards Coomaditchy Lagoon) is also possible.
- The concentrations of the chemicals of interest were not reported greater than the limit of reporting or investigation levels, with the exception of:
 - Copper and zinc, which are greater than the adopted marine ecosystems criteria.
 - Chromium, copper, lead, nickel and zinc, which are greater than the acopted freshwater ecosystems criteria.

The concentrations of these chemicals of interest are likely to represent ambient background groundwater quality, given the industrial history of the region, the similarity in the concentrations of metals in soils on site and at background soil sample locations, and the location of the site in a recharge zone. On this basis, management of groundwater under the site is not considered to be required.





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1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) was engaged by Port Kembla Copper Pty Ltd (PKC) to complete a Detailed Site Investigation (DSI) of the former Port Kembla Primary School, located on Military Road, Port Kembla, New South Wales (the site). The site location is shown in **Figure 1** attached.

The objective of the DSI was to assess for the presence of the soil and groundwater contamination resulting from historical activities which occurred at the site and surrounding properties. The DSI was completed in accordance with our proposal (ref. P27623114_L_Rev0, dated 1 November 2012) and Golder Sampling, Analysis and Quality Plan, (SAQP), dated 20 June 2013, (attached as **Appendix A**).

Golder understands PKC is seeking to divest the property for potential mixed business and medium residential land use.

1.1 Background and Previous Investigations

The site is approximately 2.2 hectares in area and predominantly open space, with grass cover across the south eastern and north western ends. The central portion of the site (where the previous remaining former school building was located - now demolished) is paved with concrete. Bitumen basketball and netball courts are located immediately to the north, north-west and north east of the former main school building. Concrete foundations of various demolished school buildings are located in the south eastern and north eastern portions of the site.

Golder previously completed a Phase 1 Environmental Site Assessment (ESA) (Report *127623035-001-R-Rev0*, November 2012) for the site. The results of this study indicated the following in relation to the site condition:

- The site is located adjacent to heavy industrial, commercial and residential land of Port Kembla.
- The site was used as a school from 1916 until 2002, when it was purchased by PKC and left as vacant land forming a buffer between the site and surrounding properties.
- All except one of the former school buildings were demolished by PKC (the main school building was heritage listed and was retained). The heritage building was damaged by fire in 2012 and subsequently demolished in 2013 (during the DSI).
- Asbestos cement sheeting was used in the former site buildings. Suspected asbestos cement fragments were present on the ground surface near the remaining building (identified prior to fire damage and subsequent demolition of this structure).
- Lead based paints and polychlorinated biphenyl (PCB) containing light fittings and switches may have been used in the site buildings – based on the known age of the property.
- Parts of the site appear to have been filled using slag and coal washery reject (CWR). The chemical nature and extent of the fill is not known.
- Previous investigations reported lead and copper in shallow soil (depths less than 1 m below ground level) at concentrations greater than the adopted investigation levels for residential and open space land uses.
- The site is reported to be habitat to Green and Golden Bell Frogs (*Litoria aurea*) a species listed as endangered.
- Selected heavy metals (copper, nickel and zinc) were detected at concentrations above the respective ANZECC/ARMCANZ (2000) marine 95% trigger levels in groundwater samples collected from two existing, on-site, groundwater monitoring wells (D1 and D4) which were installed in 2005 (URS, 2006). The well locations shown in the attached Figure 2

On the basis of the information gathered during this Phase 1 ESA, Golder concluded the following:

Impacted soils previously reported at the site may be associated with the following historical activities:





- On-site filling of land, use of asbestos containing materials (ACM) in site buildings and possible use of lead containing paint.
- Off-site fallout from neighbouring industrial sites.
- The nature and extent of impacts have not been delineated, and
- An intrusive (soil and groundwater) assessment was required to:
 - Assess the nature and extent of impacts (if present) at the site.
 - Develop management/remedial measures (if required) to make the land suitable for its intended future land use.

1.2 **Objectives**

The objectives of the DSI included the following:

- Assess the nature and extent (if present) of contamination to soil and groundwater resulting from the potentially contaminating activities identified in the Phase 1 ESA.
- Assess the suitability of the site for potential future mixed business and medium density residential land use.
- Obtain sufficient information to develop remediation and/or management measures (if required) to render the site suitable for the proposed future uses.

1.3 Scope of Work

The DSI was completed in general accordance with the SAQP (**Appendix A**), which describes the approach and rationale applied to the works.

Fieldwork was completed in two stages (Stages 1 and 2) – the timing and scope of which are described in the following sections.

1.3.1 Stage 1 - Test Pit and Off-site Hand Auger Soil Sampling

- Excavation of 24 test pits (TP01 TP16, TP20 and TP24 TP30) using a small excavator on 25 27 June 2013;
- The test pits were located on an approximately 30 m x 30 m grid with the purpose being to broadly characterise shallow soils / fill under the unsealed areas of the site. Some of the locations also targeted potential point sources of contamination, including the periphery of building areas (where lead paint and asbestos containing materials may have been used) and a former septic tank.
- Soil samples were collected from each test pit at the following indicative depth intervals:
 - Surface to 0.25 mbgl (near surface sampling), 0.5 mbgl, 1 mbgl and at every metre thereafter (and/or where evidence of contamination was noted through field observations).
- Two background soil sample locations were collected using a hand auger on nearby vacant residential lots for the purpose of measuring Ambient Background Concentrations (ABC) for calculation of ecological investigation levels (EILs) in accordance with the National Environment Protection (Assessment of Site Contamination) Measure as amended 2013 (ASC NEPM); and
- Sampling locations were backfilled with the soil cuttings generated.





1.3.2 Stage 2 – Bore holes and Monitoring Well Installation

- Drilling of six bore holes (BH01 to BH06) on 9 and 10 October 2013 using a small drilling rig fitted with push tube augers.
- The boreholes were located on an approximate 30 m grid in the sealed areas of the site (at and surrounding the former main building) where test pitting was not possible.
- Four monitoring wells (MW1 MW4) were installed.
- Soil cuttings from drilling activities were stored in secure, sealed and appropriately labelled buckets onsite for subsequent treatment and disposal by PKC;
- Groundwater monitoring well construction was carried out according to Golder protocols and Minimum Construction Requirements for Water Bores in Australia (ARMCANZ, 2003). Bore licences were registered with the Department of Primary Industries, Office of Water, in accordance with the Water Management (General) Regulation 2011;
- The monitoring wells were proposed to be developed one week after installation, but were dry. Accordingly, groundwater samples were not collected from the four new shallow wells. However, the two existing deep wells located on-site (D1 and D4) were sampled during July 2013.





2.0 SITE DESCRIPTION

Characteristics of the site are presented in the following sections based on information presented in the Phase 1 ESA (Golder, 2012) conducted for the site.

Photographs taken during the DSI are included in Appendix B.

2.1 Site Location

The location of the site is shown in **Figure 1**. **Table 1** presents a summary of the site identification details.

Site Name	Former Port Kembla Primary School	
Street Address	Military Road	
City, State, Postal Code	Port Kembla, NSW, 2505	
Country	Australia	
Legal Description	Lot 1 in Deposited Plan 811699 at Port Kembla, Local Government Area Wollongong, Parish of Wollongong, County of Camden.	
Ownership	Port Kembla Copper Pty Ltd	
Zoning	B4 – Mixed Use	
Local Environmental Plan	Wollongong Local Environmental Plan 2009	
Land Area	2.19 hectares	

Table 1: Summary of Site Details

The site is approximately trapezoidal in shape and covered with grass in the south eastern and north western portions. The central portion of the site (surrounding the recently demolished school building) is paved with concrete. Bitumen basketball and netball courts are located immediately to the north, north-west and north east of the former building. The site now is vacant and fenced from public access.

2.2 Surrounding Land Use

The main land uses surrounding the site are summarised below:

- North: Electrolytic Street, beyond which is the former PKC smelter and refinery and other heavy industrial sites;
- North east: Reservoir Street, beyond which is MM Kembla Pty Ltd (heavy industry);
- East: Marne Street, beyond which is residential land;
- South: Military Road, beyond which is residential land; and
- West: Military Road, beyond which is residential and commercial/light industrial land. A BP petrol station is located approximately 100 m west of the site.

The site is located approximately 900 m south of Port Kembla Outer Harbour, 750 m north east of Coomaditchy Lagoon and 700 m west of the Tasman Sea.

2.3 Site History

The current Certificate of Title for the site indicates that the site is owned by Port Kembla Copper Pty Ltd.

The site was used as a primary school from 1916 until 2002.

A review of historical aerial photographs for the site indicates the land use surrounding the site has remained relatively constant since 1951, consisting of:

- North and north east heavy industry.
- East and south residential.





• West and north-west – residential and commercial.

Historical quarrying and filling appears to have occurred approximately 200 m east of the site. A detailed review of the site history is included in the Phase 1 ESA (Golder, November 2012).

2.4 **Topography**

The building that remained until 2013, and recently demolished during this investigation (**Figure 2**), was located on the crest of a hill, with the ground surface sloping down from the building in every direction. The steepest slopes are towards the north and south east. The topographic map (10m contour interval, (1990) Soil Landscape Series 1:100,000 Sheet of Wollongong – Port Hacking 9029-9129) of the area indicates that the elevation of the site ranges from 20m Australian Height Datum (AHD) at the northern tip of the site to 30m AHD in the southern portion of the site. The topographic map indicates that the site exists on the northern end of a ridge line that runs from the north-west to south-east.

Retaining structures/embankments border the site along Electrolytic, Reservoir and Marne Streets. The site is approximately 3 m higher than Electrolytic Street in the north and approximately 1.8 m higher near the intersection of Electrolytic and Reservoir Streets. The site is approximately 2 m higher than the adjacent ground level along Marne Street.

2.5 Geology and Hydrogeology

Geological and hydrogeological information for the site and/or surrounding area (250 m) is summarised in **Table 2**.

Table 2: Site Geological and Hydrogeological Information

Geology	 The Geological Survey of N.S.W. Department of Mineral Resources (1985) Geological Series 1:100,000 Sheet of Wollongong – Port Hacking 9029-9129 maps the geology underlying the site as the Dapto Latite, described as melanocratic, coarse grained and porphyritic Latite. A URS Australia Pty Limited (URS) (February 2006) soil and groundwater investigation at the site intersected the Dapto Latite under the site at depths ranging from 4.4 mbgl (monitoring well D1) to 5.2 mbgl (monitoring well D4). Weathered Dapto Latite was observed to crop out in several areas surrounding the school, including: 		
	 Adjacent to Military Road (near the former school building); 		
	 At the intersection of Marne Street and Military Road (in the grass verge next to the foot path); 		
	 Near the intersection of Reservoir Street and Marne Street (in the grass verge next to the foot path); and 		
	Near the intersection of Electrolytic Street and Military Road (near the western corner of the site.		
	The materials overlying bedrock were reported by URS (February 2006) as fill or possible fill to between 0.8 m bgl (metres below ground level) in monitoring well D1 and 0.5 m bgl in monitoring well D4, overlying natural clay and silt soils.		
	According to Graeme Waller and Associates (August, 1996), possible slag and CWR were present in the western corner of the site. Also, slag and CWR were observed during the site walkover on 8 June 2012, at the ground surface in the northern and western portions of the site as part of the Phase 1 ESA (Golder, 2012).		
Approximate Depth to Groundwater	Two groundwater monitoring wells (D1 and D4 - see Figure 2) were installed at the site (URS, 2006) and form part of the groundwater		



	monitoring network for the adjacent PKC smelter and refinery. During the July 2011 monitoring round the water level in these wells were recorded as 3.80 mbgl (D1) and 5.90 mbgl (D4) (Golder, 2011). Groundwater elevations at these wells were 29.67 mAHD (D1) and 25.51 mAHD (D4). Both of the wells are installed in bedrock.	
	Shallow (possibly perched) groundwater was observed seeping from the northern embankment of the site onto Electrolytic Street during the Phase 1 ESA (Golder, November 2012).	
Inferred Groundwater Flow Direction	The site is located at the crest of a hill and is likely to form a local recharge area and groundwater divide. Groundwater in the Dapto Latite is known to move north towards Port Kembla Harbour (Golder, 2011) and may also move southwest toward Coomaditchy Lagoon. Possible perched groundwater appears to be moving north towards Electrolytic Street, based on observed seeps from the retaining wall along this site boundary. Perched water (if present) could also move in other directions away from the topographic high located on the central southern portion of the site.	

2.6 Previous Site Investigations

Seven reports obtained from PKC provided information on the condition of the site – in particular the potential for contamination at the site. A summary of the scope of works and outcomes of these investigations are presented in the following sections.

2.6.1 Graeme Waller & Associates (August 1996), Environmental Lead Assessment, Port Kembla Public School

Graeme Waller and Associates conducted an assessment of lead in the surficial soils of the Port Kembla Public School. The report was submitted to the NSW Department of School Education and identified potential sources of lead impacts as airborne particulate fallout from both motor vehicle emissions and industrial sources, and from lead based paints.

Many of the soil samples collected across the site were described as containing fused black material (possible slag), black grit, and black shale (possible CWR). The samples with the highest concentrations of lead generally coincided with the presence of these materials in the soil.

2.6.2 Port Kembla Copper (October 2000), Port Kembla Community Soil Monitoring Programme Post Establishment Soil Plot Report

PKC undertook an investigation into the long term impacts of lead emissions from the smelting and refining operations on soil quality with the Port Kembla area. The investigation included establishment of 12 soil monitoring plots of imported virgin excavated natural material (VENM) soil of known chemical composition that was capped with turf. This report outlines the initial placement of the soil plots (one of which is situated within the site) and the initial baseline analysis of the soil. The results of subsequent sampling (if conducted) were not able to be located in PKC's archives.

2.6.3 Graham Brooks and Associates (February 2002), Heritage Assessment, Port Kembla Public School

Graham Brooks and Associates prepared a heritage assessment for PKC prior to their purchase of the site. The assessment outlined the historical context of the former Port Kembla Primary School and provided an assessment of heritage significance of the site and buildings that were present on the site. The assessment identified that the first school building was constructed in 1916 (after the Electrolytic Refining and Smelting (ER&S) company began operations in Port Kembla in 1907 (Wollongong Council Website)). An extension to the northern portion of this was indicated to have occurred in 1931. Construction of the former infants school building being opened in 1953.





A description is provided of the 1916 building as being "covered with an asbestos slate roof" and two sheds that existed along the Electrolytic Street and Reservoir Street boundaries are described as having corrugated asbestos roofing.

2.6.4 Port Kembla Copper (July 2002), Internal Memorandum, Old Port Kembla Primary School Soil Assessment

PKC completed a soil assessment at the site in June 2002, with samples collected from six areas of the site. Soil samples were collected from 0-50 mm and 100-150 mm below ground level at five locations within each of the six areas (total of 60 samples). The soil samples were analysed for arsenic, cadmium, chromium, copper, nickel, lead and zinc.

The results of the soil analyses are summarised as follows:

- Arsenic concentrations were less than the site adopted investigation levels for arsenic including the NEPM¹ HIL²-A, HIL-D, HIL- E and HIL-F. Concentrations of arsenic in four soil samples exceeded the NEPC (1999) arsenic EIL³;
- Cadmium concentrations were less than the site adopted investigation levels for cadmium including the HIL-A, HIL-D, HIL- E and HIL-F. Concentrations of cadmium in nine soil samples exceeded the NEPC (1999) cadmium EIL;
- Chromium concentrations were less than the site adopted investigation levels for chromium including the HIL-A, HIL-D, HIL-E and HIL-F and EIL;
- Nickel concentrations were less than the site adopted investigation levels for nickel including the HIL-A, HIL-D, HIL- E and HIL-F and EIL;
- Zinc concentrations were less than the site adopted investigation levels for zinc including the HIL-A, HIL-D, HIL-E and HIL-F. Concentrations of zinc in 18 soil samples exceeded the NEPC (1999) zinc EIL;
- Copper:
 - 17 soil concentrations exceeding HIL-A,
 - One soil concentration exceeding HIL-D,
 - Five soil concentrations exceeding HIL-E,
 - No soil concentrations exceeding HIL-F, and
 - 55 soil concentrations exceeding EIL.
- Lead:
 - 10 soil concentrations exceeding HIL-A,
 - No soil concentrations exceeding HIL-D,
 - Two soil concentrations exceeding HIL-E,
 - No soil concentrations exceeding HIL-F, and
 - Two soil concentrations exceeding EIL.

2.6.5 Zweep & Connolly (2002), Valuation and Acquisition Report on Commercial Development Property at Military Road, Port Kembla, 2505

Zweep & Connolly prepared a valuation report for the site in 2002. The report identified potential impacts at the site related to filling and fallout from the adjacent PKC copper smelter.



¹ NEPM classification as per previous NEPM (NEPC, 1999)

² HIL - Health Investigation Level

³ EIL - Ecological Investigation Level



2.6.6 URS (February 2006), Soil and Groundwater Investigation, Port Kembla Copper Smelter Facility, Port Kembla, NSW

URS was engaged by PKC to undertake a soil and groundwater investigation of the PKC smelter and refinery site located to the north. These works were commissioned in response to the smelter and refinery site being declared as presenting a potential significant risk of harm by the NSW EPA⁴ on 13 February 2004. The "chemicals of interest" identified in the declaration were arsenic, cadmium copper lead manganese sulfate and zinc and groundwater acidity.

Two monitoring wells (D1 and D4) were installed within the former Port Kembla Primary School (refer to **Figure 2**) as part of the URS investigation. These wells were originally installed to assess (background) groundwater quality up gradient of the PKC smelter and refinery.

Soil samples collected during installation of the two monitoring wells at the site (D1 (1-1.5m and 4.2-8m) and D4 (1.5-2m and 5.4-8m)) both contained concentrations of copper greater than the site adopted EIL, and sample D4 5.4-8 contained copper at a concentration in excess of the site adopted HIL-A copper concentrations, but was less than the HIL- D, HIL-E and HIL-F copper concentrations. The concentrations of other metals in the samples collected from D1 and D4 were less than the respective adopted HIL and EIL criteria.

Groundwater sampled from monitoring well D4 did not contain concentrations of the "chemicals of interest" greater than the respective ANZECC/AMCANZ (2000) marine 95% trigger values, with the exception of copper (0.01 mg/L) and zinc (0.024 mg/L). Well D1 was dry and not able to be sampled.

2.6.7 URS (November 2007), Groundwater Monitoring Port Kembla Copper, May 2007 Round

URS was engaged by PKC to conduct a round of groundwater monitoring at all accessible monitoring wells located on and surrounding the PKC smelter and refinery. The chemicals of potential concern (COPC) in groundwater were identified as arsenic, cadmium, copper, lead, manganese, nickel, and zinc.

Groundwater samples were collected from on-site monitoring wells D1 and D4 during this round of monitoring. The concentrations of the COPC were less than the respective ANZECC/AMCANZ (2000) marine 95% trigger values, with the exception of the following:

- Monitoring well D1 copper (0.03 mg/L) and zinc (0.032 mg/L)
- Monitoring well D4 copper (0.117 mg/L), nickel (0.09 mg/L) and zinc (0.078 mg/L).

2.6.8 Golder (November 2012), Phase 1 Environmental Site Assessment – Former Port Kembla Primary School

Golder was retained by PKC to conduct a Phase I ESA of the former Port Kembla Primary School (Golder, November 2012). The Phase 1 ESA included a review of historical aerial photographs, certificates of title, local topography, geology and hydrogeology, local council, EPA and Dangerous Goods records and walkover of the site and surrounding properties. On the basis of the information gathered during this investigation, Golder concluded impacted soils previously reported at the Site (refer to above sections) may be associated with the following historical activities:

- On Site filling of land, use of asbestos materials and possible use of lead paint.
- Off Site fallout from neighbouring industrial sites.

Golder (November 2012) recommended an intrusive investigation to:

Assess the nature and extent of potential impacts to soil and groundwater under the site

⁴ At the time of the declaration the NSW EPA was also known as the NSW Department of Environment and Conservation (DEC), but the NSW EPA was still the regulatory body under the *CLM Act 1997*.





- Develop management/remedial measures (if required) to make the land suitable for its intended future land use
- Assess whether a notification should be made to the NSW EPA of the presence of contamination at the Site in accordance with the Guidelines on the Duty to Report Contamination under the Contaminated Land Management (CLM) Act 1997.

2.7 Site Areas and Chemicals of Potential Concern

Table 3 below presents a summary of the site areas of potential concern and respective chemicals of potential concern (COPC) as presented in the Phase 1 ESA (Golder, 2012).

Key Areas of Interest	Chemicals of Potential Concern	
On-Site		
Areas filled with slag and CWR (predominantly northern and western portions, but may be under large areas of the site)	Metals, combustible materials and ammonia	
Suspected asbestos containing materials comprising cement fragments observed on the concrete hard stand, south of the site building (since demolished)	Asbestos	
Surficial soil impacts from historical fallout of airborne deposits from nearby industrial activities	Metals	
Lead paint residue - in soil surrounding (demolished and remaining buildings)	Lead	
Mounded/stockpiled soil of unknown composition	Unknown	
Areas of demolished buildings/demolition works	Asbestos and lead	
Seepage water in northern portion of site near Electrolytic Street	Metals and ammonia	
Septic tank	Nutrients, metals, organic compounds	
Off-Site		
Petrol Station on Church Street	TPH ⁵ , BTEX ⁶ , PAH ⁷ and lead	
Former quarry 200 m east of the site	Unknown	
Port Kembla Copper	Metals ⁸	

Table 3: Areas and Chemicals of Potential Concern

It is noted that since the site is located on the crest of a hill and forms a local high point, contaminants associated with surrounding properties (ie off site locations identified in Table 3, above) are considered unlikely to impact upon soil, groundwater or surface water quality at the site.



 $^{^{\}rm 5}$ Petroleum Hydrocarbons measured as Total Petroleum Hydrocarbons (TPH)

⁶ BTEX measured as Benzene, Toluene, Ethylbenzene, Total Xylenes (BTEX)

⁷ PAH measured as Polynuclear Aromatic Hydrocarbons (PAH)

⁸ Metals: arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium & zinc



3.0 FIELD INVESTIGATIONS

3.1 **Potential Contamination Sources**

Based on the results of the Phase 1 ESA (Golder, November 2012), the on-site areas of potential concern (refer to Section 2.7) were targeted for sampling and included the following:

- Areas filled with slag and CWR, predominantly northern and western portions of the site.
- Suspected asbestos containing cement fragments (observed on concrete hard stand south of former building).
- Surficial soil impacts from historical fallout of airborne deposits from nearby industrial activities.
- Lead containing paint residues in soils surrounding demolished and remaining buildings.
- Mounded/stockpiled soil of unknown composition.
- Areas of demolished buildings/demolition works (main building).
- Seepage water in northern portion of site near Electrolytic Street.
- Septic tank.

3.2 Sampling Plan and Methodology

3.2.1 Soil Sampling

The soil investigation program completed as part of the DSI is outlined below in **Table 4**. Test pits, off site hand augers and bore holes locations are shown in **Figure 2**.

Activity	Details		
Number of Sample Investigation Points	30 sampling points on site were investigated including 24 test pits and 6 bore holes. The number of sample locations is consistent with those recommended in the Sampling Design Guidelines (NSW EPA, 1995).		
Test Pitting (First Stage of Works)	A total of 24 test pit locations were excavated using an excavator during 25 - 27 June 2013. The test pits continued to a minimum of 0.3 m into the natural soil profile, with the exception of TP16 (which was terminated due to the presence of asbestos fill). The locations and elevations of the test pits were recorded using a Global Position System (GPS).		
Off-site Hand Auger (First Stage of Works)	Two background soil samples were collected using a hand auger on 27 June 2013 at nearby vacant residential lots (OL1 and OL2). The depths of these bore holes was 0.5mbgl and 0.7 mbgl, respectively.		
Soil Bores (Second Stage of Works)	Six bore holes were drilled on site using a Geoprobe rig on 9 and 10 October 2013. All bore holes were cleared using hand auger to a depth of 0.6 mbgl and drilled to a minimum of 1.1 m into the natural soil profile. The locations and elevations of the soil bores were recorded using a GPS.		
Soil Bores Drilled and Target Depth	The six bore holes were advanced to maximum depth of 2.6 mbgl and generally terminated on weathered bedrock. Groundwater was not evident in the soil bores, with the exception of BH4 (where water seepage was observed at 0.5 mbgl). Bore hole BH4 was converted to shallow monitoring well (MW04), whilst monitoring wells were also installed (into boreholes) next to the following test pits, all of which		

Table 4: Soil Sampling Scope





Activity	Details		
	had evidence of water seepage when excavated during the first stage of field works: TP 20 (MW1), TP26 (MW2) and TP27 (MW3).		
	Bore holes were drilled using a truck mounted drill rig with solid stem augers. Push tubes were used to collect the soil samples		
Soil Sampling (Tests pits, hand augers (off-site) and bore holes) Soil samples were collected at the surface (directly below ground sur and at approximately 0.5 m intervals thereafter and/or where evidence contamination were noted through field observations. Based upon fiel observations and PID screening, up to two samples per location were for laboratory analysis. This included samples of natural soils underly soil profile. Soil samples were collected from soil profiles suspected asbestos containing materials, including TP3, TP7, TP10, TP11, TP1 TP15, TP16A, TP16B and TP20.			
Decontamination	Soil sampling equipment was decontaminated between each sampling event using a contaminant-free detergent (Decon 90), followed by a rinse by potable water between each location. All drilling equipment was decontaminated prior to and on completion of each sampling location. The drilling rig was also decontaminated on completion of the works.		
Field Records	All bore holes were logged in accordance with AS1726-1993 and the United Soil Classification System (USCS)		
	Odours were recorded by the Golder site supervisor during the collection of soil samples. The sample descriptions, sample numbers, results of all field measurements, were recorded in the field logs and are attached as Appendix C .		
Sample Preservation	Samples were placed in tightly packed laboratory supplied containers to minimise headspace. Soil samples were clearly labelled with unique sample identification numbers and stored in a chilled cooler box prior to dispatch under chain-of-custody (COC) procedures to NATA accredited laboratories (ALS Laboratory Group (ALS) for primary samples and quality control samples and Enviro Lab (ELS) for inter-duplicate samples), accredited for the selected analysis.		
Disposal of Soil Cuttings	Sampling locations were backfilled with the soil cuttings, where possible. The soil cuttings from drilling was, however, stored in sealed and appropriately labelled buckets and disposed of by PKC (in accordance with NSW EPA requirements).		
Sample Analysis	Samples were tracked in the field and laboratory using COCs. Samples were analysed for the following analytes by ALS:		
	Metals (10 metals): Up to 2 primary samples per location		
	TRH / BTEX / PAH/ Phenols / OCPs ⁹ : 1 primary sample per location		
	Ammonia as N ¹⁰ : 1 primary sample per location		
	Total N +TKN+NO2+NO3+NH3+Total Phosphorus ¹¹ (2 locations around the septic tank area): Up to 2 primary samples per location		
	Asbestos (concrete hard stand south of building and demolished building areas		

⁹ OCPs measured as Organochlorine Pesticides (OCPs)

^{10,11} Nutrients





Activity	Details
	and demolition fill): 10 primary samples collected, which were greater than the 8 proposed in the Golder (2013) SAQP.
	15 samples of natural and fill materials collected from the site were analysed for pH, cation exchange capacity and particle size distribution for purpose of establishing relevant site EILs.
	The samples collected from off-site locations were analysed for metals (10 metals).
Quality Control (QC) samples	Three field duplicates (analysed by ALS Laboratory) and three field triplicates (analysed by ELS Laboratory) were collected as part of the soil sampling program. These samples were analysed for the same analytes as the primary samples.
	Three rinsate blanks and three trip blanks were collected over a 3 day sampling program. The rinsate and trip blanks were analysed in accordance with recommendation provided in Golder (2013) SAQP.

3.2.2 Groundwater Sampling

The groundwater investigation program completed as part of the DSI is outlined below in **Table 5**. Sample locations are shown in **Figure 2**.

Table 5.	Groundwater	Sampling	Scone
Table 5.	Groundwater	Sampling	Scope

Activity	Details
Well Construction	Four monitoring wells were constructed using 50 mm diameter Class 18 uPVC with machine slotted (0.4 mm) screen surrounded by a gravel pack across the targeted groundwater table. The gravel pack (1-2 mm graded washed sand) was placed from the base of the bore hole to 0.1 m above the well screen. Bentonite pellets placed on the top of the sand filter pack (approximately 0.2 m thick). The bentonite was then hydrated to promote sealing and topped with concrete. Wells were fitted with lockable caps and a steel gatic cover finished at ground level.
Well Development	Upon completion, each was proposed to be developed by air lifting, but all four wells were found to be dry.
Well Gauging, Purging and Sampling	Groundwater sampling was proposed one week after well development, using dedicated sampling equipment to avoid cross-contamination. However, as no water was present in shallow monitoring wells MW1 – MW4, sampling of these wells was not possible. Existing deep wells (D1 and D4) were sampled during July 2013.
Decontamination	Decontamination was not required for groundwater purge and sample equipment as all equipment is dedicated. The oil / water interface probe was decontaminated for the two deep wells sampled using Decon 90 solution and rinse by potable and deionised water between each location.
Sample Preservation	Samples were placed in laboratory supplied bottles containing the appropriate preservatives. Samples were stored in an ice chilled cooler-box whilst on site and in transit to the laboratory.
	Samples collected for metal analysis were filtered in the field, using 0.45 μm filters and preserved with nitric acid.



Activity	Details
Disposal of Purged Groundwater	Purge water and decontamination fluids were drummed on-site in 205 L drums and disposed of by PKC in accordance with NSW EPA requirements.
Well Survey	The newly installed wells were surveyed to metres Australian Height Datum (mAHD) and the easting and northing coordinates locations to Australian Map Grid (AMG). The survey was commissioned by PKC.
Sample Analysis	Samples were tracked in the field and laboratory using COCs. Samples were analysed for the following analytes:
	Metals (10 metals): two primary samples (D1 and D4)
	TRH / BTEX / PAH/ Phenols / OCPs: two primary samples (D1 and D4)
	Ammonia as N, Total N +TKN+NO2+NO3+NH3+Total Phosphorus: two primary samples (D1 and D4)
Quality Control (QC) Samples	One field duplicate and one field triplicate sample were planned to be collected for the groundwater sampling program. QC samples were proposed to be analysed for the same analytes as the primary samples.
	In addition one rinsate blank and one trip blank were planned to be collected (assuming a one day sampling program). It was proposed that the rinsate blank would be analysed for metals, TRH / BTEX / PAH/ phenols / OCPs and the trip blank would be analysed for TRH (C_6 - C_{10} range) and BTEXN.
	As only two wells contained groundwater the QC program proposed in the Golder (2013) SAQP was reduced and only a rinsate blank was collected.

Monitoring locations were selected according to the following rationale:

Table 6: Monitoring Well Location Selection Rationale.

Area/Source	Proposed Investigation Strategy	Monitoring Well Location
Filled ground	Based on observations of water seepage during	MW1
	the preceding soil sampling program and site	MW2
	walkover, three monitoring wells were installed	MW3
	near the site boundaries.	
Septic tank - potential	One groundwater monitoring well was located in	MW4 (BH04)
for leakage or overflow	the vicinity of the former septic tank in a	
from septic tank.	borehole in which water seepage was observed.	

3.3 Analytical Program

3.3.1 Soil

Soil samples were analysed for site identified COPC. The soil analytical program is summarised in **Table 7** with the soil assessment criteria discussed in Section 4.2





Table 7: Soil Analytical Program

Analyte		Number of A	nalyses	
	Primary	Duplicate	Triplicate	Total
Heavy metals (As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn) ¹²	64	3	3	70
Benzene, toluene, ethylbenzene and xylene (BTEX)	31	3	3	37
Total Petroleum Hydrocarbon (TPH) and Total Recoverable Hydrocarbons (TRH)	31	3	3	37
Phenols	31	3	3	37
Polycyclic aromatic hydrocarbons (PAHs)	31	3	3	37
Organochlorine pesticides (OCPs)	31	3	3	37
Ammonia as N	31	3	3	37
Total N +TKN+NO2+NO3+NH3+Total Phosphorus	3	- ¹³	-	3
Asbestos (ID in bulk samples)	10	-	-	10
Asbestos (Fibres in soil)	7	-	-	7
pH, cation exchange capacity and particle size distribution	15	-	-	15

Consistent with the SAQP (Golder, 2013), two soil samples per sampling location were analysed for metals, and a minimum one sample per location for TPH, TRH, BTEXN, PAH, OCPs. The soil samples selected for TPH and BTEX analysis were all within the top 1 m in the sandy fill layer.

3.3.2 Groundwater

Groundwater samples were analysed for the COPC. The groundwater analytical program is summarised in **Table 8** with the groundwater assessment criteria discussed in Section 4.4.

Table 8: Groundwater Analysis Programme

Analyte	Number of Analyses			
	Primary	Duplicate ¹⁴	Total	
Heavy metals (As, Cd, Cr, Cu, Pb, Mn, Hg, Ni, Se, Zn)	2	-	2	
Polycyclic aromatic hydrocarbons (PAHs)	2	-	2	
Benzene, toluene, ethylbenzene and xylene (BTEX)	2	-	2	
Total Petroleum Hydrocarbon (TPH) and Total Recoverable Hydrocarbons (TRH)	2	-	2	
Organochlorine pesticides (OCPs)	2	-	2	
Phenolic Compounds	2	-	2	
Total N +TKN+NO2+NO3+NH3+Total Phosphorus	2	-	2	

4.0 ASSESSMENT CRITERIA

4.1 General

Recently, the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) was amended (NEPC, May 2013). The amended ASC NEPM includes updated risk-based Health Investigation Levels (HIL) for selected organic and inorganic chemicals in soils. It is also incorporates the Health Screening Levels (HSLs) for petroleum hydrocarbons in soil, soil vapour and groundwater as well as Ecological Screening Levels (ESLs) for petroleum hydrocarbons in soil and Ecological Investigation Levels (EILs) for selected inorganic chemicals in soil.

The guidelines used for the assessment of environmental data obtained during the DSI are described in the following sections.

¹² As: arsenic, Cd: cadmium, Cr: chromium, Cu: copper, Pb: lead, Mn: manganese, Hg: mercury, Ni: nickel, Se: selenium and Zn: zinc. ¹³ - means not analysed

¹⁴ As only two wells contained water the QC program proposed in the Golder (2013) SAQP was reduced and no samples were collected.



4.2 Soil Investigation Levels

4.2.1 Canadian Guideline for TPH fractions.

The ASC NEPM (NEPC, 2013) Health Screening Levels (HSLs) for petroleum contaminants are based on assumed sources of impact being consistent with typical Australian fuels. These are not considered appropriate to apply to the analytical data at this site where atypical petroleum sources may be present (not drum storage or petrol sources on site). The Canadian Council of Ministers of the Environment (CCME) (2008a) presents screening values for selected petroleum contaminants which area considered appropriate to assess impacts from atypical petroleum sources. The CCME (2008a) provides Tier 1 risk based screening levels for TPH in surface soils that assess both human health and environmental concerns for a variety of land uses. The derivation of the CCME Tier 1 guidelines is broadly consistent with the risk based methodology of the ASC NEPM HSLs including:

- The TPH fractions and toxicological reference concentrations to assess the fractions are based on the TPH Criteria Working Group (TPHCWG) approach using aromatic and sub aliphatic sub fractions (Edwards et al 1997). CCME (2008a) state that the four broad physio chemical fractions used to derive the guidelines (F1: C₆-C₁₀, F2: >C₁₀ to C₁₆, F3: >C₁₆ to C₃₄ and F4: C₃₄₊) address the diversity of TPH impact sources, including various crudes and product admixtures.
- CCME (2008a) recommends that BTEX compounds be subtracted from the F1 fraction in applying the Tier 1 screening values.
- CCME (2008a) recommends that if determinations of target PAH have been made these should be extracted from the appropriate petroleum hydrocarbon fraction (i.e. F2 for naphthalene).
- The land use scenarios include a 'Commercial' category: where the primary activity is commercial (e.g., shopping mall) and there is free access to all members of the public, including children. The use may include, for example, commercial day-care centres. It does not include operations where food is grown. While this more conservative than the HIL/ HSL- D which does not include provision of sensitive uses such as childcare centers. As such this is an appropriate and conservative scenario.
- The land use scenario include a Residential/Parkland category: where the primary activity is residential or recreational activity. The ecologically-based approach assumes parkland is used as a buffer between areas of residency. This is an appropriate and conservative scenario.

The Tier 1 screening levels are based on the most conservative pathway whether it is human health, environment, protection of potable groundwater resources or management limits. The Technical Supplement to these guidelines (CCME 2008b) provides the risk-based screening levels for each pathway, including direct contact (ingestion and dermal contact) and vapour inhalation (indoor) for coarse and fine soil. These two specific pathways (direct contact and vapour inhalation) for coarse grained soils have been selected as relevant as the ecological pathways are assessed through the application of the ESLs provided in the ASC NEPM (NEPC, 2013) and the groundwater on site is not a potable resource.

The soil samples selected for TPH and BTEX analysis were all collected within the surface 1 m in the sandy fill layer and therefore the soil type sand has been selected as the most appropriate.

4.2.2 Health Investigation Levels (HILs)

Health investigation levels (HILs) are scientifically based, generic assessment criteria designed to be used in the first stage (Tier 1 screening assessment) of the assessment of potential risks to human health from chronic exposure to contaminants. The HILs have been derived for a range of metals and organic substances and are generic to all soil types. The HILs are based on four land use settings including HIL-A (residential with accessible soil), HIL-B (residential with minimal soil access), HIL-C (recreational, public open space) and HIL-D (commercial / industrial).





PKC understand the site is proposed to be developed for mixed business and medium density residential land uses. Accordingly, HILs for the following land use categories have been applied to assessing the soil sample results:

- HIL B (residential with minimal opportunities for soil access, includes high-rise buildings and apartments).
- HIL D (commercial/industrial, includes shops, factories, offices and industrial sites).

4.2.3 Asbestos Health Screening Levels

The amended ASC NEPM (NEPC, 2013) includes Health Screening Levels (HSLs) for asbestos in soil, which are based on scenario-specific likely exposure levels, and adopted from Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (WA DoH, 2009).

HSLs B and D (for high density residential land use and commercial/industrial land use, respectively) are considered appropriate.

4.2.4 Ecological Based Guidelines

4.2.4.1 General

The amended ASC NEPM (NEPC, 2013) includes updated risk-based Ecological Investigation Levels (EILs) for selected organic and inorganic chemicals in soils. It is also incorporates the Ecological Screening Levels (ESLs) for petroleum hydrocarbons in soil.

There are three land use scenarios considered for the EILs/ESLs: areas of ecological significance; urban, residential and public open space; and commercial/ industrial. ESL and EILs have been adopted for the following exposure scenarios:

- The urban residential and public open space exposure scenario. This is equivalent to the combined exposure scenarios of residential A & B, and is therefore considered relevant for the site; and
- The commercial /industrial scenario.

EILs apply principally to the top 2 m of soil and are dependent on various other site specific soil physiochemical properties including grain size, pH and cation exchange capacity.

4.2.4.2 Ecological Screening Levels (ESLs)

The amended ASC NEPM (NEPC, 2013) includes ESLs for selected petroleum hydrocarbon compounds and total petroleum hydrocarbon fractions for assessment of risk to terrestrial ecosystems. ESLs are provided for several land use scenarios and soil types. ESLs are relevant for the root zone in soil which corresponds to the top 2 m of the finished level of a site. As identified above, the ESL for urban residential and for commercial/ industrial land use are applied.

ESLs are provided for coarse and fine soils. Two soil types have been identified on site - sandy fill and natural clay. As all soil samples analysed for TRH and BTEXN were collected from the sandy fill layer, the coarse soil values were applied.

The ESLs selected for the site are provided in the Table 8 (attached) and summarised in Table 11 below.

4.2.4.3 Ecological Investigation Levels (EILs)

EILs for urban residential and for commercial/ industrial land uses have been applied for the DSI. Under the amended ASC NEPM (NEPC, 2013), a method is provided for the calculation of site specific EILs for zinc, copper, chromium (III) and nickel. Generic EILs are also available for lead, arsenic, and naphthalene. Site specific EILs are calculated using the following formula:





Where:

ACL = Added Contaminant Limit. The ACL is calculated based on soil specific properties such as pH, cation exchange capacity (CEC) and clay content.

ABC = Ambient Background Concentration, the ABC, is the naturally occurring level of the contaminant at the site. This can be measured by using the concentration of a soil sample collected at a reference site not impacted by the contaminant source. Two locations from nearby vacant residential lots (OL1 and OL2) were selected to provide the ambient back ground concentrations (ABC) (Figure 2). Four samples were collected from these locations and analysed for metals, three of the samples reported similar concentrations however one sample (OL2_0.0_0.2) had elevated concentrations of arsenic, copper, lead, manganese and zinc (refer to Table 1 in attached Tables). This sample was not considered to represent the ambient background concentrations and was not included in the EIL calculation. The average metal concentrations from the three remaining samples (OL1_0.1-0.2, OL1_0.3-0.5, OL2_0.3-0.5) were used to determine the ABC. Table 10 (below) shows the results obtained for ABC:

Contaminant	Units	Average concentration
Zinc	mg/kg	37
Copper	mg/kg	75
Chromium	mg/kg	19.33
Nickel	mg/kg	4.67

Table 9: Ambient Background Concentrations (ABC)

Site specific soil characteristics including grain size, pH, cation exchange capacity are required to calculate the ACL. EILs have been calculated separately for the two soil types (sandy fill and natural clay) identified on site. Site soil properties for EILs are summarised in **Table 10** below:

Soil Property	Units	Average value used in ACL calculation (Sand) –	Average value used in ACL calculation (Clay)
рН	pH Units	5.59	5.83
Clay in soils <2um	% (w/w)	20.50	43.57
Cation Exchange Capacity	Cmol/kg	9.78	20.83

Table 10: Soil Properties Used in ACL Calculation

The EILs calculated for the site are provided in the **Table 9** (attached) and are summarised in Table 11 below.

4.2.5 Management Limits

In addition to the HSLs and ESLs, the amended ASC NEPM (NEPC, 2013) also includes 'Management Limits' that are designed to avoid or minimise the potential effects of petroleum hydrocarbons such as:

- Formation of observable light non-aqueous phase liquids (LNAPL);
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.





The Management Limits have also been considered in the DSI. The management limits are provided for coarse and fine soils. As noted previously, however, soil samples analysed for TRH and BTEXN were collected from the site fill materials and as such only sand (coarse) values were applied.

4.3 Summary

A summary of the relevant guidelines for the site are identified in

Table 11 below:



4.3.1 **Proposed Soil Investigation Levels**

Table 11: Proposed Soil Investigation Levels (in mg/kg)

	ECOL	OGICAL INV	ESTIGATION L	IMITS	MANAGEM	ENT LIMITS	HEALTH INVESTIGATION LIMITS			IMITS
Analyte	ESL - Urban residential / coarse	ESL - Industrial / Coarse	EIL - Urban residential - coarse / fine	EIL (Industrial) coarse / fine	Manag. limits Urban Residential	Manag. limits Commercial & Industrial	HIL-B	HIL-D	CCME – Residential – Coarse	CCME – Commercial – Coarse
Benzene	50	75	-	-	-	-	-	-	-	-
Toluene	85	135	-	-	-	-	-	-	-	-
Ethylbenzene	70	165	-	-	-	-	-	-	-	-
Total xylene	105	180	-	-	-	-	-	-	-	-
Naphthalene	-	-	170 / 170	370 / 370	-	-	-	-	-	-
F1	180*	215*	-	-	700	700		-	12,000	19,000
F2	120*	170*	-	-	1,000	1,000		-	6,800	10,000
F3	300	1,700	-	-	2,500	3,500		-	15,000	23,000
F4	2800	3,300	-	-	10,000	10,000		-	21,000	RES
Arsenic	-	-	100 / 100	160 / 160	-	-	500	3,000	-	-
Cadmium	-	-			-	-	150	900	-	-
Chromium (III)	-	-	420 / 420	680 / 680	-	-	-	-	-	-
Chromium (VI)	-	-			-	-	500	3,600	-	-
Copper	-	-	205 / 355	265 / 355	-	-	30,000	240,000	-	-
Lead	-	-	1,100 / 1,800	1,100 / 1,800	-	-	1,200	1,500	-	-
Mercury	-	-	-	-	-	-	120 ¹ / 30 ²	730 ¹ / 180 ²	-	-
Nickel	-	-	175 / 275	395 / 465	-	-	1,2000	6,000	-	-
Zinc	-	-	170 / 370	170 / 370	-	-	60,000	400,000	-	-
Total PAHs	-	-	-	-	-	-	400	4,000	-	-
Benzo[a]pyrene	1.4	1.4	-	-	-	-			-	-
Carcinogenic PAHs (as B[a]P TEQ)	-	-	-	-	-	-	4	40	-	-





DSI - DETAILED SITE INVESTIGATION, FORMER PORT KEMBLA PRIMARY SCHOOL, PORT KEMBLA, NSW

	ECOL	ECOLOGICAL INVESTIGATION LIMITS MANAGEMENT LIMITS HEALTH INVESTIGATION LIMITS					IMITS			
Analyte	ESL - Urban residential / coarse	ESL - Industrial / Coarse	EIL - Urban residential - coarse / fine	EIL (Industrial) coarse / fine	Manag. limits Urban Residential	Manag. limits Commercial & Industrial	HIL-B	HIL-D	CCME – Residential – Coarse	CCME – Commercial – Coarse
Phenol	-	-	-	-	-	-	45,000	240,000	-	-
Pentachlorophenol	-	-	-	-	-	-	130	660	-	-
Aldrin + Dieldrin	-	-	-	-	-	-	10	45	-	-
Chlordane	-	-	-	-	-	-	90	530	-	-
DDT, DDD & DDE	-	-	-	-	-	-	600	3,600	-	-

Notes:

- No guideline available

¹ denotes criteria for inorganic mercury ² denotes criteria for methyl mercury

B(a)P TEQ – Benzo(a)pyrene toxicity equivalency quotient

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

TPH:

 $F1 = C_6 - C_{10}$ $F2 = >C_{10} - C_{16}$ $F3 = >C_{16} - C_{35}$ $F4 = >C_{34} - C_{40}$





4.4 Groundwater Investigation Levels

4.4.1 General

Assessment of groundwater should consider the risks posed to all potential receptors on and off the site. An evaluation of both the ecological and the human receptors and pathways of exposure is therefore required. Groundwater Investigation Levels (GILs) relevant to this investigation and adopted by the amended ASC NEPM (NEPC, 2013) include:

- Groundwater HSLs for Vapour Intrusion (NEPC, 2013);
- Australian Drinking Water Guidelines (ADWG) (National Health and Medical Research Council (NHMRC) and Natural Resource Management Ministerial Council (NRMMC) 2011); and
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality ANZECC/ARMCANZ (2000).

4.4.2 Human Health Based Assessment

The application of human health based guidelines for groundwater requires an evaluation of exposure scenarios for the different water bearing zones. It is not expected that shallow or deep groundwater under the site and surrounding residential areas would be suitable for extraction and domestic use due to:

- The perched and ephemeral nature of shallow groundwater under the site.
- The generally low yields for groundwater in the deep aquifer.

Accordingly, human exposure to groundwater is likely to only be via the following pathways:

- Incidental exposure to shallow groundwater during excavations.
- Inhalation of vapour from the shallow groundwater may also form a pathway for exposure to future site users.

The amended ASC NEPM (NEPC, 2013) provides groundwater HSLs for inhalation exposures for TPH and BTEXN. The HSLs are not, however, relevant if groundwater is at depths of less than 2 m bgl. Due to the shallow depth the HSLs cannot be applied to the perched water.

Incidental worker exposure to groundwater during site excavations may occur. For the purpose of this investigation, the groundwater data will be assessed relative to the health-based ADWG (2011) criteria with a factor of 10 applied to account for the limited ingestion potential relative to the drinking water exposure assumptions. This is generally consistent with the approach described in the National Health and Medical Research Council (NHMRC, 2008) Guidelines for Managing Risks in Recreational Water, although is likely to represent a conservative assessment of potential risks.

4.4.3 Ecological Based Assessment Criteria

In accordance with the amended ASC NEPM (NEPC, 2013), the Ecological Investigation Levels used to evaluate the groundwater analytical results have been adopted from ANZECC/ARMCANZ (2000). These guidelines provide environmental based trigger values for concentrations of organic and inorganic chemicals in freshwater and marine aquatic environments.

Due to the location of the site and potential down-gradient receptors (Port Kembla Harbour and Coomaditchy Lagoon), trigger levels for marine and freshwater aquatic ecosystems have been adopted. The 95% level of protection has been adopted. This protection level applies to ecosystems that could be classified as slightly-moderately disturbed.

4.4.4 **Proposed Groundwater Investigation Levels**

The adopted screening levels are listed below in **Table 12** (below).





DSI - DETAILED SITE INVESTIGATION, FORMER PORT KEMBLA PRIMARY SCHOOL, PORT KEMBLA, NSW

Table 12: Proposed Groundwater Investigation Levels (µg/L)

	Health Investigation Limits	Ecological Investigation Limits		
Analyte	10 x NHMRC 2011 Drinking Water	GIL (Marine Waters) – 95% protection	GIL (Marine Waters) – 95% protection	
BTEXN				
Benzene	10	700	950	
Toluene	8000	-	-	
Ethylbenzene	3000		-	
	6000	-	-	
Naphthalene	-	70	16	
Metals (mg/L)				
Arsenic*	0.1	-	0.013	
Cadmium*	0.02	0.0055	0.0002	
Chromium*	0.5	0.0044	0.001	
Copper*	20	0.0013	0.0014	
Lead*	0.1	0.0044	0.0034	
Manganese*	1	-	-	
Nickel*	0.2	0.07	0.011	
Selenium*	0.1	-	-	
Zinc*	-	0.015	0.008	
Mercury*	0.01	0.0004	0.0006	
Phenols				
Phenol	-	400	320	
2-Chlorophenol	3000	-	-	
2.4-Dichlorophenol	2000	-	-	
2.4.6-Trichlorophenol	200	-	-	
Pentachlorophenol	100	22	10	
Polycyclic Aromatic Hydrocarbon	IS			
Naphthalene	-	70	16	
Benzo[a]pyrene	0.01	-	-	
Acidity			-	
Sulfate as SO4 - Turbidimetric	5000	-		
Nutrients				
Ferrous Iron	-	0.91	-	
Nitrite as N	30	-	-	
Nitrate as N	500	-	-	
Organochlorine Pesticides (OCP)				
Heptachlor	3	-		
Endrin	-	0.008	0.02	
Endosulfan sulfate	300	0.1	0.2	
4.4`-DDT	200	-	-	
Methoxychlor	3000	-	-	
Sum of Aldrin + Dieldrin	3	-	-	
Organophosphorus Pesticides (O	PP)			
Diazinon	30	•	-	
Chiorpyritos	100	0.009	0.01	
Parathion	100	-	-	
	30	-	-	
Azinpnos ivietnyi	30	-	-	

<u>Notes</u> - No guideline available

* denotes units for metals are in mg/l





5.0 INVESTIGATION RESULTS

5.1 Subsurface Observations

The majority of the site is underlain by fill materials, with only locations BH1, BH6, TP29 and TP30 (southern site boundary) and TP8 (eastern boundary) intersecting natural soils from the ground surface. The fill was typically less than 0.5 m thick, but was reported to be up to 2 m thick along the southern, north western and northern boundaries of the site (TP5, TP13, TP16, TP20, TP26 and TP27). The fill generally consisted of brown-black, silty clay and sandy clay. Coal washery reject (CWR) fill material was reported at 10 investigation locations (TP03, TP06, TP09, TP11, TP12, TP15, TP16A, TP27, BH02 and BH04), which are predominantly located in the southern portion of the site. Possible slag material was also reported at BH04, whilst fragments of concrete, glass, brick, ceramic pipe, timber and tiles were observed in near surface fill at a small number of locations.

Suspected asbestos containing materials (ACM) were observed in test pits adjoining the Reservoir Street site boundary (locations: TP12A, TP16A and TP16B) located in the northeast of the site, and in the central-southern portion of the site at TP 10, TP11 and TP15. Samples were taken for laboratory confirmation. Test pit locations TP12A, TP16A and TP16B were abandoned due to the presence of suspected ACM.

The natural soil layer underlying the fill (where present) consisted of gravelly silty clay and clay. Soils overlie bedrock which was typically intersected at less than 1 mbgl, but is greater deeper in the central-southern parts of the site (eg at BH1 – BH6, TP14 and TP25) and along Electrolytic Street (at TP26 and TP28).

Fill and natural soils were typically dry to slightly moist, although wet ground and seepage of water was identified at TP20, TP26, TP27 and BH4.

Spoil containing asbestos was disposed of by PKC.

Photographs of test pits and bore holes/well installations are presented in **Appendix B**. Test pit, offsite hand auger and bore hole logs are included in **Appendix C**.

5.2 Field Screening

5.2.1 Field Screening for Volatile Organic Compounds

Soil samples collected during test pitting and drilling were field head space screened for the presence of Volatile Organic Compounds (VOCs) using a field portable photoionisation detector (PID). The PID calibration certificates are provided in **Appendix F**.

Results of PID field headspace screening of soil samples is provided in the bore hole logs located in **Appendix C**. PID readings indicated no evidence of VOC contamination in the soils sampled. All field headspace readings were 0.0 ppm.

5.3 Soil Analytical Results

Soil analytical results are presented in the summary **Tables 1** to **9** attached in **Appendix D**. Laboratory certificates and chain of custody documentation are provided in **Appendix E**.

5.3.1 Adopted Health Investigation Levels

Metals

Total metal concentrations were detected below the site adopted HILs for all soil samples submitted for analysis. A comparison of metals analytical soil results against site adopted HILs is presented in **Table 1** (**Appendix D**).

TRH

Results for TRH F1 (C_6 - C_9), F2 (> C_{10} – C_{16}), F3 (> C_{16} – C_{34}), and F4 (> C_{34} – C_{40}) petroleum hydrocarbons were below the limit of detection all the soil samples analysed with the exception of samples collected from test pits TP25 and TP28, located near to the Electrolytic Street site boundary. These results are summarised below:





■ F3 (>C₁₆ - C₃₄): Samples TP25_0.0_0.1 (700 mg/kg) and TP28_0.0_0.1 (1,330 mg/kg).

In the absence of Australian health based investigation levels, the reported TRH detections at locations TP25_0.0_0.1 and TP28_0.0_0.1 were compared with the following Canadian investigation levels for petroleum hydrocarbons in coarse-grained surface soils for both the assessment of direct contact/ingestion and vapour inhalation exposure pathways for commercial and residential land use exposure scenarios.

Exposure Pathway	Land Use	TRH (C ₆ -C ₁₀)	TRH (>C ₁₀ -C ₁₆)	TRH (>C ₁₆ -C ₃₄)	TRH (>C ₃₄)
Direct Contact (Ingestion and Dermal Contact)	Residential	12,000 mg/kg	6,800 mg/kg	15,000 mg/kg	21,000
Direct Contact (Ingestion and Dermal Contact)	Commercial	19,000 mg/kg	10,000 mg/kg	23,000 mg/kg	RES
Vapour Inhalation (indoor)	Residential	40 mg/kg	190 mg/kg	N/A	N/A
Vapour Inhalation (indoor)	Commercial	320 mg/kg	1,700 mg/kg	N/A	N/A

Table 13: Canadian Investigation Levels for Petroleum Hydrocarbons in Coarse Grained Soils

Source: CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons (PHC) in Soil: Scientific Rationale Supporting Technical Document, dated January 2008.

N/A - not applicable

RES - Residual petroleum hydrocarbon formation. Calculated value exceeds 30,000 mg/kg and solubility limit for petroleum hydrocarbon fraction.

There were no reported exceedances of the adopted Canadian investigation levels provided in **Table 13**. A comparison of TRH (and BTEXN) analytical soil results with the adopted health screening levels is presented in **Table 2** (**Appendix D**).

BTEXN

Results for BTEXN were below the limit of detection for all the soil samples analysed with the exception of the sample collected from test pit TP28_0.0_0.1 (toluene 0.6 mg/kg and meta & para-xylene 0.5 mg/kg). These concentrations are at or only slightly greater than the limits of reporting. No health criteria are provided in the Canadian investigation levels for toluene and xylene.

PAH

Low concentrations (close to detect concentrations) of PAHs were detected for soil samples collected at sample locations TP10_0.0_0.1, TP25_0.0_0.1, TP28_0.0_0.1 and TP30_0.0_0.1. All PAH concentrations were well below the criteria.

A comparison of PAH soil analytical results with the adopted health-based investigation levels is presented in **Table 3** (**Appendix D**).

OCPs and Phenols

Results for OCPs and phenols were below the limit of detection for all the soil samples analysed.

A comparison of OCPs and phenols soil analytical results with adopted health-based investigation levels is presented in **Table 3** (Appendix D).

Nutrients

Results for nutrients were below the detection limit with the exception of Ammonia (1 sample), Total Kjeldahl Nitrogen (TKN) as N (5 samples), Total Nitrogen as N (5 samples) and Total Phosphorus as P (5 samples). No investigation levels were identified for nutrients. However, the following is noted:





- The concentrations of phosphorous are less than ecological investigations level of 2,000 mg/kg provided in the rescinded version of the NEPM (NEPC, 1999).
- The nitrogen in the soils is all in the form of TKN, an organic essentially insoluble form of nitrogen. The samples analysed for nitrogen were collected from (apparently) reworked natural soils at TP20 and TP26, and filled ground (including CWR and slag) near to a suspected for septic tank at BH4. The highest concentrations of TKN were reported in the reworked natural soils, and not in filled ground adjacent to a potential source of nitrogen (septic tank). On this basis, the concentrations of TKN are considered likely to represent natural conditions.

The nutrient soil analytical results are presented in **Table 5** (Appendix D).

5.3.2 Adopted Ecological Investigation Levels

Metals

Site specific EILs were calculated for the two types of soil found on site: fill/sand and natural/clay.

Fill/ Sand: In soil samples collected from the fill/ sand soil layer total metal concentrations were detected below the site adopted Ecological Investigation Levels (EILs) for all samples submitted for analysis, with the exception of arsenic (3 samples), copper (22 samples), and zinc (7 samples). These COPC were detected at concentrations above the respective, site adopted, EILs for either urban residential or commercial / industrial land use scenarios. These exceedances are summarised below:

- <u>Arsenic</u>: three soil samples had concentrations of arsenic above the EIL for commercial/industrial (160 mg/kg) and urban residential (100 mg/kg) land use, ranging from 166 mg/kg (TP20_0.5_0.6) to 209 mg/kg (TP25_0.9_1.0);
- <u>Copper</u>: twenty-one soil samples had concentrations of copper above the EIL for commercial/industrial land use (265 mg/kg) and urban residential land use (205 mg/kg), ranging from 287 mg/kg (TP4_0.0_0.1) to 2,740 mg/kg (TP6_0.2_0.3). One sample (262 mg/kg at TP27_0.0_0.1) also had a concentration of copper above the EIL for urban residential (205 mg/kg) land use, but below the commercial/industrial EIL; and
- Zinc: three soil samples had concentrations of zinc above the EIL for urban residential land use (310 mg/kg) and commercial/industrial (455 mg/kg) land use, ranging from 500 mg/kg (TP6_0.2_0.3) to 529 mg/kg (TP8_0.0_0.1). Four samples also had concentrations of zinc above the EIL for urban residential (310 mg/kg) land use, but below the commercial/industrial EIL. Zinc concentrations for these four samples ranged from 369 mg/kg (TP16A_0.2_0.3) to 415 mg/kg (TP30_0.0_0.1).

<u>Natural/Clay:</u> In soil samples collected from the natural/clay layer total metal analysis were detected below the site adopted EILs for all samples, with the exception of copper (3 samples) and zinc (2 samples). These exceedances are summarised below:

- <u>Copper</u>: soil concentrations detected above the EIL for commercial/industrial (355 mg/kg) and the EIL for urban residential (355 mg/kg) land use ranged from 436 mg/kg (TP27_0.0_0.1) to 717 mg/kg (TP27_0.5_0.6); and
- <u>Zinc</u>: soil concentrations detected above the EIL for commercial/industrial (435 mg/kg) and urban residential (655 mg/kg) land use, ranged from 798 mg/kg (TP27_0.5_0.6) to 1150 mg/kg (TP26_1.5_1.6).

A comparison of the metals analytical soil results with the adopted EILs is presented in **Table 9** (**Appendix D**).

TRH

Results for TRH F1 (C_6 - C_9), F2 (> C_{10} – C_{16}), F3 (> C_{16} – C_{34}), and F4 (> C_{34} – C_{40}) petroleum hydrocarbons were below the adopted ESLs for all the soil samples analysed with the exception of samples collected from





test pits TP25 and TP28, located near to the Electrolytic Street site boundary. These results are summarised below:

F3 (>C₁₆ - C₃₄): Samples TP25_0.0_0.1 (700 mg/kg) and TP28_0.0_0.1 (1,330 mg/kg) were above the ESL for urban residential land use of 300 mg/kg, but below the ESL for industrial/commercial land use of 1,700 mg/kg.

A comparison of TRH analytical soil results with the adopted ESLs is presented in **Table 8** (Appendix D).

BTEXN

Results for BTEXN were below the ESL for all the soil samples analysed. Sample TP28_0.0_0.1 contained detect concentrations of toluene (0.6 mg/kg) and meta-para xylenes (0.5 mg/kg), which were below the respective ESLs for both urban residential and industrial/commercial land use exposure scenarios for both COPC.

A comparison of BTEXN analytical soil results with the adopted ESLs is presented in Table 8 (Appendix D).

5.3.3 Adopted Management Investigation Levels

TRH

Results for TRH F1 (C_6 - C_9), F2 (> C_{10} – C_{16}), F3 (> C_{16} – C_{34}), and F4 (> C_{34} – C_{40}) petroleum hydrocarbons were below the adopted Management Limits (MLs) for all the soil samples analysed.

A comparison of TRH analytical soil results against adopted management limits is presented in **Table 8** (**Appendix D**).

5.3.4 Adopted Asbestos Investigation Levels

Asbestos

Suspected asbestos containing materials were observed in test pits during soil sampling (TP12A, TP16A and TP16B). Ten primary soil samples were analysed for asbestos identification in bulk samples. Seven of these samples detected asbestos, within all containing chrysotile (white asbestos), five containing amosite (brown asbestos) and one containing crocidolite (blue asbestos). The seven samples with positive identification of asbestos containing materials were: TP10_0.0_0.1, TP11_0.1_0.2, TP12A_0.1_0.2, TP15_0.0_0.1, TP16A_0.9_1.0, TP16B_0.1_0.2 and TP20_0.5_0.6.

Asbestos quantification analysis was completed by ALS laboratory and results compared against the amended ASC NEPM (NEPC, 2013) health screening levels for the residential B and commercial/industrial D land use scenarios. All the samples analysed for asbestos were below the health screening level (0.001% weight for weight (w/w)) for asbestos fines and fibrous asbestos (<7mm). One sample (TP10_0.0_0.1), however, contained 0.10% w/w of non-friable asbestos, which is above the adopted health screening levels for the residential B (0.04% w/w) and commercial/industrial D (0.05% w/w) land use scenarios.

Comparison of the asbestos analytical results with the adopted health screening levels is presented in **Table 6** (**Appendix D**).

5.4 Groundwater Investigation Results

5.4.1 Groundwater Conditions and Flow

The depth to groundwater on 17 July 2013 ranged from 0.450 (D4) to 1.70 (D1) m below top of casing (btoc). Inferred groundwater flow based on previous investigations for the adjacent smelter and refinery (eg URS, 2007) suggests a northerly direction of groundwater movement.

No visual evidence of contamination (e.g. sheen) was observed during groundwater sampling.

Groundwater gauging results are presented in the attached **Table 10** and groundwater quality parameters are presented in the attached **Table 11** (**Appendix D**).





5.4.2 Groundwater Chemical Analytical Results

Groundwater analytical results are presented in **Table 12** included in **Appendix D**. Laboratory certificates and chain of custody sheets are included in **Appendix E**.

Groundwater samples were only able to be collected for analysis from the two existing (deep) wells on site (D1 and D4). The four new shallow wells were dry.

BTEX

Results for BTEX were reported below the respective laboratory limits of detection for both groundwater samples analysed.

TRH

Results for TRH were reported below the respective laboratory limits of detection for both groundwater samples analysed.

Metals

Results for selenium and mercury were reported below the respective laboratory limits of detection for both groundwater samples analysed. Concentrations of other metals analysed were above the respective limits of detection, but below the site adopted GILs, with the exception of the following:

Sample D1

- Reported a concentration of chromium at 0.003 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.001 mg/L;
- Reported a concentration of copper at 0.163 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.0014 mg/L and ANZECC (2000) marine 95% trigger value of 0.0013 mg/L;
- Reported a concentration of lead at 0.004 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.0034 mg/L; and
- Reported a concentration of zinc at 0.105 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.008 mg/L and ANZECC (2000) marine 95% trigger value of 0.015 mg/L.

Sample D4

- Reported a concentration of chromium at 0.003 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.001 mg/L;
- Reported a concentration of copper at 0.062 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.0014 mg/L and ANZECC (2000) marine 95% trigger value of 0.0013 mg/L;
- Reported a concentration of nickel at 0.015 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.0011 mg/L; and
- Reported a concentration of zinc at 0.055 mg/L, above the ANZECC (2000) freshwater 95% trigger value of 0.008 mg/L and ANZECC (2000) marine 95% trigger value of 0.0015 mg/L.

PAH, Phenols & OCPs

Results for PAHs, phenols and OCPs were reported below the respective laboratory limits of detection for both groundwater samples analysed.

Nutrients

Results for nutrients were above the detection limit with the exception of nitrite as N. For both samples concentrations of nitrate as N were below the site adopted investigation limit of 10x NHMRC (2011) ADWG.





Given the apparent absence of impacts in soil and the location of the site in a recharge zone, the concentrations of nutrients in groundwater are likely to represent ambient background groundwater quality.



6.0 QUALITY ASSURANCE AND QUALITY CONTROL

Analytical data validation is the process of assessing whether the data is in compliance with method requirements and project specifications. The primary objective of this process is to ensure that the data of known quality are reported and to identify if data can be used to fulfil the overall project objectives.

The data validation guidelines adopted are based upon the following data validation guidance documents published by the United States Environmental Protection Agency (USEPA) and the National Environment Protection Council (NEPC):

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review (EPA 540-R-10-011, dated January 2010);
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review (EPA-540-R-08-01, dated June 2008); and
- NEPC (April 2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999, EPHC 2013, Canberra

The process involves the checking of analytical procedure compliance and the assessment of the accuracy and precision of analytical data from a range of quality control measurements, generated from both field sampling and analytical programs.

The specific elements that have been checked and assessed for this project are detailed below and presented in detailed data validation summary sheets presented in **Appendix E**.

6.1 Quality Assurance (QA) Program

The quality assurance elements of the program included a review of:

- Preservation and storage of samples upon collection and during transport to the laboratory;
- Sample holding times;
- Use of appropriate analytical and field sampling procedures;
- Required limits of reporting;
- Frequency of conducting quality control measures; and
- The occurrence of apparently anomalous results, e.g. laboratory results that appear to be inconsistent with field observations or measurements.

6.2 Quality Control (QC) Program

The quality control elements of the program included a review of the results for:

- Laboratory blanks;
- Laboratory duplicates;
- Field duplicates;
- Field triplicates;
- Laboratory internal standards and calibration blanks;
- Matrix spike results;
- Surrogate recoveries; and




The Relative Percent Difference (RPD) between duplicate quality control sample results.

6.3 Quality of Analytical Data Results

QC samples collected in the field during the investigation included:

- Three intra-laboratory duplicate soil samples;
- Three inter-laboratory duplicate soil samples;
- Three soil trip blanks (one per day for soil sampling);
- Four rinsate blanks (three collected during soil sampling, one collected during groundwater sampling).

In addition to field QC samples, the laboratory prepared and analysed the following QC samples with each laboratory batch:

- Laboratory duplicates;
- Laboratory blanks;
- Surrogate spikes;
- Matrix spikes; and
- Laboratory control samples.

6.4 Quality of Analytical Data Results

Analytical results for QC data are presented in **Tables 7a and 7b** for soil and **Table 13** for groundwater (**Appendix D**). Detailed laboratory QC data is presented in the analytical reports in **Appendix E**.

6.5 Data Validation Results

Accuracy and precision measurements from the appropriate QC check samples were compared with the analytical DQOs to assess the quality of the analytical data. The primary objective of the data validation process was to ensure that the data reported is suitable to be used to achieve the investigation objectives.

On the basis of the analytical data validation procedure employed, the overall quality of the soil and groundwater analytical data produced is considered to be of an acceptable standard for interpretative use. However, some of the outliers were:

Soil Batch (EW1301886)

- The laboratory duplicate (LD) relative percentage difference (RPD) for arsenic, zinc and total phosphorus as P in samples TP30_0.0-0.1_25/06/13 and TP26_0.5-0.6_25/06/13 exceed laboratory based limits. This is likely due to sample heterogeneity in soil samples. This is not expected to affect the validity of this batch.
- Outside laboratory limits RPD results were observed for total metals and sum of PAHs between the primary/duplicate samples TP25_0.0-0.1 and QC100 and primary/duplicate TP5_0.5-0.6/QC102 respectively. This may be due to the sample heterogeneity. The highest value was used for reporting purpose, as a conservative measure.
- Outside laboratory limits RPD results were observed for total metals and between the primary/triplicates samples TP25_0.0-0.1/QC200, TP8_0.0-0.1/QC201 and TP5_0.5-0.6/QC202 respectively. This may be due to different techniques used for the two laboratories and it is not expected to affect the quality data of this batch. As a conservative measure the highest value was used for reporting purpose.





Soil Batch (ES1322093)

 The LD relative percentage difference (RPD) for manganese in sample BH5-1.0-09/10/13 exceeds laboratory based limits. This is likely due to sample heterogeneity in soil samples. This is not expected to affect the validity of this batch.

Groundwater Batch (ES1316167)

The matrix spike recovery for ammonia as N, nitrite plus nitrate as N (NOx) and reactive silica were not determined due to background level greater than or equal to four times spike level.





7.0 DISCUSSION AND CONCLUSIONS

A DSI has been completed at the site with the principal objective of assess for the presence and extent (if any) of the soil and groundwater contamination resulting from historical activities which occurred at the site and surrounding properties. Golder understands the DSI was commissioned by PKC to support the proposed divestment for potential future mixed business and medium density residential land use.

Based on the scope of works completed at the site, the following conclusions are made:

Soil

- The investigation indicates the site is underlain by a generally thin layer of fill material, typically consisting of silty clay and sandy clay. Coal washery reject was reported to be present in approximately one-third of the locations, whilst asbestos was positively identified at seven locations, situated in the northern and central portions of the site.
- Natural soils typically comprising gravelly silty clay and clay underlie the fill, under which is volcanic bedrock generally encountered at approximately 1 mbgl.
- The concentrations of the chemicals of interest were not reported greater than the limits of reporting and/or health investigations levels adopted for the proposed mixed business and medium density residential land use. Nutrients reported at concentrations greater than the limit of reporting are considered to represent ambient background soil conditions.
- The concentrations of arsenic (3 samples), copper (22 samples) and zinc (7 samples) exceeded the adopted ecological investigation levels (EILs).
- The concentrations of total recoverable hydrocarbons (TRH) F3 (>C₁₆ C₃₄) in samples from test pits TP25 and TP28 located near to the Electrolytic Street were greater than the residential ecological screening levels (ESLs).
- Asbestos containing material was detected in samples collected from the test pits TP10, TP11, TP12A, TP15, TP16A, TP16B and TP20 located in the central and northern portion of the site. Analysis indicated that one sample (TP10_0.0_0.1) had a concentration of non-friable asbestos above the investigation value for residential B (0.04%) and commercial/industrial D (0.05% w/w) land use scenarios.
- The presence of the chemicals of interest greater than the ecological assessment criteria, asbestos and general fill material may require future management in residential portions of the site (if redeveloped for this purpose), which could include on site retention (eg placement under road reserves/pavements) and management through the implementation of an environmental management plan (EMP).

Groundwater

- Shallow monitoring wells were installed near locations where water seepage was reported during soil investigations. However, groundwater did not accumulate in these wells and consequently were not sampled. This tends to suggest that any shallow groundwater under the site (including that observed by Golder (November 2012)) is likely to be perched, of limited extent, potentially ephemeral and therefore have limited potential uses.
- Groundwater levels in two deep (fractured rock) monitoring wells installed at the site ranged from 0.450 (D4) to 1.70 (D1) m below top of casing (btoc). Inferred groundwater flow based on groundwater level measurements and previous investigations is towards the north (URS, 2007). Since the site is located on a ridge and is likely to represent a recharge zone and groundwater divide, groundwater movement in other directions (including south towards Coomaditchy Lagoon) is also possible.
- The concentrations of the chemicals of interest were not reported greater than the limit of reporting or investigation levels, with the exception of:



- Copper and zinc, which are greater than the ANZECC (2000) marine ecosystems criteria.
- Chromium, copper, lead, nickel and zinc, which are greater than the ANZECC (2000) freshwater ecosystems criteria.

The concentrations of these chemicals of interest are likely to represent ambient background groundwater quality, given the industrial history of the region, the similarity in the concentrations of metals in soils on site and at background soil sample locations, and the location of the site in a recharge zone. On this basis, management of groundwater under the site is not considered to be required.





8.0 LIMITATIONS AND USE OF THIS REPORT

Your attention is drawn to the document "Limitations", which is included in **Appendix G** of this report. The statements presented in this document are intended to advise you of what your realistic expectations of this report should be. The document is not intended to reduce the level of responsibility accepted by Golder, but rather to ensure that all parties who may rely on this report are aware of the responsibilities each assumes in so doing.





9.0 REFERENCES

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Zweep & Connolly (2002) Valuation and Acquisition Report on Commercial Development Property at Military Road Port Kembla 2505.





Report Signature Page

CARDLINA OLMOS

Carolina Olmos Environmental Engineer

Concertant

Graeme Miller Principal Scientist

CO/GM/co

A.B.N. 64 006 107 857

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FIGURES





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APPENDIX A

Sampling & Analytical Quality Plan



20 June 2013

SAMPLING AND ANALYTICAL QUALITY PLAN

Former Port Kembla Primary School, Military Road, Port Kembla, NSW

Submitted to: Port Kembla Copper Pty Ltd Military Road PORT KEMBLA NSW 2505

REPORT



Report Number. Distribution:

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FIGURES

Figure 1 – Site Layout

Figure 2 – Proposed sampling locations.





1.0 INTRODUCTION

Golder Associates Pty Ltd (Golder) has prepared this sampling and analysis quality plan (SAQP) for a detailed site investigation (DSI) at the former Port Kembla Primary School, located on Military Road, Port Kembla, NSW (the site). The location and layout of the site is shown on Figure 1 (attached).

Golder understands the purpose of the DSI is to characterise the condition of the site to support divestment for potential future mixed business and residential use.

The SAQP defines the field works to be carried out at the site and presents specific quality assurance and quality control details to be employed during the DSI.

The background information provided in the following sections of the SAQP is taken from the Phase 1 Environmental Site Assessment (ESA) (Golder, 2012) conducted for the property.

2.0 SITE INFORMATION

2.1 Site Location

The location of the Site is shown in Figure 1. Table 1 presents a summary of the Site identification details.

Site Name	Former Port Kembla Primary School	
Street Address	Military Road	
City, State, Postal Code	Port Kembla, NSW, 2505	
Country	Australia	
Legal Description	Lot 1 in Deposited Plan 811699 at Port Kembla, Local Government Area Wollongong, Parish of Wollongong, County of Camden.	
Ownership	Port Kembla Copper Pty Ltd	
Zoning	B4 – Mixed Use	
Land Area	2.19 hectares	

Table 1: Summary of Sites Details

The Site is approximately trapezoidal in shape and covered with grass in the south eastern and north western portions. The central portion of the Site (surrounding the partially demolished remaining school building) is paved with concrete. Bitumen basketball and netball courts are located immediately to the north, north west and north east of the former building.

2.2 Surrounding Land Use

The main land uses surrounding the Site are summarised below:

- North: Electrolytic Street, beyond which is the former PKC smelter and refinery and other heavy industrial sites.
- North east: Reservoir Street, beyond which is MM Kembla Pty Ltd (heavy industry).
- East: Marne Street, beyond which is residential land.
- South: Military Road, beyond which is residential land.
- West: Military Road, beyond which is residential and commercial/light industrial land. A BP petrol station is located approximately 100 m west of the Site.

The Site is approximately 900 m south of Port Kembla Outer Harbour, 750 m northeast of Coomaditchy Lagoon and 700 m west of the Tasman Sea.



2.3 Site History

The current Certificate of Title indicates the Site is owned by Port Kembla Copper Pty Ltd. The Site was used as a primary school from 1916 until 2002.

A review of aerial photographs indicates the land use surrounding the Site has remained relatively constant since 1951, consisting of:

- North and north east heavy industry.
- East and south residential.
- West and north-west residential and commercial.

Historical quarrying and filling appears to have occurred approximately 200 m east of the Site.

2.4 Topography

The building which remains on Site (see Figure 2) is located on the crest of a hill, with the ground surface sloping down from the building in every direction. The steepest slopes are towards the north and south east. The topographic map (10m contour interval) of the area indicates that the elevation of the Site ranges from 20m AHD at the northern tip of the Site to 30m AHD in the southern portion of the Site. The topographic map indicates that the Site exists on the northern end of a ridgeline that runs from the north-west to south-east.

Retaining structures/embankments border the Site along Electrolytic Street and Reservoir Street. The Site is approximately 3m higher than Electrolytic Street in the north and approximately 1.8m higher near the intersection of Electrolytic and Reservoir Streets. The Site is approximately 2 m higher than the adjacent ground level along Marne Street.

2.5 Geology and Hydrogeology

Geological and hydrogeological information for the Site and/or surrounding area (250 m) is summarised in Table 4.

Table 2: Geological and Hydrogeological Information

	The Geological Survey of N.S.W. Department of Mineral Resources Geological Series 1:100,000 Sheet of Wollongong – Port Hacking 9029- 9129 maps the geology underlying the Site as the Dapto Latite, described as melanocratic, coarse grained and porphyritic Latite. URS (February 2006) intersected the Dapto Latite under the Site at depths ranging from 4.4 mbgl (monitoring well D1) to 5.2 mbgl (monitoring well D4).
	Weathered Dapto Latite was observed to crop out in several areas surrounding the school, including:
Geology	 Adjacent to Military Road (near the school building)
	 At the intersection of Marne Street and Military Road (in the grass verge next to the foot path)
	 Near the intersection of Reservoir Street and Marne Street (in the grass verge next to the foot path) and
	 Near the intersection of Electrolytic Street and Military Road (near the western corner of the Site.
	The materials overlying bedrock were reported by URS (February 2006) as fill or possible fill to between 0.8 mbgl (metres below ground level) in





	monitoring well D1 and 0.5mbgl in monitoring well D4, overlying natural clay and silt soils. According to Graeme Waller and Associates (August, 1996), possible slag and coal washery reject (CWR) were present in the western corner of the site. Also, slag and CWR were observed during the Site walkover on 8 June 2012, at the ground surface in the northern and western portions of the site. (Golder, 2012)
Approximate Depth to Groundwater	Two groundwater monitoring wells (D1 and D4 - see Figure 2) exist at the Site, forming part of the groundwater monitoring network for the adjacent PKC smelter and refinery. During the July 2011 monitoring round the water level in these wells were 3.80 mbgl (D1) and 5.90 mbgl (D4) (Golder 2011). Groundwater elevations at these wells were 29.67 mAHD (D1) and 25.51 mAHD (D4). Both of the wells are installed in bedrock, were identified during the Site walkover on 8 June 2012, and appear to be intact.
Inferred Groundwater Flow Direction	The Site is located at the crest of a hill and is likely to form a local recharge area and groundwater divide. Groundwater in the Dapto Latite is known to move north towards Port Kembla Harbour (Golder, 2011) and may also move southwest toward Coomaditchy Lagoon. Possible perched groundwater appears to be moving north towards Electrolytic Street, based on observed seeps from the retaining wall along this boundary.

2.6 **Previous Investigations**

Seven reports obtained from PKC provided information on the condition of the Site – in particular the potential for contamination at the Site. A summary of the scope of works and outcomes of these investigations are presented in the following sections.

Graeme Waller & Associates (August 1996) Environmental lead Assessment Port Kembla Public School.

Graeme Waller and Associates conducted an assessment of lead in the surficial soils of the Port Kembla Public School. The report was submitted to the NSW Department of School Education. The report identified potential sources of lead impacts as airborne particulate fallout from both motor vehicle emissions and industrial sources, and from lead based paints.

Many of the soil samples collected across the Site were described as containing fused black material (possible slag), black grit, and black shale (possible coal washery reject). The samples with the highest concentrations of lead generally coincided with the presence of these materials in the soil.

Port Kembla Copper (October 2000) Port Kembla Community Soil Monitoring Programme Post Establishment Soil Plot Report.

PKC undertook an investigation into the long term impacts of lead emissions from the smelting and refining operations on soil quality with the Port Kembla area. The investigation included establishment of 12 soil monitoring plots of imported virgin excavated natural material (VENM) soil of known chemical composition that were capped with turf. This report outlines the initial placement of the soil plots (one of which is situated within the Site) and the initial baseline analysis of the soil. The results of subsequent sampling (if conducted) were not able to be located in PKC's archives.

Graham Brooks and Associates (February 2002) Heritage Assessment Port Kembla Public School February 2002.

Graham Brooks and Associates prepared a heritage assessment for PKC prior to their purchase of the Site. The assessment outlined the historical context of the former Port Kembla Primary School and provided an



assessment of heritage significance of the Site and buildings present on the Site. The assessment identified that the first school building was constructed in 1916 (after the Electrolytic Refining and Smelting (ER&S) company began operations in Port Kembla in 1907 (Wollongong Council Website)). An extension to the northern portion of this was indicated to have occurred in 1931. Construction of the former infants school building commenced in 1952, with the building being opened in 1953. A description is provided of the 1916 building as being "covered with an asbestos slate roof" and two sheds that existed along the Electrolytic Street and Reservoir Street boundaries are identified as having corrugated asbestos roofing.

Port Kembla Copper (July 2002) Internal Memorandum Old Port Kembla Primary School Soil Assessment.

PKC undertook a soil assessment at the Site in June 2002, with samples collected from six areas of the Site. The samples were collected from 0-50 mm and 100-150 mm below ground level at five locations within each of the six areas (total of 60 samples). The samples were analysed for arsenic, cadmium, chromium, copper, nickel, lead and zinc.

The results of analysis are summarised as follows:

- Arsenic results were less than NEPM¹ HIL²-A, HIL-D, HIL- E and HIL-F. Four sample results exceeded EIL³ criteria.
- Cadmium results were less than HIL-A, HIL-D, HIL- E and HIL-F. Nine sample results exceed EIL criteria.
- Chromium results were less than HIL-A, HIL-D, HIL-E and HIL-F and EIL criteria.
- Nickel results were less than HIL-A, HIL-D, HIL- E and HIL-F and EIL criteria.
- Zinc results were less than HIL-A, HIL-D, HIL-E and HIL-F. 18 sample results exceed EIL limits.
- Copper:
 - 17 results exceeding HIL-A,
 - one results exceeding HIL-D,
 - five results exceeding HIL-E,
 - No results exceeding HIL-F, and
 - 55 sample results exceed EIL criteria.
- Lead:
 - 10 results exceeding HIL-A,
 - No results exceeding HIL-D,
 - 2 results exceeding HIL-E,
 - No results exceeding HIL-F, and
 - 2 sample results exceed EIL criteria.
- Notes: ¹ NEPM classification as previous NEPM 1999. ² HIL - Health Investigation Level

³ EIL - Ecological Investigation Level





Zweep & Connolly (2002) Valuation and Acquisition Report on Commercial Development Property at Military Road Port Kembla 2505.

Zweep & Connolly prepared a valuation report for the Site in 2002. The report identified potential impacts at the Site related to filling and fallout from the adjacent PKC copper smelter.

URS (February 2006) Soil and Groundwater Investigation Port Kembla Copper Smelter Facility, Port Kembla NSW.

URS was engaged by PKC to undertake a soil and groundwater investigation of the PKC smelter and refinery. These works were commissioned in response to the Site being declared as presenting a potential significant risk of harm by the NSW Department of Environment and Conservation (DEC) on 13 February 2004. The chemicals of interest identified in the declaration were arsenic, cadmium copper lead manganese sulfate and zinc and groundwater acidity.

Two monitoring wells (D1 and D4) were installed within the former Port Kembla Primary School (refer to Figure 2) as part of the URS investigation. These wells were installed to assess (background) groundwater quality upgradient of the PKC smelter and refinery.

Soil samples collected during installation of the two monitoring wells at the Site (D1 (1-1.5m and 4.2-8m) and D4 (1.5-2m and 5.4-8m)) each had concentrations of copper greater than the EIL criteria, and sample D4 5.4-8 exceeded the HIL-A copper criteria, but was less than HIL- D, HIL-E and HIL-F. The concentrations of other metals in the samples collected from D1 and D4 were less than the HIL and EIL criteria.

Groundwater sampled from monitoring well D4 did not have concentrations of the chemicals of interest greater than the ANZECC 2000 marine 95% trigger values, with the exception of copper (0.01 mg/L) and zinc (0.024 mg/L). Well D1 was dry and was not sampled.

URS (November 2007) Groundwater Monitoring Port Kembla Copper May 2007 Round.

URS was engaged by PKC to conduct a round of groundwater monitoring at all accessible monitoring wells located on and surrounding the PKC smelter and refinery. The chemicals of interest in groundwater were identified as arsenic, cadmium, copper, lead, manganese, nickel, and zinc.

Groundwater samples were collected from monitoring wells D1 and D4 during this round of monitoring. The concentrations of the chemicals of interest were less than the ANZECC 2000 marine 95% trigger values, with the exception of the following:

- Monitoring well D1 copper (0.03 mg/L) and zinc (0.032 mg/L)
- Monitoring well D4 copper (0.117 mg/L), nickel (0.09 mg/L) and zinc (0.078 mg/L).

2.5 **Potential Areas and Chemicals of Interest**

Table 3 below presents a summary of the potential areas of interest and respective chemicals of interest obtained from the Phase 1 ESA (Golder, 2012).

Key Areas of Interest	Chemicals of Interest
Areas Filled with slag and CWR (predominantly northern and western portions, but may be under large areas of the Site)	Metals, Combustion Ammonia
Asbestos cement fragments (Observed on concrete hard stand south of building)	Asbestos

Table 3: Potential Areas and Chemicals of Interest





Key Areas of Interest	Chemicals of Interest
Surficial soil impacts from historical fallout of airborne deposits from nearby industrial activities	Metals
Lead Paint residue - in soil surrounding (demolished and remaining buildings)	Lead
Mounded/stockpiled soil of unknown composition	Unknown, but may include metals, ammonia, general waste and combustion hazard
Areas of demolished buildings/demolition works	Asbestos, Lead
Seepage water in northern portion of Site near Electrolytic Street	Metals and ammonia
Septic tank	Nutrients, metals, organic compounds
Off-Site	
Petrol Station on Church Street	TPH, BTEX, PAH, Lead
Former quarry 200m East of the Site	Unknown
Port Kembla Copper	Metals

Key:

Metals - arsenic, cadmium, chromium, copper, lead, manganese, mercury, nickel, selenium & zinc

It is noted that since the Site is located on the crest of a hill and forms a high point compared to the surrounding land, contaminants associated with surrounding properties are considered unlikely to impact upon soil, groundwater or surface water quality at the Site.

3.0 DATA QUALITY OBJECTIVES, ASSURANCE & QUALITY CONTROL

The Data Quality Objectives (DQOs) process is used to define the type, quantity and quality of data needed to support decisions relating to the environmental condition of a site. Application of the seven-step DQO/DQI planning approach (provided in Appendix IV of Guidelines for the NSW Site Auditor Scheme (NSW DECC 2006)) to the former Port Kembla Primary School assessment is outlined below.

3.1 State the Problem

The former Port Kembla Primary School has been historically used as a school from 1916 until 2002, when it was purchased by PKC. As a result of filling and activities undertaken adjacent to the property (heavy industrial and residential land), the site may have been contaminated. Detail on potential areas and types of contamination are provided in **Section 2.5**.

3.2 Identify the Decisions

Assessment of the site is to focus on potential human health and environmental risks associated with potential contamination. The decisions that need to be made on the contamination status of the site include:

- Whether contamination exists in soils or groundwater at the site that would preclude a range of land uses and pose a risk to identified receptors; and
- If such contamination is encountered through the characterisation assessment proposed, assess feasible management options.

The site will be considered not to pose a risk if analytical results for the media sampled and analysed are less than the adopted site criteria, or are determined by a site specific risk assessment not to represent an





unacceptable risk. Where an unacceptable risk is indicated by the DSI results, management options will need to be considered to allow future beneficial use of the site.

3.3 Identify Inputs to the Decision

The primary inputs to assessing the presence of contamination in soil and groundwater will be as follows:

- Assessment of the areas of potential contamination derived from information gathered during the Phase 1 ESA;
- Use of field investigation techniques to assess areas of contamination including the collection of soil and groundwater samples for field assessment and off-site laboratory analysis;
- Assessment of the field measurement/observation (e.g. field screening with portable photo ionisation detector (PID) and field measurement of water quality parameters) and laboratory analytical results.
- Assessment of the suitability of the data for the purposes of environmental assessment through application of data quality indicators (DQIs);
- Assessment of health and environmental risk based on analysis of soil and groundwater samples for potential contaminants and comparison of the concentrations of these contaminants with the adopted assessment criteria; and
- If management/remediation is warranted, the response needs to be assessed as technically feasible, environmentally justifiable and consistent with relevant laws, policies and guidelines.

3.4 Define the Study Boundaries

The study boundaries are defined as follows.

- The lateral extent of the Investigation Area is shown in **Figures 1 and 2**.
- Depth of potential contamination is considered likely to be limited to the shallow soil profile (<4m depth) and the inferred depth to groundwater (based on local geology, site topography and surface water features identified in the area) approximately 1.5-2 mbgl; and</p>
- Environmental matrix being assessed soil and groundwater.

3.5 Develop a Decision Rule

The soil and groundwater analytical data generated shall be compared with the adopted assessment guidelines (**Section 6**) and against background concentrations, where available and relevant.

The soil and groundwater analytical QA/QC data shall be compared against the adopted acceptance criteria (**Section 5.1**) and may need to be disregarded should the data not meet the adopted acceptance criteria.

Following the initial assessment, Golder would advise PKC if conditions potentially constituting Significant Risk of Harm under the CLM Act (1997) were encountered.

3.6 Specify Limits of Decision Errors

Data Quality Indicators are developed based on the following parameters:

- P Precision: A quantitative measure of the variability (or reproducibility) of data;
- A Accuracy: A quantitative measure of the closeness of reported data to the "true" value;
- R Representativeness: The confidence (expressed qualitatively) that data are representative of each media present on site;





- C Completeness: A measure of the amount of useable data from a data collection activity; and
- C Comparability: The confidence (expressed qualitatively) that data may be considered to be equivalent for each sampling and analytical event.

The measures/criteria employed to enable review of these parameters are described below and detailed in (Section 5).

Precision

Field precision will be monitored through the use of Golder's standard procedures (SOPs) and ensuring that these are complied with throughout the sampling event(s). Suitable criteria and/or performance indicators for assessment of laboratory precision include performance of intra-laboratory and inter-laboratory duplicate sample sets through calculation of relative percentage differences (RPD).

Accuracy (Bias)

Accuracy in the field activities will be monitored through the use of SOPs and ensuring that these are complied with throughout the sampling event(s). The closeness of the reported data to the "true" value is assessed through review of performance of:

- Method blanks, which are analysed for the analytes targeted in the primary samples;
- Matrix spike sample sets; and
- Laboratory control samples.

Representativeness

To ensure representativeness of the field conditions, appropriate media will be sampled as identified in this SAQP.

To ensure the data produced by the laboratory is representative of conditions encountered in the field, the following steps will be taken:

- Blank samples will be analysed the laboratory in parallel with field samples to confirm there are no unacceptable instances of laboratory artefacts;
- Review of relative percentage differences (RPD) values for field and laboratory duplicates to provide an indication that the samples are generally homogeneous, with no unacceptable instances of significant sample matrix heterogeneities; and
- The appropriateness of collection methodologies, handling, storage and preservation techniques will be assessed to ensure/confirm there was minimal opportunity for sample interference or degradation (i.e. volatile loss during transport due to incorrect preservation/transport methods/sampling technique for example).

Completeness

In assessing the completeness of the field data the following is considered:

- All critical locations sampled;
- Representative samples collected; and
- An appropriately experienced sampling team is engaged in the investigation program.

In validating the degree of completeness of the analytical data sets acquired during the program the following is considered:

Whether SOPs for sampling protocols have been adhered to; and



Copies of all project chain of custody (COC) documentation are reviewed and presented.

Comparability

In the event that the reported data sets are comprised of results from separate sampling events (eg groundwater), issues of comparability between data sets are reduced through adherence to the same SOPs on each data gathering activity.

In addition the data will be collected by experienced samplers and NATA accredited laboratory methodologies will be employed in all laboratories.

3.7 Optimise Design for Obtaining Data

Sample locations have been selected based on the observed site conditions and site history.

Sampling will target the areas of potential contamination (e.g. septic tank, areas filled with slag and coal washery reject (CWR), mounded stockpiles etc.), coupled with broader sampling across the site.

The test pitting sampling will primarily be grid-based (30 m x 30 m) shallow sampling of soil to provide overall site characterisation data. A total of 24 test pit locations will be investigated. Six (6) boreholes locations will be drilled in the central portion of the site (surrounding the remaining building and septic tank) which is paved with concrete. Four shallow groundwater monitoring wells will also be installed.

Two background soil samples will be collected from nearby vacant residential lots for the purpose of measuring ambient background concentrations (ABC) to allow calculation of ecological investigation levels (EILs).

4.0 SAMPLING PROGRAM

4.1 **Potential Contamination Sources**

Based on the information collated and observations made as part of the Phase 1 ESA Site inspection, the targeted locations are presented in section 2.5 and include the following:

- Areas filled with slag and CWR, predominantly northern and western portions of the Site;
- Asbestos cement fragments (Observed on concrete hard stand south of building);
- Surficial soil impacts from historical fallout of airborne deposits from nearby industrial activities;
- Lead Paint residue in soil surrounding (demolished and remaining buildings);
- Mounded/stockpiled soil of unknown composition;
- Areas of demolished buildings/demolition works (main building),
- Seepage water in northern portion of Site near Electrolytic Street, and;
- Septic tank.





4.2 Soil Sampling Density and Scope

The proposed investigation program is outlined below in Table 4. Proposed sample locations are shown in **Figure 2**.

Activity	Details
Service Location	"Dial Before You Dig" underground utility location service is engaged to identify underground services prior to any intrusive work commencing.
Number of Sampling investigation points	30 sampling points on site are considered. 24 test pitting and 6 boreholes (4 of the boreholes will be converted into monitoring wells). 2 background sample locations will be collected from a nearby park.
Test Pitting	A total of twenty-four test pit locations will be investigated using a backhoe or small excavator on site. The test pits will continue to a minimum of 30 cm into the natural soil profile is intersected. The locations and elevations of the test pits will be recorded using a GPS.
Soil Bores Clearance	A total of six boreholes will be drilled on site. All boreholes will be cleared using hand auger to a depth of 1.2 metres mbgl and be drilled to a minimum 30 cm into the natural soil profile The locations and elevations of the soil bores will be recorded using a GPS.
Soil Bores Drilled and Target Depth	The six boreholes will be advanced to 2 m beyond the initial water strike, which is expected at $1.5 - 2$ mbgl, based on the information obtained during the Phase 1 searches (including site topography, local geology and local hydrology).
Drilling Technique	Boreholes will be drilled using a truck mounted drill rig with solid stem augers. Push tubing will be used first to collect the soil samples.
Soil Sampling	Samples will be collected at the surface (directly below ground surface level) and at approximately 0.5 m intervals thereafter and/or where evidence of contamination is noted through field observations. Based upon field observations and PID screening, up to two samples per location will be nominated for laboratory analysis. This will include samples of natural soils underlying the filled soil profile. Ten litre soil samples will be collected from locations and profiles suspected to contain asbestos.
Decontamination	Soil sampling equipment is to be decontaminated between each sampling event using a contaminant-free detergent (Decon 90 or equivalent), followed by a rinse by potable water between each location. All drilling equipment is to be decontaminated prior to and on completion of each sampling location. The drilling rig will also be decontaminated on completion of the works.
Field Records	All boreholes will be logged in accordance with AS1726-1993 and the United Soil Classification System (USCS). Odours will be recorded by the Golder site supervisor during the collection of soil samples. The sample descriptions, sample numbers, results of all field measurements, will be recorded in the field logs and provided as an appendix to the DSI report.
Sample Preservation	Samples will be placed in tightly packed laboratory supplied containers to minimise headspace. Soil samples will be clearly labelled with unique sample identification numbers and stored in a chilled cooler box prior to dispatch to a

Table 4: Soil sampling Density and Scope





Activity	Details	
	NATA accredited laboratory, accredited for the selected analysis, under chain- of-custody (COC) procedures.	
Disposal of Soil Cuttings	Sampling location will be backfilled with the soil cuttings where possible, however the soil cuttings from drilling will be drummed on site in 205 L drums and will be disposed of by PKC (in accordance with NSW EPA requirements).	
Sample Analysis	 Samples will be tracked in the field and laboratory using COCs. Samples will be analysed for the following analytes: Metals (10 metals*): Up to 2 primary samples per location TRH / BTEX / PAH/ Phenols / OCPs: 1 primary sample per location Ammonia as N**: 1 primary sample per location Total N +TKN+NO2+NO3+NH3+Total Phosphorus** (4 location around the Septic Tank Area): Up to 2 primary samples per location Asbestos (concrete hard stand south of building and demolished building areas and demolition fill): Up to 8 primary samples. 15 samples of natural soil materials collected from the site will be analysed for pH, cation exchange capacity and particle size distribution. 	
Quality Control (QC) samples	Three field duplicates and three field triplicates will be taken for the soil sampling program. QC samples will be analysed for the same analytes as the primary samples. Also, four rinsate blanks and four trip blanks will be taken (assuming a 4 day sampling program). Rinsate blank will be analysed for metals, TRH / BTEX / PAH/ Phenols / OCPs. Trip blank will be analysed for TRH C ₆ -C ₁₀ and BTEXN.	

Notes:

 $\label{eq:action} \ensuremath{^*\!Arsenic}, \ensuremath{ cadmium}, \ensuremath{ copper}, \ensuremath{ lead}, \ensuremath{ nickel}, \ensuremath{ manganese}, \ensuremath{ selenium}, \ensuremath{ zinc} \ensuremath{ and \ensuremath{ marcury}}.$

BTEX: Benzene, Toluene, Ethylbenzene and Xylene.

TRHs: Total Recoverable Hydrocarbons

PAHs: Polycyclic Aromatic Hydrocarbons

OCPs: Organochlorine (OC) and Organophosphorous (OP) Pesticides

** Nutrients

If impacts are identified through the vertical delineation of the soil, additional analysis will only be scheduled following approval from PKC.

4.3 Groundwater Sampling Density and Scope

The proposed investigation program is outlined below in Table 5. Proposed sample locations are shown in **Figure 2**.

Activity	Details
Well Construction	Four monitoring wells will be constructed using 50 mm diameter Class 18
	uPVC with machine slotted (0.4 mm) screen surrounded by a gravel pack
	across the targeted groundwater table. The gravel pack will be placed from the
	base of the borehole to 0.5 m above the well screen. A bentonite grout seal
	(approximately 0.5 m thick) will be placed above the screen/gravel pack. The
	bentonite will be hydrated to promote sealing. Wells will be fitted with lockable
	caps and a steel gatic cover finished at ground level.





Activity	Details		
Well Development	Upon completion, each well will be developed by air lifting to remove fluids introduced during drilling.		
Well Gauging, Purging and Sampling	Groundwater sampling is proposed one week after well development, using dedicated sampling equipment to avoid cross-contamination. Monitoring wells will be gauged pre-purging using an oil / water interface probe. The		
Decontamination	Decontamination would not be required for groundwater purge and sample equipment as all this equipment is dedicated. The oil / water interface probe will decontaminated using Decon 90 solution and rinse by potable and deionised water between each location.		
Sample Preservation	Samples will be placed in laboratory supplied bottles containing the appropriate preservatives. Samples stored in an ice chilled cooler-box whilst on site and in transit to the laboratory. Samples collected for metal analysis will be filtered in the field.		
Disposal of Purged Groundwater	Development water, purge water and decontamination fluids will be drummed on site in 205 L drums and will be disposed of by PKC in accordance with NSW EPA requirements.		
Well Survey	The newly installed wells will be surveyed to metres Australian Height Datum (mAHD) as well as the easting and northing coordinate locations (AMG). The survey will be commissioned by PKC.		
Sample Analysis	 Samples will be tracked in the field and laboratory using COCs. Samples will be analysed for the following analytes: Metals (10 metals*): 6 primary samples TRH / BTEX / PAH/ Phenols / OCPs: 6 primary samples Ammonia as N, Total N +TKN+NO2+NO3+NH3+Total Phosphorus** : 6 primary samples 		
Quality Control (QC) Samples	One field duplicate, one field triplicate will be taken for the groundwater sampling program. QC samples will be analysed for the same analytes as the primary samples. Also, one rinsate blank and one trip blank will be taken (assuming a 1 day sampling program).). Rinsate blank will be analysed for metals, TRH / BTEX / PAH/ Phenols / OCPs. Trip blank will be analysed for TRH C6-C10 and BTEXN.		

Monitoring well locations were chosen according to:

Table 6: Monitoring Well Locations.

Area/Source	Proposed Investigation Strategy	Monitoring Well Location
Filled ground	To be based on observations from soil sampling program	PS_MW1 PS_MW2 PS_MW3
Septic Tank - Potential for leakage or overflow from septic tank.	One groundwater monitoring wells in the vicinity of the septic tank.	PS_MW4





5.0 QUALITY ASSURANCE AND QUALITY CONTROL

5.1 Data Validation Assessment

The assessment of the quality of the analytical data will be undertaken in accordance with guidance provided in the following:

- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review, (EPA 540/R-94/013, February 2002);
- USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review, (EPA 540/R-99/008, October 1999)
- NEPC, 1999 National Environmental Protection (assessment of site contamination) Measure (Amendment, 2013).

The following table presents a summary of the requirements for QC samples and required data validation acceptance criteria.

Quality Control Samples	Required Frequency	Acceptance Criteria
Rinsate Blank	1 per day	No contamination present in the rinsate blanks
Method Blanks (Laboratory Blanks)	One per "process batch" and 1 per 20 samples	No contamination present in the method blanks
Field Duplicate (Same Laboratory)	1 per 20 samples	If sample concentration <10x LOR no RPD If sample concentration >10 x LOR <20 x LOR RPD <50% >20 x LOR RPD <30%
Field Triplicate (secondary laboratory)	1 per 20 samples	If sample concentrations <10 x LOR, no RPD limit If Sample concentration <20 x LOR, RPD <50% If Sample concentration >20 x LOR, RPD <30%
Laboratory Duplicate	1 per 10 samples	If Sample concentration <10 x LOR, no RPD If Sample concentration <20 x LOR, RPD <50% If Sample concentration >20 x LOR, RPD <20%
Matrix Spike	One matrix for each soil type Or 1 per 20 samples	% R = 70-130 % RPD < 30% Also refer to laboratory control limits for MS/MSD and laboratory control samples
Laboratory Control Samples	One for each process batch	Laboratory Control Limits (provided in laboratory certificates)
Surrogates	Where required by analytical method.	USEPA surrogate recovery limits.

Table 7: Frequency of Quality Control Samples and Acceptance Criteria





5.2 Laboratory Testing Protocols

It is proposed that Australian Laboratory Services Pty Ltd (ALS) undertakes the primary and EnviroLab (ELS) the secondary analyses. ALS would sub-contract asbestos analyses to a laboratory NATA accredited for that analysis. ALS and ELS are NATA accredited for all other required analyses.

5.3 Data Quality Objectives for Sample Analysis

The data quality objectives for the field work and laboratory analysis will be implemented during the investigation works to ensure data is valid and complete for the site assessment. The DQOs include the following:

- The sampling program is to characterise the media in the vicinity of investigation locations;
- The LOR will be targeted to be below the adopted criteria (See attached Tables 1 and Table 2)
- Sample preservation, storage, and holding time of samples within acceptable limits;
- Complete field and analytical laboratory sample Chain-of-Custody (CoC) procedures and documentation;
- Analytical results for replicated samples, including field and laboratory duplicates and inter-laboratory duplicates, expressed as Relative Percent Difference (RPD);
- Rinsate blanks will be collected at the frequencies given in Table 7, to assess whether crosscontamination has occurred during field sampling. Results are targeted to be below the laboratory limits of reporting;
- Laboratory spikes, controls and surrogates are targeted to be within 70% and 130% to demonstrate the reliability of the laboratory results reported.

6.0 ADOPTED SITE ASSESSMENT GUIDELINES

It is understood that the amendment of the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPC, 1999) took effect on 16 May 2013 and includes repealing the original schedules to the NEPM and the substitution of new schedules.

In the preparation of the DSI Report, Golder will adopt the following guidelines:

6.1 Soil Investigation Levels

6.1.1 Health Based Guidelines

The revised NEPM includes updated risk-based Health Investigation Levels (HILs) for selected organic and inorganic chemicals in soils. It is also incorporates the health screening levels (HSLs) for petroleum hydrocarbons in soil, soil vapour and groundwater derived by the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) (CRC CARE, 2011). The soil HSLs replace the NSW EPA (1994) *Contaminated Sites: Service Station Guidelines* (1994) and include criteria for BTEX, naphthalene and TRH.

The HSLs have been developed to provide assessment of chronic human health risks and do not consider issues such as aesthetics, explosion risks or environmental considerations. The soil HSLs, for vapour intrusion, are also considered to be protective of direct contact and the direct contact pathway has not been assessed separately. Different soil HSLs are provided for a variety of exposure settings including: low-high



density residential; recreational/open space; and commercial / industrial land uses. Different soil HSLs have also been derived for different soil types i.e. sand/silt/clay and different depths of impact.

The following assessment criteria have been adopted when evaluating the reported soil analytical results:

- HILs: Based on the current land use zoning, HIL Level A (residential with garden / accessible soil, includes childcare and primary schools), HIL B (residential with minimal opportunities for soil access, includes high-rise buildings and apartments) and HIL D (commercial/industrial, includes shops, factories, offices and industrial sites) are the appropriate HILs for assessing the soil analytical results; and
- HSLs: For the current investigation, the soil vapour intrusion HSLs A, B and D for low-high density residential use and commercial/industrial use are considered appropriate. Rationale for selection of the applied HILs is detailed below. The soil types to be applied to deriving the appropriate HIL values will be based on the soil assessment results

Table 8::Rationale for Assessing Soil Analytical Results using Soil HSLs for Vapour Intrusion

Criteria	Rationale
Land use	As the site is located within a mixed use zoning (residential/industrial), the HSLs for 'low –high density residential and commercial use' were adopted.

6.1.2 Health Screening Levels (Asbestos)

The revised NEPM includes Health Screening Levels (HSLs) for asbestos in soil, which are based on scenario-specific likely exposure levels, and adopted from *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia* (WA DoH 2009).

For the current investigation, the asbestos contamination in soil HSLs – A, B and D for low-high density residential use and commercial/industrial use are considered appropriate.

6.1.3 Ecological Based Guidelines

The revised NEPM (NEPC, 1999) also requires that ecological assessment be considered on all sites, even those with no significant ecological environments. The revised NEPM includes updated risk-based Ecological Investigation Levels (EIL) for selected organic and inorganic chemicals in soils. It is also incorporates the Ecological Screening Levels (ESLs) for petroleum hydrocarbons in soil.

There are three land use scenarios considered for the EILs/ESLs: areas of ecological significance; urban, residential and public open space; and commercial/ industrial. The urban residential and public open space exposure scenario is equivalent to the combined exposure scenarios of residential A & B and recreational open space C, and is therefore considered relevant for the site. The commercial /industrial scenario EILs will also be applied for the reasons outlined in Table 8.

ESLs and EILs are dependent on other various parameters including grain size, pH, cation exchange capacity.

6.1.4 Management limits

The amended NEPM includes 'Management Limits' that are designed to avoid or minimise the potential effects of petroleum hydrocarbons such as:

- Formation of observable Light Non-Aqueous Phase Liquids (LNAPL),
- Fire and explosive hazards; and
- Effects on buried infrastructure e.g. penetration of, or damage to, in-ground services by hydrocarbons.

The Management Limits are also considered in the current investigation. The management limits are provided for coarse and fine soils





6.2 **Groundwater Investigation Levels**

The revised NEPM indicates that site assessment should consider the risks from contaminated groundwater to all potential receptors on and off the site of origin, and the potential effects on groundwater resources. An evaluation of both the ecological and the human receptors and pathways of exposure is therefore required. Groundwater Investigation levels relevant to this investigation included in the revised NEPM include:

- Groundwater HSLs for Vapour Intrusion (NEPM 1999);
- Australian Drinking Water Guidelines (ADWG) (National Health and Medical Research Council (NHMRC) and Natural Resource Management Ministerial Council (NRMMC) 2011); and
- Australian and New Zealand Guidelines for Fresh and Marine Water Quality ANZECC/ARMCANZ (2000).

6.2.1 Human Health Based Assessment

The application of human health based guidelines for groundwater requires an evaluation of exposure scenarios different water bearing zones. It is not expected that the groundwater in the surrounding residential area will be suitable for extraction due to low yield.

6.2.1.1 Perched Water

Evidence of perched water has been identified on site (as seeps from embankments). The perched water is likely to be located within fill and is at shallow depths. While the perched water is not extracted for reuse on site, the shallow depth may result in incidental direct contact by workers during excavation.

Inhalation of vapour from the groundwater may also form a pathway for exposure to site users and occupants. If groundwater is present at less than <2 mBGL, use of the Groundwater HSLs for Vapour Intrusion is precluded.

However, Mance (1984) suggested that environmental quality standards for chemicals in recreational waters should be based on the assumption that recreational water makes only a relatively minor contribution to intake. They assumed a contribution for swimming of an equivalent to 10% of drinking water consumption. Since most authorities (including Worth Health Organization - WHO) assume consumption of 2 litres of drinking water per day, this would result in an intake of 200 mL per day from recreational contact with water (WHO 2003). This provides for a simple screening approach in which a substance occurring in recreational water at a concentration of 10 times that stipulated in the drinking water guidelines may merit further consideration.

Hence, for the purpose of this investigation, the groundwater data will be assessed relative to the healthbased ADWG (2011) criteria with a factor of 10 applied to account for the limited ingestion potential relative to the drinking water exposure assumptions. This approach is considered conservative as swimming is an unlikely recreational activity in the creek, and any primary contact use would most likely be limited to walking or splashing in the creek.

6.2.2 Ecological Based Assessment Criteria – Perched and Deep Groundwater

In accordance with the revised NEPM, the ecological investigation levels used to evaluate the groundwater analytical results have been adopted from ANZECC/ARMCANZ (2000). These guidelines provide environmental based trigger values for concentrations of organic and inorganic chemicals in freshwater and marine aquatic environments.

Due to the location of the site and potential down-gradient receptors (Port Kembla Harbour), which is marine water, the trigger levels for marine aquatic ecosystems have been adopted. The 95% level of protection has been adopted. This protection level applies to ecosystems that could be classified as slightly-moderately disturbed.





7.0 **REFERENCES**

CRC CARE (2011). Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, Part 2: Application Document

Graeme Waller and Associates (August 1996). Environmental Lead Assessment Port Kembla Public School.

Golder Associates (September 2011) Port Kembla Smelter and Refinery Statutory Groundwater Monitoring July 2011.

Golder Associates (November 2012) Former Port Kembla Primary School – Phase I Environmental Site Assessment.

The National Health and Medical Research Council (NHMRC, 2008) Guidelines for Managing Risks in Recreational Water,

NEPC (1999). National Environmental Protection (Assessment of Site Contamination) Measure (NEPM), Schedule B1 Guideline on Investigation Levels for Soil and Groundwater;

URS (February 2006) Soil and Groundwater Investigation Port Kembla Copper Smelter Facility, Port Kembla NSW







Report Signature Page

GOLDER ASSOCIATES PTY LTD

CAROLINA OLMOS

Carolina Olmos Environmental Engineer

Concertencel

Graeme Miller Principal Scientist

CO/GM/co

A.B.N. 64 006 107 857

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SAQP FORMER PORT KEMBLA PRIMARY SCHOOL

FIGURES





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solutions@golder.com www.golder.com

Golder Associates Pty Ltd 124 Pacific Highway St. Leonards, New South Wales 2065 Australia T: +61 2 9478 3900





APPENDIX B Site Photographs







Photograph 1 – Previous main building, located in the centre of the site Photograph taken in August 2013 before the building was completely demolished.



Photograph 2 – Previous main building, located in the centre of the site, and suspected septic tank area. Photograph taken in August 2013 before the building was completely demolished.







Photograph 3 – North west area of the site where test pits TP27, TP28 and TP29 were excavated.



Photograph 4 – North west area of the site, with PKC stack visible beyond the site boundary, where monitoring well MW2 was installed and test pit TP26 excavated.







Photograph 5 – Photograph shows location of BH4/ MW4. Photograph taken during the second stage of works, October 2013, after the main building was demolished.



Photograph 6 – Borehole BH2 at the location of the former main site building, in the centre of the site. Photograph taken during the second stage of works, October 2013







Photograph 7 –Locations of test pit TP20 and monitoring well MW1 (separate locations), near to Reservoir Street site boundary.



Photograph 8 – North west area of the site where test pit TP27 was excavated and monitoring well MW3 installed (separate locations).

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APPENDIX C

Test Pit and Bore hole Logs



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		Dri	lling		Sampling				Field Material Descr	iptic	on	
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H	-		- - - - 0.5	0.40	BH1 0.10 m PID = 0 ppm		×		Silty CLAY low to medium plasticity, black/dark brown, with some coarse grained sand, no odour, firm, slightly moist	м		
ΡΤ				1.00	BH1 0.50 m PID = 0 ppm		×		fragments noted, stiff, dry	D		
			1.0 — - - 1.5 —	-	BH1 1.00 m \PID = 0 ppm		×		grading to weathered bedrock, orange brown, stiff END OF BOREHOLE @ 1.10 m PUSH TUBE REFUSAL			
			- - - 2.0—									
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			0.0 	0.40	BH2 0.10 m PID = 0 ppm			× × × × × × × × × × ×	FILL: Gravelly Sandy CLAY low plasticity, brown, fine gravel, occassional coal wash reject noted, no odour, dry	D		
			0.5—	-	BH2 0.50 m PID = 0 ppm			0 	Sandy CLAY low plasticity, dark brown, coarse grained sand, with some fine gravel, no odour, stiff, slightly moist	м		
			1.0 —	1.00	BH2 1.00 m PID = 0 ppm			- o o o o o o o o o	colour grading to oranger red brown and dark grey, ironstone layer noted		_	
			- 1.5 — -	1.50				- • •	Gravelly Silty CLAY black/orange brown, fine gravel, ironstone fragments, possibly weathered bedrock at 2.0m, moist, soft clay bands noted	D		
			2.0— - -	2.20	BH2 2.00 m PID = 0 ppm				soft, moist clay bands noted, very hard	_		
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<u>E</u>		BH3 0.10 m PID = 0 ppm			FILL: Gravelly Sandy CLAY low plasticity, dark brown, fine gravel, no odour	D		
-	0.5	BH3 0.40 m PID = 0 ppm	× ·		Sity CLAY low to medium plasticity, dark brown mottled red, soft, moist			
Ē	1.0	<u>1.00</u> BH3	× .	X X X	becoming firm, minor fine gravel content, slightly moist	м		
Ben		1.00 m PID = 0 ppm	× · · · · · · · · · · · · · · · · · · ·	_×	Gravelly Silty CLAY orange brown, no odour, very hard, dry		-	
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HA			-0.0	0.05	BH4 0.05 m PID = 0 ppm				BITUMEN SURFACE FILL: Gravelly Silty CLAY low plasticity, black, fine gravel, some coal wash reject noted, no odour, soft, moist FILL: colour graded to yellow brown, coal washery reject noted,	м		
			- 0.5 — -	0.50	BH4 0.40 m PID = 0 ppm				moist, possible metal slag noted at 0.5m	w	-	-
			- - 1.0 - -	0.80	BH4 0.80 m PID = 0 ppm BH4 1.00 m PID = 0 ppm				Gravelly Silty CLAY low plasticity, green-brown/black, with some fine gravel, ironstone fragment, no odour, soft, moist	м		
ΡΤ			- 1.5 — - -	1.50	BH4 1.80 m				CLAY colour graded to orange brown, with some gravel, layer very moist (possible weathered bedrock)		-	
			2.0	-	PID = 0 ppm BH4 2.20 m		Qz Qz Qz	< <	Weathered Bedrock, firm clay lenses noted, orange brown, no odour, presented as rgavelly silty clay			-
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METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
НА			-0.0 - - - 0.5 - - -	0.05	BH5 0.10 m PID = 0 ppm BH5 0.30 m PID = 0 ppm				BITUMEN FILL: SAND fine grained, white and dark brown, no odour, very moist Gravelly Sitty CLAY low plasticity, orange brown/brown, firm, dry, no odour, ironstone fragments noted	м		
			- - 1.0 —	0.80	BH5 1.00 m			<	Silty CLAY low plasticity, black, trace fine gravel, wet clay lenses noted, no odour, soft Gravelly Silty CLAY low plasticity, yellow/orange brown, fine gravel, very weathered	D		-
ΡΤ			- - 1.5—		PID = 0 ppm BH5			-	bedrock, stiff, dry			
GLB Log GAP NON-CORED FULL PAGE 137823028 LOGS GPJ < <drawingfile>> 10/12/2013 12:55 8:2.856</drawingfile>					PID = 0 ppm				END OF BOREHOLE @ 1.60 m TARGET DEPTH REACHED			
GAP 8_07.3 L			-	٦ envir	This report of borehole conmental purposes of	e mu only, enco	st be r withou ountere	ead ii t atte ed. A	n conjunction with accompanying notes and abbreviations. mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	It has signi ss.	s beer ficanc	n prepared for se of the materials GAP gINT FN. F01a RL3

CL PF LC JC		r: CT: ION: D:	Port Kr Port Kr Port Kr 13762	embla embla F embla F 3028	Phase II Primary School			COO SUF INC HOI	REPORT ORDS: 307754.0 m E 6182208.0 m N MGA94 56 RFACE RL: DATUM: AHD LINATION: -90° LE DEPTH: 2.00 m	Ο	SHEE DRILI CON LOGO CHEO	BOREHOLE: BH6 ET: 1 OF 1 L RIG: Geoprobe TRACTOR: Matrix Drilling GED: KY DATE: 9/10/13 CKED: CO DATE: 15/10/13
		Dril	ling	I	Sampling	_			Field Material Des	cripti	on	Ι
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE		STRUCTURE AND ADDITIONAL OBSERVATIONS
AA			-0.0	-	BH6		× — —	•	Silty CLAY low plasticity, dark brown, with some fine gravel, dry, no odour			-
	_		- - 0.5 - -	0.20	0.10 m PID = 0 ppm BH6 0.30 m PID = 0 ppm			- - - -	Gravelly Silty CLAY low plasticity, yellow/orange brown, potentially weathered bedrock, no odour, hard			-
РТ			- 1.0 - - -	1.00	BH6 1.00 m PID = 0 ppm		×^ × ×		becoming very stiff	- D		-
	_		1.5 — - - - -2.0 —	-	BH6			<	END OF BOREHOLE @ 2.00 m			
56			- - - 2.5 - - - -	-	2.00 m PID = 0 ppm				TARGET DEPTH REACHED			-
gFile>> 10/12/2013 12:55 8.2.6			- 3.0 — - - -	-								-
23028 LOGS.GPJ < <drawin< td=""><td></td><td></td><td>3.5 — - - 4.0 —</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></drawin<>			3.5 — - - 4.0 —									-
P NON-CORED FULL PAGE 1376.			- - - 4.5 —									
GAP 8_07.3 LIB.GLB Log GAF			- - 5.0 —	l envir	This report of borehold on the second s	e mu only, enco	st be r withou puntere	ead ir t atter ed. A	n conjunction with accompanying notes and abbreviations. mpt to consider geotechnical properties or the geotechnica s such it should not be relied upon for geotechnical purpos	It has It signi ses.	s bee	n prepared for ce of the materials GAP gINT FN. F01a RL3

CLIEN PROJ LOCA JOB N	NT: JECT: ATION: NO:	Ass Port K Port K Port K 13762	ocia embla embla Pl embla Pl 3028	nase II rimary School			CO SUI INC HO	ORDS: 307834.0 m E 6182234.0 m N MGA94 56 RFACE RL: DATUM: AHD CLINATION: -90° LE DEPTH: 1.60 m	s [[[[[[Shee Drili Con ⁻ Log(Che(ET: 1 OF 1 _ RIG: 5T Excavator IRACTOR: Affective Services GED: KY DATE: 9/10/13 CKED: CO DATE: 15/10/13
_	Dri	lling		Sampling	1			Field Material Des	criptio	n ≻	
METHOD	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBO	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENC DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
		-0.0	0.20					TOPSOIL: Sandy CLAY low plasticity, dark brown, very soft, no odour, very moist	м	VS	
		0.5	0.20					FILL: Sity CLAY low plasticity, dark brown-red brown, with some sandy clay and fine to coarse gravel fragments and boulders, very soft, very moist to wet, soft	M - W	s	
			0.90			× –		Gravelly Silty CLAY low plasticity, red brown, fine gravel, very soft, moist			Water seepage at 0.60m
		-	-				-		м	vs	
		1.5 —	1.50			$\underline{\overline{\times}}^{\theta}$		grading to red orange brown, with some ironstone fragments	-		
		-	-					END OF BOREHOLE @ 1.60 m			
		- 2.0— -	-								
		2.5-	-								
		3.0-	-								
		-									
		3.5	-								
		4.0	-								
		4.5-									
		-									



Defining Sampling Field Material Description Image: Sampling Image: Sampling	CI PF LC JC		T: ECT: TION: IO:	Port K Port K Port K 13762	embla embla Pr embla Pr 3028	nase II imary School			CO SUI INC	REPORT ORDS: 307770.0 m E 6182264.0 m N MGA94 56 RFACE RL: DATUM: AHD CLINATION: -90° LE DEPTH: 2.60 m	OF	SHEE DRILI CON LOGO	OREHOLE: MW2 T: 1 OF 1 RIG: 5T Excavator IRACTOR: Affective Services GED: KY DATE: 9/10/13 CKED: CO DATE: 15/10/13	
0 0			Dri	lling	_	Sampling				Field Material Des	criptio	on	1	
0 0.0 Wein at 1 500 0 0.0 0.00 M 0.0 0.00 metal pipe at 0.00 M 0.0 1.0 0.00 M M 0.0 1.0 0.00 M M 0.0 1.0 1.0 M M M 0.0 1.0 1.0 M M M 0.0 1.0 1.0 M M M 0.0 0.0 M M M M 0.0 0.0 0.0 M M M 0.0 0.0 0.0 M M M 0.0 0.0 0.0	METHOD	PENETRATION	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE		STRUCTURE AND ADDITIONAL OBSERVATIONS	
	EX			0.5	0.60			Qz Qz		FILL: Sity CLAY low plasticity, dark brown/black, with some fine gravel, no odour, moist metal pipe at 0.60m becoming orange brown after 0.90m, no odour, slightly moist FILL: Gravelly CLAY low plasticity, orange brown/yellow brown, soft, bricks observed, wet, soft WEATHERED BEDROCK yellow brown/orange brown, with some clay and ironstone fragments, dry	- M W D	s	Water at 1.60m	
	00077.0 0071.0			2.5-	-			Qz Qz	Q	END OF BOREHOLE @ 2.60 m TARGET DEPTH REACHED				
	o.GPJ < <drawingfile>> 10/1⊿/201</drawingfile>			3.5 —	-									
	XED FULL PAGE 13/023028 LUG			4.0-										
				4.5	-									



CL PF LC JC		T: ECT: TON: D:	Port Kr Port Kr Port Kr 13762	embla embla Pl embla Pl 3028	hase II rimary School			CO SUF INC HOI	REPORT ORDS: 307707.0 m E 6182253.0 m N MGA94 56 RFACE RL: DATUM: AHD LINATION: -90° LE DEPTH: 1.60 m	OF	SHEE DRILI CON ⁻ LOGC CHEC	CREHOLE: MW3 ET: 1 OF 1 L RIG: 5T Excavator TRACTOR: Affective Services GED: KY DATE: 9/10/13 CKED: CO DATE: 15/10/13
		Dri	lling		Sampling				Field Material Des	scripti	on	
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX			0.5 1.0 	0.50			Qz Qz Qz Qz		FILL: Silty CLAY low plasticity, black/dark brown, no odour, moist, soft, glass, bricks and boulders were observed	М	S	Water seepage at 0.60m
	-			- - - - - -			Qz d		END OF BOREHOLE @ 1.60 m TARGET DEPTH REACHED			
000,200 0.201 0.102 0.10			2.5 — - - 3.0 — -	-								
				-								
			 4.5 	-								
	1		5.0 —	TI enviro	his report of borehole onmental purposes o	e mu only, enco	st be re withou puntere	ead ii t atte ed. A	n conjunction with accompanying notes and abbreviations mpt to consider geotechnical properties or the geotechnic s such it should not be relied upon for geotechnical purpo	. It ha al sign ses.	s beei	n prepared for se of the materials GAP gINT FN. F01 RL

(F L	CLIEN PROJE	Т: Р ЕСТ: Р ПОN: Р О: 1:	Gol sso ort Kem ort Kem 3762302	bla bla Ph bla Pri 28	rites ase II mary School	COORDS: 307707 SURFACE RL: DJ INCLINATION: -90 HOLE DEPTH: 1.6	DRT OF STANDP 7.0 m E 6182253.0 m N MGA94 56 ATUM: AHD 3° 50 m	ipe in	SHEET: 1 OF 1 DRILL RIG: 5T Exc CONTRACTOR: Af LOGGED: KY CHECKED: CO	avator fective Services DATE: 9/10/13 DATE: 15/10/13
		Drilling			Field Material Descr	iption		Instrument	tation Details	
METHOD	WATER	DEPTH (metres)	DEPTH RL	GRAPHIC LOG	SOIL/ROCK MA DESCRIPTI	TERIAL ON				
			0.50		SILTY CLAY			0.20 0.40 0.50 1.60		ement entonite ravel pack
				for	environmental purposes only, materials enco	without attempt to co untered. As such it s	onsider geotechnical properties or th hould not be relied upon for geotech	e geotechnic inical purpos	cal significance of the es.	GAP gINT FN. F R

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PROJECT: Port Kembla Phase II

LOCATION: Port Kembla Primary School

REPORT OF HAND AUGERED BOREHOLE: OL1

SHEET: 1 OF 1

COORDS: 307932.0 m E 6182172.0 m N MGA94 56 SURFACE RL: DATUM: AHD INCLINATION: -90° HOLE DEPTH: 0.50 m

LOGGED: KY

DATE: 27/6/13 DATE: 15/10/13

JO	BN	D:	13762	3028				HO	LE DEPTH: 0.50 m	(CHEC	CKED: CO DATE: 15/10/13	
		Dri	lling	1	Sampling				Field Material Desc	riptic	n	Γ	
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
				0.20	OL1 0.00-0.20 m PID = 0 ppm				CLAY low plasticity, black/dark brown, with some fine gravel content, no odour, stiff		St		
НА			-	-	OL1 0.30-0.50 m				CLAY low plasticity, yellow-brown, minor content of gravel, no odour, firm	м	F		
			-0.5	-	PID = 0 ppm				END OF HAND AUGER @ 0.50 m TOP OF WEATHERED BEDROCK				+
			-	-									
			1.0 —										
			-	-									
			- 1.5 —	-									
			-	-									
			-	-									
			2.0-										
			-	-									
			2.5—	-									
			-	-									
			3.0 —										
			-	-									
þ			- 3.5 —										
			-	-									
			-	-									
			4.0										
			-	-									
			4.5 —	-									
0			-	-									
			5.0	1	in report of the state								
1				۲۱ prep	ared for environmenta	ered al pu teria	rpose ls enc	s only ounte	nust be read in conjunction with accompanying notes and a r_i , without attempt to consider geotechnical properties or the ared. As such it should not be relied upon for geotechnical p	geote geote ourpos	echnic ses.	IS. It has been cal significance of GAP gINT FN. F	01 RL
-													



PROJECT: Port Kembla Phase II

LOCATION: Port Kembla Primary School

REPORT OF HAND AUGERED BOREHOLE: OL2

COORDS: 307897.0 m E 6182206.0 m N MGA94 56 SURFACE RL: DATUM: AHD INCLINATION: -90° SHEET: 1 OF 1

LOGGED: KY

DATE: 27/6/13 DATE: 15/10/13

J	OB NO):)	13762	3028				HO	LE DEPTH: 0.70 m	(CHEC	CKED: CO DATE: 15/10/13
		Dri	lling	1	Sampling				Field Material Desc	riptic	n	
METHOD	PENETRATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0 	0.30	OL2 0.00-0.20 m PID = 0 ppm		• • •		Sandy CLAY low plasticity, black, fine grained sand, with minor content of fine gravel, very moist, very soft		vs	
HA			- 0.5 — -		OL2 0.30-0.50 m PID = 0 ppm				CLAY low plasticity, black to orange brown, with minor content of fine gravel, no odour, very moist, stiff	м	St	-
			-						END OF HAND AUGER @ 0.70 m TOP OF WEATHERED BEDROCK			
												-
			- 1.5—									-
			-									
			2.0									-
			- 2.5—									-
0 8.2.856			-									
10/12/2013 12:5			3.0									-
<pre>c<drawingfile>></drawingfile></pre>			- 3.5—									-
128 LOGS.GPJ			-									
- PAGE 1376230			4.0									
ON-CORED FULL			- - 4.5									
GLB Log GAP N			-									
3AP 8_07.3 LIB.(5.0 5.0 5.0 Image: State of the s											
		-				-		-		-		

CL PR		-: CT: ION [.]	Port Ke Port Ke Port Ke	embla embla P embla P	hase II			CO SUI PIT	ORDS: 307849.0 m E 6182082.0 m N MGA94 56 RFACE RL: DATUM: AHD	5 N (SHEE MACH CONT	T: 1 OF 1 HINE: 5T Excavator IRACTOR: Affective Services GED: KY DATE: 27/6/13
JO	B NC):):	13762	3028				BU	CKET TYPE: 80cm x 60cm	(CHEC	CKED: CO DATE: 15/10/1
	E	Exca	vation		Sampling				Field Material Desc	riptio	on	
MEINUU	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0 - -	0.40	TP01 0.00-0.10 m PID = 0 ppm				FILL: Sandy CLAY low plasticity, dark brown/black, no odour, very moist, very soft		vs	Water seepage at 0.20m
			- 0.5 - -		TP01 0.50-0.60 m PID = 0 ppm			-	Gravelly CLAY low plasticity, yellow/orange brown, fine gravel, no odour, slightly moist, firm	м	F	
			- - 	0.90	TP01 0.90-1.00 m PID = 0 ppm		Qz	¢	BEDROCK orange-brown, with many ironston fragments noted, dry TEST PIT DISCONTINUED @ 1.00 m TARGET DFPTH REACHED			
			- - 15									
			-									
			- 2.0— -									
			- - 2.5—									
			-									
			3.0 — - -									
			- 3.5 —									
			- - 4.0—									
			-									
			4.5 — - -									
			5.0 —									

CL		r: cct:	G SS Port K Port K	oldo oci embla embla F	er ates ^{hase II}			CO SUI	REPOF ORDS: 307870.0 m E 6182103.0 m N MGA94 56 RFACE RL: DATUM: AHD	TS	OF SHEE MACH	TEST PIT: TP02 T: 1 OF 1 HINE: 5T Excavator TRACTOR: Affective Services
LC		ION:	Port K	embla F	rimary School			PIT	DEPTH: 1.30 m	I		GED: KY DATE: 27/6/13
		J.	13702	3020	Compling			BU	Field Meterial Dage	ul mái a		JKED. CO DATE. 15/10/13
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
EX				0.30	TP02 0.00-0.10 m PID = 0 ppm TP02 0.30-0.40 m PID = 0 ppm				FILL: Sandy CLAY low plasticity, no odour, very moist, very soft CLAY low plasticity, with some fine grained sand and fine gravel, no odour, moist, firm	M-W	vs	
			- - 1.0 — -	0.80	TP02 0.90-1.00 m PID = 0 ppm		Qz Qz Qz Qz	0	BEDROCK weathered, orange and red, with many fine gravel and ironstone contents and some clay, no odour, moist	— м	F	
									TEST PIT DISCONTINUED @ 1.30 m TARGET DEPTH REACHED			
			5.0 —	envir	This report of test pit	t must only, v enco	t be re withou untere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. I mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	t has signi es.	 been ficanc	prepared for ce of the materials GAP gINT FN. F01 RL

(G	olde	er				REPOR	RL	OF	TEST	PIT: TP03
CL	IENT		Port Ke	embla	ales			CO SUI	ORDS: 307898.0 m E 6182122.0 m N MGA94 56 RFACE RL: DATUM: AHD	е Г	SHEE MACH	T: 1 OF 1 HINE: 5T Excav	ator
PR			Port Ke	embla P embla P	Phase II Primary School			DIT	DEPTH: 1 20 m	(RACTOR: Affe	ctive Services
JO	B NC):	13762	3028	linary ocnoor			BUG	CKET TYPE: 80cm x 60cm	(CHEC	CKED: CO	DATE: 15/10/13
	E	xca	vation		Sampling	1			Field Material Desc	riptic	n		
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STR A OB	UCTURE AND DDITIONAL SERVATIONS
			-0.0	0.30	TP03 0.00-0.10 m PID = 0 ppm				FILL: Sandy CLAY low plasticity, brown, fine grained sand, (minor content of dark grey sand also noted), no odour, very moist, very soft, coal wash reject noted		vs		-
EX			- 0.5 — -	0.80	TP03 0.50-0.60 m PID = 0 ppm				FILL: CLAY low plasticity, orange brown and black/grey of coal washery reject (CWR), no odour, moist, firm	м	F		-
			 1.0 —		TP03 0.90-1.00 m PID = 0 ppm		Qz Qz Qz		BEDROCK weathered, orange brown, with many gravel and ironstone fragments, no odour, dry	D			-
			-						TEST PIT DISCONTINUED @ 1.20 m TARGET DEPTH REACHED				-
			- 1.5										-
			-										-
			-										-
			2.0										-
			-										-
			-										-
			- 2.5										-
			-										-
			3.0										-
			-										-
			-										-
			3.5 —										-
			-										-
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			4.0										-
			-										-
			-										-
			4.5 -										-
			-										-
													-
				envir	This report of test pit r onmental purposes of e	nus nly, enco	at be rea without ountere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	: has signif s.	been ficanc	prepared for e of the materia	IS GAP gINT FN. F01e RL3

GAP 8_07.3 LIB.GLB_Log_GAP_NON-CORED FULL PAGE_137623028 LOGS.GPJ_<<DrawingFile>> 10/12/2013 12:55_8.2.856



PROJECT: Port Kembla Phase II

LOCATION: Port Kembla Primary School

REPORT OF TEST PIT: TP04

COORDS: 307919.0 m E 6182142.0 m N MGA94 56 SURFACE RL: DATUM: AHD SHEET: 1 OF 1 MACHINE: 5T Excavator CONTRACTOR: Affective Services LOGGED: KY DATE: 27/6/13 CHECKED: CO DATE: 15/10/13

PIT DEPTH: 1.00 m BUCKET TYPE: 80cm x 60cm

	10/ 02	5020				BU				
Exca	vation		Sampling				Field Material Desc	riptic	on	
METHOU EXCAVATION RESISTANCE WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
	-0.0	0.30	TP04 0.00-0.10 m PID = 0 ppm				FILL: SAND fine grained, pale brown, very moist	м		
5	0.5-	0.00	TP04 0.50-0.60 m		Qz Qz Qz	0	BEDROCK weathered, brown, with many gravel and ironstone fragments, dry		-	
	-		PID = 0 ppm		Qz Qz	0		D		
	-1.0		0.90-1.00 m PID = 0 ppm		Qz	¢	TEST PIT DISCONTINUED @ 1.00 m TARGET DEPTH REACHED			
	- - 1.5									
	-									
	2.0-									
	-									
	3.0									
	-									
	3.5									
	4.0-									
	-									
	4.5									
	5.0									

CL		r: :CT: 10N:	Port K Port K Port K	embla embla P embla P	Primary School			CO SUI PIT	REPOR ORDS: 307831.0 m E 6182107.0 m N MGA94 56 RFACE RL: DATUM: AHD DEPTH: 1.20 m	2 T	OF SHEE MACH CONT	TEST PIT: TP05
JC)B NO	D:	13762	3028				BU	CKET TYPE: 80cm x 60cm		CHEC	CKED: CO DATE: 15/10/13
		Exca	vation	1	Sampling				Field Material Desc	riptic	n	
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
×				0.20	TP05 0.00-0.10 m PID = 0 ppm TP05 0.50-0.60 m			× × × × × × × × × × × × × × × × × × ×	FILL: Sandy CLAY low plasticity, brown, fine grained sand, no odour, very moist, very soft FILL: Silty CLAY low plasticity, black, with some fine gravel contents, bricks and ceramic bottles noted, moist, very soft	м	vs	
Ш			- - - 1.0 —	1.00	QC102 / QC202 PID = 0 ppm TP05 0.90-1.00 m PID = 0 ppm		0 0 0 0 0 0 0 0		Gravelly CLAY low plasticity, orange brown mottled white and red, with some fine grained sand, moist, firm WEATHERED BEDROCK		F	
					TP05 1.10-1.20 m PID = 0 ppm		Q7		Test PIT DISCONTINUED @ 1.20 m TARGET DEPTH REACHED			
				envir	This report of test pit onmental purposes	t musi only, v encc	t be re withou ountere	ad in It atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	has signi s.	been ficanc	prepared for e of the materials GAP gINT FN. F07 RI

CLIENT: PROJECT LOCATION JOB NO:	Port K Port K Port K Port K 13762	embla embla F embla F 3028	Phase II Primary School			CO SUI PIT BU	ORDS: 307852.0 m E 6182122.0 m N MGA94 56 RFACE RL: DATUM: AHD DEPTH: 1.00 m CKET TYPE: 80cm x 60cm		SHEET MACHI CONTF LOGGE	T: 1 OF 1 INE: 5T Excav RACTOR: Affe ED: KY KED: CO	ator ctive Services DATE: 27/6/13 DATE: 15/10/13
Eve	ovation		Sompling				Field Motorial Data	vintia			
METHOU EXCAVATION RESISTANCE WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	STR A OBS	UCTURE AND DDITIONAL SERVATIONS
ž	0.0	0.20	TP06 0.00-0.10 m PID = 0 ppm TP06 0.20-0.30 m PID = 0 ppm TP06 0.50-0.60 m PID = 0 ppm				FILL: Sandy CLAY low plasticity, black, with some fine gravel content, broken glass noted, no odour, very moist, very soft FILL: Coal Washery Reject (CWR) layer Silty CLAY low plasticity, orange brown, with some fine gravel and ironstone fragments, no odour, moist, soft	M	VS S		
	- - 1.0	0.80	TP06 0.90-1.00 m		×	-	grading to weathered bedrock, orange brown/white mottled red, with many fine gravel and ironstone fragments	-			
	4.0	-									
	4.5	-									
	5.0	envir	This report of test pi ronmental purposes	t must only, v enco	t be re withou	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. I mpt to consider geotechnical properties or the geotechnica s such it should not be relied upon for geotechnical purpos	t has I signi es.	been p ficance	prepared for of the materia	ls GAP gINT FN. F

CL PF LC		r: :ct: :10N:	Port Ke Port Ke Port Ke	embla embla P embla P	hase II rimary School			CO SUI PIT	REPOR ORDS: 307876.0 m E 6182143.0 m N MGA94 56 RFACE RL: DATUM: AHD DEPTH: 1.00 m	2T	OF SHEE MACH CONT	F TEST TE: 1 OF 1 HINE: 5T Exca IRACTOR: Af GED: KY	PIT: TP07 avator fective Services DATE: 27/6/13
JC	DB NC	D:	13762	3028				BU	CKET TYPE: 80cm x 60cm	(CHEC	CKED: CO	DATE: 15/10/13
		Exca	vation		Sampling				Field Material Desc	riptic	on		
METHOD	EXCAVATION	WATER	DEPTH (metres)	DEPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY	ST	RUCTURE AND ADDITIONAL BSERVATIONS
EX			0.0 - - - 0.5—	0.20	TP07 0.00-0.10 m PID = 0 ppm TP07 0.30-0.40 m PID = 0 ppm TP07			× × × × × × × × × × × × × × × × × × ×	FILL: Clayey SAND fine grained, brown, some dark grey, concrete post noted, no odour, moist FILL: Gravelly CLAY low plasticity, black, many fine gravel, some bricks and boulders noted, very moist, very soft	- M	vs		
			- - -	0.90	0.50-0.60 m PID = 0 ppm TP07 0.90-1.00 m				CLAY orange brown mottled black, with some fine grained sand/gravel content, no odour, moist grading to weathered bedrock, orange brown, with some clay and	_	F		
			1.5 — - - - - - - - - - - - - - - - - - - -		PID = 0 ppm				rest under the decomposition of the decomposition o				
				envir	onmental purposes o	musi only, v enco	untere	ad in it atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical is such it should not be relied upon for geotechnical purpose	nas signi s.	been ficanc	prepared for the mater	ials GAP gINT FN. F01 RL

LIENT: ROJEC	Pa T: Pa DN: Pa	rt Kem rt Kem rt Kem	ıbla ıbla Pl ıbla Pı	hase II rimary School			CO SUI PIT	ORDS: 307901.0 m E 6182160.0 m N MGA94 56 RFACE RL: DATUM: AHD DEPTH: 1.00 m		SHEE MACH CONT LOGG	T: 1 OF 1 IINE: 5T Excava RACTOR: Affeo GED: KY	ator ctive Services DATE: 26/6/13
OB NO:	: 13	76230	28				BU	CKET TYPE: 80cm x 60cm		CHEC	KED: CO	DATE: 15/10/1
Ē	xcavati	on		Sampling				Field Material Desc	riptic	on .		
EXCAVATION RESISTANCE	WATER DEPTH	(metres)	EPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY	STRI AI OBS	JCTURE AND DDITIONAL SERVATIONS
	0.	0	0.30	TP08 0.00-0.10 m QC101 QC201 PID = 0 ppm			2	Sandy CLAY low plasticity, black, fine grained sand, firm clay, trace gravel, no odour, moist				
	0.	5		TP08 0.50-0.60 m PID = 0 ppm				orange/yellow brown, with some fine gravel, stiff, slightly moist	м			
_	—1.	0	0.80	TP08 0.90-1.00 m PID = 0 ppm		Qz Qz	0	WEATHERED BEDROCK brown/orange brown, with some clay and gravel fragments, dry TEST PIT DISCONTINUED @ 1.00 m	D	_		
		-						TARGET DEPTH REACHED				
	1.	5										
	2.	- - 0 -										
	2	- - 5										
		-										
	3.	0										
	3.	- - 5										
	4.	0										
	4.	5										
		-										

			G	olde	er				REPOR	RT	OF	TEST PIT: TP09
С		T:	Port K	embla	ates			CO SUI	ORDS: 307809.0 m E 6182136.0 m N MGA94 56 RFACE RL: DATUM: AHD	: 	SHEE MACH	T: 1 OF 1 HINE: 5T Excavator
P L' J(ROJE OCAT OB NO	ECT: FION: O:	Port K Port K 13762	embla P embla P 3028	hase II rimary School			PIT BU(DEPTH: 0.80 m CKET TYPE: 80cm x 60cm	l l	CONT LOGG CHEC	RACTOR: Affective Services SED: KY DATE: 26/6/13 KED: CO DATE: 15/10/13
F		Exca	vation		Sampling				Field Material Des	rintic	n	
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0 	0.20	TP09 0.00-0.10 m PID = 0 ppm				TOPSOIL: Sandy CLAY low plasticity, black, very soft, no odour, wet, very soft	w	VS	
Ä			-	0.50	TP09 0.30-0.40 m PID = 0 ppm				FILL: Sitty CLAY low plasticity, black, bricks, glass and coal washery reject noted, no odour, moist, soft			
			0.5— - -	-	TP09 0.50-0.60 m PID = 0 ppm		×××× 		Silty CLAY low to medium plasticity, orange brown, with some fine gravel content, moist	— м	S	
			- 1.0	-					TEST PIT DISCONTINUED @ 0.80 m DUE TO REFUSAL TARGET DEPTH REACHED			
			- 1.5 — - -	-								
			- 2.0— - -	-								
8.2.856			2.5— - - -	-								-
File>> 10/12/2013 12:56			3.0 — - - -	-								
)28 LOGS.GPJ < <drawin< td=""><td></td><td></td><td>3.5 — - - -</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td></drawin<>			3.5 — - - -									-
RED FULL PAGE 137623			4.0— - - -	-								
GLB Log GAP NON-COF			4.5	-								
GAP 8_07.3 LIB			· 5.0—	envir	This report of test pi onmental purposes	t must only, v enco	t be re withou ountere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. I mpt to consider geotechnical properties or the geotechnica s such it should not be relied upon for geotechnical purpos	t has signit es.	been ficanc	prepared for e of the materials GAP gINT FN. F01e RL3

CL		r: CT:	Port K	embla embla F	er ates Phase II			CO SUI	REPOF ORDS: 307831.0 m E 6182146.0 m N MGA94 56 RFACE RL: DATUM: AHD	T	OF SHEE MACH CONT	TEST PIT: TP10 T: 1 OF 1 HINE: 5T Excavator IRACTOR: Affective Services
LC JC	DCAT	'ION: D:	Port K 13762	embla F 3028	Primary School			PIT BU	DEPTH: 1.00 m CKET TYPE: 80cm x 60cm		LOGO CHEO	GED: KY DATE: 26/6/13 CKED: CO DATE: 15/10/13
	I	Exca	vation		Sampling				Field Material Desc	riptic	on	
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0	0.30	TP10 0.00-0.10 m PID = 0 ppm			~~~~	FILL: Sitty CLAY low plasticity, black, with some fine gravel content, bricks, timber and tiles observed, no odour, moist, soft		S	
EX			0.5 — -		TP10 0.50-0.60 m PID = 0 ppm				slightly moist, firm	м	F	
			-	0.90	TP10				BEDROCK	D	-	
	-			-	0.90-1.00 m PID = 0 ppm		02		orange brown, with some clay and ironstone fragments, dry TEST PIT DISCONTINUED @ 1.00 m TARGET DEPTH REACHED			
			- 1.5 — -	-								
			- 2.0 —	-								
			- - 2.5—	-								
				-								
			-	-								
			3.5									
			- 4.0									
			- - 4.5—									
			- - 5.0-	-								
				envir	This report of test pit onmental purposes of	mus only, enco	t be re withou ountere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. I mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	t has signi es.	been ficanc	prepared for se of the materials GAP gINT FN. F0 R

CL PR		T: CT:	Port K	OCI embla embla P	ates hase II			CO SUI	ORDS: 307854.0 m E 6182161.0 m N MGA94 56 RFACE RL: DATUM: AHD	9 		T: 1 OF 1 HINE: 5T Excav	ator ctive Services
lo Jo	B NC	ion: D:	Port K 13762	embla P 3028	rimary School			PIT BU(DEPTH: 1.50 m CKET TYPE: 80cm x 60cm	[(LOGO	GED: KY CKED: CO	DATE: 26/6/13 DATE: 15/10/1
	E	Exca	vation		Sampling				Field Material Desci	iptic	on		
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STR A OB	UCTURE AND DDITIONAL SERVATIONS
			-0.0	0.10			≥ ≥ 4 4 ⊿		CONCRETE				
			-	0.40	0.10-0.20 m PID = 0 ppm				FILL: SAND fine grained, pale brown, with some stiff clay, bricks and boulders, no odour, moist, minor coal wash reject content noted				
Ś			0.5		TP11 0.50-0.60 m PID = 0 ppm				low plasticity, orange brown, with some fine gravel and sand, no odour, slightly moist, firm	м			
			- 1.0 <i></i> -	1.00	TP11 0.90-1.00 m PID = 0 ppm		Qz	0	WEATHERED BEDROCK orange brown, with some stiff clay, fine gravel and ironstone content die				
			- - 1 5		TP11 1.40-1.50 m		Qz Qz Qz			D			
			-		PID = 0 ppm				TEST PIT DISCONTINUED @ 1.50 m TARGET DEPTH REACHED				
			- 2.0 <i>—</i>										
			- - 2.5—										
			-										
			3.0										
			- 3.5 —										
			-										
			4.0— - -										
			- 4.5—										
			-										
-			5.0 -		This report of test pit	must	he re	ad in	conjunction with accompanying notes and abbreviations. It	has	been	prepared for	

CL		T: CT:	Port Ke	embla embla	er ates Phase II			CO SUI	REPUR ORDS: 307868.0 m E 6182186.0 m N MGA94 56 RFACE RL: DATUM: AHD	: 		TIEDIPII: IP12
JO		IUN: D:	Port Ke	embia P 3028	minary School			BU	CKET TYPE: 80cm x 60cm	(DATE: 26/6/13 CKED: CO DATE: 15/10/13
	E	Exca	vation		Sampling				Field Material Desc	riptic	on	
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			0.0 -	0.30	TP12 0.00-0.10 m PID = 0 ppm				FILL: Clayey SAND fine grained, brown, trace glass and coal washery reject observed, no odour, moist CLAY	-		
Ë			- 0.5— -		TP12 0.50-0.60 m PID = 0 ppm				low plasticity, orange brown mottled red, stiff, no odour	м		
	_		- - —1.0—	0.80	TP12 0.90-1.00 m PID = 0 ppm		Qz Qz		WEATHERED BEDROCK orange brown, with some clay and ironstone fragments, no odour, dry TEST PIT DISCONTINUED @ 1.00 m	D		
			-	-					TARGET DEPTH REACHED			
			1.5 									
			- 2.0—									
			- - 25—									
			-									
			 3.0									
			- - 3.5—									
			-									
			4.0 — -									
			- - 4.5—									
			-									
	I		5.0 —	envir	This report of test pit conmental purposes of	musi only, v	t be re withou	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical s s such it should not be relied upon for geotechnical purpose	has signi s.	been ficanc	prepared for e of the materials GAP gINT FN. F

CLIENT: Port Kembla PROJECT: Port Kembla Phase II							REPOR COORDS: 307873.0 m E 6182188.0 m N MGA94 56 SURFACE RL: DATUM: AHD			RT OF TEST PIT: TP12A SHEET: 1 OF 1 MACHINE: 5T Excavator CONTRACTOR: Affective Services			
JOB NO: 137623028							BUCKET TYPE: 80cm x 60cm			CHECKED: CO DATE: 15/10/13			
	Excavation Sampling							Field Material Description					
METHOD EXCAVATION	RESISTANCE WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS		
EX		-0.0	-	TP12A 0.10-0.20 m Asbestos Sample PID = 0 ppm				FILL: Silty CLAY dark brown, soft, asbestos noted, wet	w				
		-0.5	-					TEST PIT DISCONTINUED @ 0.50 m HOLE ABANDONED DUE TO ASBESTOS					
		1.0-	-										
		1.5	-										
			-										
		2.0-	-										
		2.5 —	-										
		3.0-	-										
			-										
		3.5	-										
		4.0-	-										
			-										
		4.5	-										
		5.0	1	This report of test pi	t must	be re	ad in	conjunction with accompanying notes and abbreviations	s. It has	been	prepared for		
CL			Port K Port K	embla embla	er ates Phase II Primary School			CO SUI	REPO ORDS: 307795.0 m E 6182152.0 m N MGA94 56 RFACE RL: DATUM: AHD	RT	OF SHEE MACH	F TEST ET: 1 OF 1 HINE: 5T Excav IRACTOR: Affe	ator ctive Services
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JC	DCAT DB NC	10in: D:	13762	embla F 3028	rimary School			BU	DEPTH: 1.80 m CKET TYPE: 80cm x 60cm		CHEC	CKED: CO	DATE: 26/6/13 DATE: 15/10/13
		Exca	vation		Sampling				Field Material Des	cripti	on	-	
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STR A OB	UCTURE AND DDITIONAL SERVATIONS
			-0.0	0.20	TP13 0.00-0.00 m PID = 0 ppm				TOPSOIL: Sandy CLAY low plasticity, black, no odour, slightly moist, soft				
			- - - - - -	-	TP13 0.50-0.60 m PID = 0 ppm				FILL: Clayey SAND fine grained, yellow brown, with some clay (dark brown, low plasticity and firm), slightly moist, firm	м			
EX			- - - - -	0.90	TP13 0.90-1.00 m PID = 0 ppm			****	with some big boulders, timber and gravel fragments were observed, becoming wet	w			
			- 1.5— -	1.50	TP13 1.50-1.60 m PID = 0 ppm		Qz Qz		WEATHERED BEDROCK orange brown, with some clay, slightly moist	м			
			- 2.0— - -	-					TARGET DEPTH REACHED				
			- 2.5— - -	-									
			3.0 — - -	-									
			3.5 — - -	-									
			4.0										
			4.5— - -	-									
			5.0—	envir	This report of test pit	musionly, v encc	t be re withou	ead in it atte ed. A	conjunction with accompanying notes and abbreviations. mpt to consider geotechnical properties or the geotechnic s such it should not be relied upon for geotechnical purpo	It has al signi ses.	been ficanc	prepared for the materia	^{ls} GAP gINT FN. F0 RI

CL PR	IENT	: CT:	Port Ke	embla embla P	hase II			CO SUI	ORDS:307811.0 m E 6182167.0 m N MGA94 56 RFACE RL: DATUM: AHD	9 N 0	SHEE MACH CONT	ET: 1 OF 1 HINE: 5T Excava TRACTOR: Affeo	ator ctive Services
_0 JO	CATI B NC	ion: D:	Port Ke 137623	embla P 3028	rimary School			PIT BU(DEPTH: 1.50 m CKET TYPE: 80cm x 60cm	L	LOGO CHEO	GED: KY CKED: CO	DATE: 26/6/13 DATE: 15/10/ ²
_	E	Exca	/ation		Sampling				Field Material Des	criptio	on		
	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRI AI OBS	JCTURE AND DDITIONAL SERVATIONS
			-0.0 - - -	0.50	TP14 0.00-0.10 m PID = 0 ppm				FILL: Clayey SAND fine grained, brown/dark grey, with some fine gravel, no odour, moist			Water seepage at	0.20m
			0.5	0.90	TP14 0.50-0.60 m PID = 0 ppm		×		Silty CLAY low plasticity, with some fine gravel and ironstone fragments gravel, moist, stiff	м			
			 1.0	1.30	TP14 0.90-1.00 m PID = 0 ppm		× ×		becoming softer after 0.90m with red mottling, firm				
			- - 		TP14 1.40-1.50 m		Qz (Qz (WEATHERED BEDROCK orange brown, with some white gravel fragments, dry	D			
			- - 2.0 - - - -						TARGET DEPTH REACHED				
			2.5										
			4.0— - -										
			- 4.5 - -										
			- 5.0 —										

ROJECT:	Port Ke Port Ke	embla embla P	hase II			CO SUI	ORDS: 307837.0 m E 6182188.0 m N MGA94 56 RFACE RL: DATUM: AHD	s N C		I: 1 OF 1 IINE: 5T Excava RACTOR: Affect	tor tive Services
OCATION: OB NO:	Роп Ке 137623	mbia P 1028	rimary School			РП BU(DEPTH: 1.00 m CKET TYPE: 80cm x 60cm	L (CHEC	KED: KY	DATE: 26/6/13 DATE: 15/10/1
Exca	vation		Sampling				Field Material Des	criptio	on		
EXCAVATION RESISTANCE WATER	DEPTH (metres)	DEPTH RL	Sample or Field test	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRI AI OBS	JCTURE AND DDITIONAL ERVATIONS
	-0.0 - - -	0.40	TP15 0.00-0.10 m PID = 0 ppm				FILL: Sandy CLAY low plasticity, brown/dark brown, fine grained sand, with some coal washery reject and boulders, moist, soft				
	0.5		TP15 0.50-0.60 m PID = 0 ppm		×		Silty CLAY low plasticity, orange brown, with many fine gravel, moist, soft	М	s		
	 	0.90	TP15 0.90-1.00 m PID = 0 ppm		-x		WEATHERED BEDROCK orange brown, with some clay, no odour, slightly moist TEST PIT DISCONTINUED @ 1.00 m TARGET DEPTH REACHED				
	- 2.0										
	- - 2.5—										
	-										
	- 3.0 — -										
	- - 3.5										
	-										
	4.0— - -										
	- - 4.5										
	-										

CLIENT: PROJEC	Port K T: Port K	oldo oci čembla čembla F	er ates ⁱ hase II			CO SUI	CRDS: 307860.0 m E 6182211.0 m N MGA94 56 RFACE RL: DATUM: AHD			T: 1 OF 1 IINE: 5T Excavator IRACTOR: Affective Services	•
LOCATIO	0N: Port K 13762	embla F 3028	Primary School			PIT BU(DEPTH: 1.00 m CKET TYPE: 80cm x 60cm	L		GED: KY DATE: 26/6/1 CKED: CO DATE: 15/10/	3 /13
E	cavation		Sampling				Field Material Desc	riptio	on		
METHOD EXCAVATION RESISTANCE	WATER DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
	0.0 - 0.5 - 1.5 - 2.0 - 2.5 - 3.0 - 3.5 - 4.0 - 4.5 -	0.20 0.30 0.90 0.90	TP16A 0.00-0.10 m PID = 0 ppm TP16A 0.20-0.30 m PID = 0 ppm TP16A 0.50-0.60 m PID = 0 ppm TP16A 0.90-1.00 m Asbestos Sample				FILL: Sandy CLAY box plasticity, brown, fine grained sand, no odour, soft, moist coal washery reject layer grading to Sity CLAY, black/dark brown, low plasticity, coal washery reject, bricks and boulders were observed, no odour, wet asbestos layer noted TEST PIT DISCONTINUED @ 1.00 m HOLE ABANDONED DUE TO ASBESTOS	M W	s	Wet at 0.70m	
	5.0-	envir	This report of test pit	t musi	t be re withou	ad in	conjunction with accompanying notes and abbreviations. It	has l	been	prepared for	

	Golder Associates
CLIENT:	Port Kembla

PROJECT: Port Kembla Phase II

LOCATION: Port Kembla Primary School

REPORT OF TEST PIT: TP16B

COORDS: 307858.0 m E 6182206.0 m N MGA94 56 SURFACE RL: DATUM: AHD

SHEET: 1 OF 1 MACHINE: 5T Excavator CONTRACTOR: Affective Services LOGGED: KY DATE: 26/6/13 CHECKED: CO DATE: 15/10/13 CHECKED. CO

PIT DEPTH: 0.20 m BLICKET TYPE: 80cm x 60cm

	.0.02	3028				BU	CKET TYPE: 80cm x 60cm		CHE	CKED: CO DATE: 15/10/13
Exca	vation		Sampling	_			Field Material Desc	ripti	on	
METHOD EXCAVATION RESISTANCE WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE		STRUCTURE AND ADDITIONAL OBSERVATIONS
Ш	-0.0	-					FILL: Sandy CLAY asbestos noted			
	-	-					TEST PIT DISCONTINUED @ 0.20 m HOLE ABANDONED DUE TO ASBESTOS			
	0.5-	-								
	-	-								
	-	-								
	1.0	-								
	-	-								
	-	-								
	1.5									
	-	-								
	2.0-	-								
	-	-								
	-	-								
	2.5-									
	-									
	-	-								
	3.0									
	-	-								
	3.5	-								
	-	-								
	-	-								
	4.0-	-								
	-									
	-									
	4.5	-								
	-	-								
		envir	This report of test pit of tes	musi nly, v enco	t be re withou ountere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. I mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	t has sign es.	been ificano	prepared for ce of the materials GAP gINT FN. F

			Port K	embla P	er ates ^{thase II}			CO SUI	REPOF ORDS: 307834.0 m E 6182234.0 m N MGA94 56 RFACE RL: DATUM: AHD	T ; ; ;	OF SHEE MACH	TEST PIT: TP20
LOC JOB	CATI 3 NO	ION: D:	Port K 13762	embla P 3028	rimary School			PIT BU(DEPTH: 1.60 m CKET TYPE: 80cm x 60cm	l	LOGO CHEO	GED: KY DATE: 26/6/13 CKED: CO DATE: 15/10/13
	E	xca	vation		Sampling				Field Material Desc	riptic	n	
METHOD	RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
			-0.0	0.20	TP20 0.00-0.10 m PID = 0 ppm				TOPSOIL: Sandy CLAY low plasticity, dark brown, very soft, no odour, very moist	м	vs	
EX			- - 0.5 - - -		TP20 0.50-0.60 m PID = 0 ppm			~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	FILL: Sitty CLAY low plasticity, dark brown-red brown, with some sandy clay and fine to coarse gravel fragments and boulders, very soft, very moist to wet, soft	M - W	s	Water seepage at 0.60m
			- - - -		TP20 0.90-1.00 m PID = 0 ppm			< - - - -	Gravelly Sitty CLAY low plasticity, red brown, fine gravel, very soft, moist	м	vs	
_			1.5 —	1.50	TP20 1.50-1.60 m PID = 0 ppm		 ×	< - -	grading to red orange brown, with some ironstone fragments TEST PIT DISCONTINUED @ 1.60 m			
			- - 2.0 — -						DIE IO THE PRESERVE TO BE RECOVERED FROM THE PIT, SAMPLE NOT ABLE TO BE RECOVERED FROM THE BOTTOM OF THE TEST PIT			
			- 2.5— -									
			3.0 — - -									
			- 3.5 — - -									
			- 4.0 — - -									
			- 4.5 - -									
			5.0—	envir	This report of test pit	musi only, v enco	t be re withou	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. If mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	t has signif	been ficanc	prepared for e of the materials GAP gINT FN. F

CL		T: CT:	G S Port K Port K	oldo oci embla embla P	er ates ^{hase II}			CO SUI	REPOF ORDS: 307724.0 m E 6182225.0 m N MGA94 56 RFACE RL: DATUM: AHD	דא י	OF SHEE MACH	TEST T: 1 OF 1 IINE: 5T Exc. RACTOR: A	PIT: TP24 avator ffective Services
LC	CAT	ION:	Port K	embla P	rimary School			PIT	DEPTH: 1.00 m	l	LOGG	ED: KY	DATE: 26/6/13
JO	DB NC):	13762	3028				BU	CKET TYPE: 80cm x 60cm	(CHEC	KED: CO	DATE: 15/10/13
МЕТНОD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION		CONSISTENCY DENSITY	S ⁻ C	IRUCTURE AND ADDITIONAL DBSERVATIONS
EX			0.0	0.40	TP24 0.00-0.10 m PID = 0 ppm TP24 0.50-0.60 m PID = 0 ppm				FILL: Sitty CLAY low plasticity, dark brown, possibly reworked material, no odour, very moist, very soft CLAY low plasticity, orange brown, firm, trace fine gravel, slightly moist, firm	м			
			-	0.90	TP24		Qz		WEATHERED BEDROCK	D			
					<u>PID = 0 ppm</u>				TEST PIT DISCONTINUED @ 1.00 m TARGET DEPTH REACHED				
				envir	This report of test pit onmental purposes o	musi only, v enco	t be re withou ountere	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	t has signif es.	been ficanc	prepared for e of the mate	rials GAP gINT FN. F01 RI

CL PR	IENT	CT:	Port Ke	embla embla P	Thase II			CO SUI	ORDS: 307748.0 m E 6182242.0 m N MGA94 56 RFACE RL: DATUM: AHD	S N C		ET: 1 OF 1 HINE: 5T Excava TRACTOR: Affec	tor tive Services
_0 JO	CAT B NC	ion: D:	Port Ke 13762	embla P 3028	rimary School			PIT BU(DEPTH: 2.00 m CKET TYPE: 80cm x 60cm	L	LOGO CHEO	GED: KY CKED: CO	DATE: 26/6/13 DATE: 15/10/1
	E	Exca	vation		Sampling				Field Material Desci	riptio	n		
MEIDU	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRU AE OBS	UCTURE AND DDITIONAL ERVATIONS
			0.0 		TP25 0.00-0.10 m QC100 / QC200 PID = 0 ppm				FILL: Silty CLAY low plasticity, dark brown, with some coal washery reject and dark grey sand, no odour, very moist			Water seepage at	0.20m
			0.5	0.50	TP25 0.50-0.60 m PID = 0 ppm			~	grading to gravelly clay, firm, low plasticity, orange brown/red brown, some fine gravels and minor boulders observed, no odour, moist, firm	-	F		
j			- 1.0 — -	1.00	TP25 0.90-1.00 m PID = 0 ppm				being slightly moist after 1.0m	м			
			- 1.5— -	1.50	TP25 1.50-1.60 m PID = 0 ppm				CLAY low to medium plasticity, dark grey mottled red-brown, trace fine white gravel, no odour, soft	-	s		
			- 	1.90	TP25 1.90-2.00 m PID = 0 ppm		Qz	<	WEATHERED BEDROCK orange brown, with some clay, with some ironstone fragments TEST PIT DISCONTINUED @ 2.00 m TARGET DEPTH REACHED				
			- 2.5—										
			- - 3.0 —										
			- - 3.5 —										
			- - 4.0										
			-										
			4.5										
			5.0 —										

		: CT:	Port Ke	oci a embla embla P	ates hase II			CO SUI	ORDS: 307770.0 m E 6182264.0 m N MGA94 56 RFACE RL: DATUM: AHD	8 N (SHEE MACH CONT	T: 1 OF 1 HNE: 5T Excavat	or ive Services
loc Job	CATI 3 NO	ON:):	Port Ke 13762	embla P 3028	rimary School			PIT BU(DEPTH: 2.60 m CKET TYPE: 80cm x 60cm	L		GED: KY KED: CO	DATE: 25/6/13 DATE: 15/10/13
	E	xca	vation		Sampling				Field Material Desc	riptio	n		
	RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRU AD OBSI	CTURE AND DITIONAL ERVATIONS
			-0.0		TP26 0.00-0.10 m PID = 0 ppm				FILL: Silty CLAY low plasticity, dark brown/black, with some fine gravel, no odour, moist				
			0.5 - - -	0.60 0.90	TP26 0.50-0.60 m PID = 0 ppm				metal pipe at 0.60m	M			
			1.0 - - - 15-	1.50	0.90-1.00 m PID = 0 ppm				becoming orange brown alter 0.30m, no 0000r, slignity moist				
				2.00	TP26 1.50-1.60 m PID = 0 ppm				FILL: Gravelly CLAY low plasticity, orange brown/yellow brown, soft, bricks observed, wet, soft	w		Water at 1.60m	
			- - - 2.5-		2.00-2.10 m PID = 0 ppm		Qz (Qz (Qz (Qz (WEATHERED BEDROCK yellow brown/orange brown, with some clay and ironstone fragments, dry	D	S		
					2.50-2.60 m PID = 0 ppm		Qz (TEST PIT DISCONTINUED @ 2.60 m TARGET DEPTH REACHED				
			- - 3.5 -										
			- 4.0										
			- 4.5 - -										
			5.0 —	opvir	This report of test pi	t must	be re	ad in	conjunction with accompanying notes and abbreviations.	t has	been	prepared for	

CL		CT:	Port Ke	ocia embla embla P	hase II			CO SUI	ORDS: 307707.0 m E 6182253.0 m N MGA94 56 RFACE RL: DATUM: AHD	9 N 0		ET: 1 OF 1 HINE: 5T Excavator IRACTOR: Affective Services
JC	DCAT DB NO	ION: D:	Port Ke	embla P 3028	rimary School			PIT BU(DEPTH: 1.60 m CKET TYPE: 80cm x 60cm	Ĺ	CHEC	GED: KY DATE: 25/6/ CKED: CO DATE: 15/10
		Exca	ation/		Sampling				Field Material Des	scriptio	n	
MEIHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS
				0.50	TP27 0.00-0.10 m PID = 0 ppm TP27 0.50-0.60 m PID = 0 ppm				FILL: Sity CLAY low plasticity, black/dark brown, no odour, moist, soft, glass, bricks and boulders were observed	м	s	Water seepage at 0.60m
L			- - 1.0 - -	0.80	TP27 0.90-1.00 m PID = 0 ppm		Qz Qz Qz Qz Qz Qz Qz		WEATHERED BEDROCK yellow orange-brown, with some clay, dry, hard	D	н	
	-	-	- 1.5		TP27 1.50-1.60 m PID = 0 ppm		Qz		TEST PIT DISCONTINUED @ 1.60 m TARGET DEPTH REACHED			
			- 2.0									
			- 2.5 - - -									
			- 3.5 — - -									
			 4.0 - -									
			- 4.5 - -									
			- 5.0 —		This report of test pi	it mue	t ho ro			It boo		

CLI PR	ENT OJE	T: CT:	Port Ke	embla embla P	Phase II			CO SUI	ORDS: 307738.0 m E 6182268.0 m N MGA94 56 RFACE RL: DATUM: AHD	8 N (SHEET: 1 MACHINE: CONTRAC	OF 1 5T Excava TOR: Affec	tor tive Services
-0 JOI	CATI B NC	ion: D:	Port Ke 13762	embla P 3028	rimary School			PIT BU	DEPTH: 1.60 m CKET TYPE: 80cm x 60cm	L	logged: Checked	KY : CO	DATE: 25/6/13 DATE: 15/10/1
	E	Exca	vation		Sampling				Field Material Des	criptio	n		
	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE CONDITION	CONSISTENCY DENSITY	STRL AE OBS	ICTURE AND IDITIONAL ERVATIONS
			0.0	0.20	TP28 0.00-0.10 m PID = 0 ppm				FILL: Silty CLAY low plasticity, black, soft, no odour, moist, soft, coal slag noted				
			- - 0.5		TP28 0.50-0.60 m PID = 0 ppm		Qz Qz Qz Qz	0 0 0	Sitty CLAY medium plasticity, orange brown, with some fine gravel fragments, no odour, moist, soft		S		
			- - 1.0	0.80	TP28 0.90-1.00 m PID = 0 ppm		Qz Qz Qz Qz	0 0	trace sandy clay at 0.80m becoming dark brown after 0.90m, slightly moist, low plasticity, hard, no odour	M			
			- 1.5—	1.50	TP28 1.50-1.60 m PID = 0 ppm		Qz Qz Qz	¢ ¢	WEATHERED BEDROCK orange brown, with some gravel, no odour TEST PIT DISCONTINUED @ 1.60 m		н		
			- - 2.0 -						TARGET DEPTH REACHED				
			- 2.5— -										
			- 3.5 — - -										
			- 4.0 — - -										
			- 4.5 — - -										
			- 5.0 —										

(Golder REPORT OF TEST PIT: TP29 COORDS: 307690.0 m E 6182290.0 m N MGA94 56 SHEET: 1 OF 1												
CL	IENT.	:	Port Ke	embla				SUI	ORDS: 307690.0 m E 6182290.0 m N MGA94 56 RFACE RL: DATUM: AHD	: 1	NACH	II: 1 OF 1 HINE: 5T Excavator	
PF	ROJE		Port K	embla P	hase II			דוס		(RACTOR: Affective Services	
JO	BNC):	13762	3028	ninary School			BU	CKET TYPE: 80cm x 60cm	(CHEC	CKED: CO DATE: 15/10/13	
	E	Exca	vation		Sampling				Field Material Desc	riptic	on		
METHOD	EXCAVATION RESISTANCE	WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS	
			-0.0		TP29 0.00-0.10 m PID = 0 ppm		× — —> × —	<	Silty CLAY low plasticity, dark brown, with some gravel, no odour, very moist, soft, reqorked				-
X			- 0.5-	0.30 0.50	TP29 0.30-0.40 m PID = 0 ppm		 	- -	with some fine grained dark grey sand, no odour, moist	м	s	Water noted at 0.30m	
			-		0.50-0.60 m PID = 0 ppm				CLAY medium plasticity, yellow/orange brown, soft, no odour, moist, soft				-
			-	0.90	TP29		07		WEATHERED BEDROCK	D	-		
			-1.0		0.90-1.00 m PID = 0 ppm			1	orange-brown, with some clay, no odour, dry TEST PIT DISCONTINUED @ 1.00 m	\square	<u> </u>		
			-										-
			-										-
			1.5 —										-
			-										-
			-										-
			2.0										-
			-										-
			-										-
			-										-
			2.5 -										-
			-										-
			-										-
			3.0 —										-
			-										-
			-										-
			35										-
			-										-
			-										-
			-										-
			4.0 —										-
			-										-
			-										-
			4.5-										
			-										-
			-										
			-										-
		L	¹ 5.0 —	envir	This report of test pit r onmental purposes or e	nus nly,	t be re withou	ad in t atte ed. A	conjunction with accompanying notes and abbreviations. It mpt to consider geotechnical properties or the geotechnical s such it should not be relied upon for geotechnical purpose	has signif s.	been ficanc	prepared for e of the materials GAP gINT FN. FC)1e
									· · · · · ·				ιLJ

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LIENT: ROJECT: OCATION [.]	Port Ke Port Ke Port Ke	embla embla P embla P	hase II rimary School			CO SUI PIT	ORDS: 307660.0 m E 6182302.0 m N MGA94 56 RFACE RL: DATUM: AHD DEPTH: 1.00 m	SHEET: 1 OF 1 MACHINE: 5T Excavator CONTRACTOR: Affective Services LOGGED: KY DATE: 25/6/13						
OB NO:	13762	3028				BU	CKET TYPE: 80cm x 60cm	(CHEC	CKED: CO DATE: 15/10/1				
Exca	vation		Sampling				Field Material Desc	riptic	on					
EXCAVATION RESISTANCE WATER	DEPTH (metres)	DEPTH RL	SAMPLE OR FIELD TEST	RECOVERED	GRAPHIC LOG	USCS SYMBOL	SOIL/ROCK MATERIAL DESCRIPTION	MOISTURE	CONSISTENCY DENSITY	STRUCTURE AND ADDITIONAL OBSERVATIONS				
	0.0		TP30 0.00-0.10 m PID = 0 ppm		*	-	Silty CLAY low plasticity, black, with many fine to large gravel fragments, no odour, very moist, reworked							
		0.50	TP30 0.50-0.60 m PID = 0 ppm			< - - - -	CLAY medium plasticity, yellow-brown, soft, no odour, moist, soft	м	S	Water seepage at 0.40m				
	- - 	0.80	TP30 0.90-1.00 m PID = 0 ppm		Qz Qz	0	WEATHERED BEDROCK yellow-brown, with some clay content, dry	D	F					
	-		FF				TARGET DEPTH REACHED							
	 1.5 -													
	- - 2.0—													
	-													
	 3.0 													
	- 3.5 —													
	-													
	4.0— - -													
	- - 4.5 -													
	-													



APPENDIX D Tables of Analytical Results



Location			TF	P1	TP2		TP3		TP4		TP5				TI	P6	TP7			
				Sample ID :	TP1_0.0-0.1	TP1_0.9-1.0	TP2_0.0-0.1	TP2_0.2-0.4	TP3_0.0-0.1	TP3_0.5-0.6	TP4_0.0-0.1	TP4_0.5-0.6	TP5_0.5-0.6	QC102	QC202	TP5_0.9-1.0	TP6_0.2-0.3	TP6_0.5-0.6	TP7_0.3-0.4	TP7_0.5-0.6
			S	ample Depth:	0.0-0.1	0.9-1.0	0.0-0.1	0.2-0.4	0.0-0.1	0.5-0.6	0.0-0.1	0.5-0.6	0.5-0.6	0.5-0.6	0.5-0.6	0.9-1.0	0.2-0.3	0.5-0.6	0.3-0.4	0.5-0.6
			Si	ample Matrix:	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Fill/Sand	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay
				Sample Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013
				Sample Type:	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	PS
			NEPM - HIL	NEPM - HIL																
Analyte	Units	LOR	В	<u>D</u>																
Moisture																				
Moisture Content	%	1			26	9.6	17.1	31.6	30.5	30.9	26.5	17.9	26.1	26.1	27	25.2	37.3	28.8	21.2	33.8
Total Metals																				
Arsenic	mg/kg	5	500	3000	6	<5	<5	<5	8	<5	<5	9	33	<5	7	<5	37	<5	7	<5
Cadmium	mg/kg	1	150	900	<1	<1	<1	<1	3	<1	<1	<1	4	4	1.9	<1	27	<1	<1	<1
Chromium	mg/kg	2	500*	3600*	13	14	10	20	7	25	3	16	13	12	8	17	5	22	20	24
Copper	mg/kg	5	30000	240000	140	87	10	82	589	80	287	78	467	59	130	69	2740	61	66	77
Lead	mg/kg	5	1200	1500	29	<5	9	7	120	12	126	22	71	9	17	<5	216	7	19	9
Manganese	mg/kg	5	14000	60000	374	38	428	<5	135	19	216	21	94	37	28	<5	362	48	50	20
Mercury	mg/kg	0.1	120**	730**	<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	<0.1	<0.1	<0.1
Nickel	mg/kg	2	1200	6000	11	9	7	3	6	4	2	3	6	5	3	<2	14	4	3	4
Selenium	mg/kg	5	1400	10000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<2	<5	<5	<5	<5	<5
Zinc	mg/kg	5	60000	400000	68	33	18	12	152	25	32	16	112	104	40	15	500	9	41	24

Legend: LOR - Limit of report

ing	FD - Field Duplicate	
	i D - i iciu Duplicate	

- Not analysed

PS - Primary Sample

FT - Field Triplicate * As Chromium VI ** As Mercury Inorganic

	•		
Health Based Investigati	on Level - NEPI	M - HILs B - Resident	ial with minimal
opportunity for soil acce	ss (NEPM 1999	- Amend 2013)	
Health Based Investigati	on Level - NEPI	M - HILs D - Commei	<u>cial / Industrial</u>
(NEPM 1999 - Amend 20	13)		

Locatio						TF	28		Т	99	TP10		TP	11	TP	12	TP13		
				Sample ID :	TP8_0.0-0.1	QC101	QC202	TP8_0.9-1.0	TP9_0.3-0.4	TP9_0.5-0.6	TP10_0.0-0.1	TP10_0.5-0.6	TP11_0.1-0.2	TP11_0.9-1.0	TP12_0.00.1	TP12_0.9-1.0	TP13_0.5-0.6	TP13_1.5-1.6	
			Si	ample Depth:	0.0-0.1	0.0-0.1	0.0-0.1	0.9-1.0	0.3-0.4	0.5-0.6	0.0-0.1	0.5-0.6	0.1-0.2	0.9-1.0	0.0-0.1	0.9-1.0	0.5-0.6	1.5-1.6	
			Sa	ample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	
				Sample Date:	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	
			1	Sample Type:	PS	FD	FT	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	
			NEPM - HIL	NEPM - HIL															
Analyte	Units	LOR	В	<u>D</u>															
Moisture																			
Moisture Content	%	1			26.6	32.8	38	21.6	26.1	30.1	31.2	29.7	27.1	13.9	39	19.2	24.1	29	
Total Metals																			
Arsenic	mg/kg	5	500	3000	41	44	21	<5	36	<5	31	<5	<5	<5	10	<5	17	<5	
Cadmium	mg/kg	1	150	900	10	14	7.3	<1	11	<1	3	<1	<1	<1	3	<1	<1	<1	
Chromium	mg/kg	2	500*	3600*	22	23	13	12	21	21	16	24	19	14	10	19	10	15	
Copper	mg/kg	5	30000	240000	2280	1760	1800	76	1020	82	422	88	201	73	961	116	171	63	
Lead	mg/kg	5	1200	1500	677	628	340	<5	192	10	124	9	21	6	173	6	38	6	
Manganese	mg/kg	5	14000	60000	609	492	410	28	111	9	88	15	39	21	456	64	72	35	
Mercury	mg/kg	0.1	120**	730**	0.3	0.4	0.6	<0.1	0.3	<0.1	0.2	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	
Nickel	mg/kg	2	1200	6000	12	12	12	5	9	2	6	4	6	5	8	14	4	2	
Selenium	mg/kg	5	1400	10000	<5	<5	4	<5	<5	<5	<5	<5	<5	<5	6	<5	<5	<5	
Zinc	mg/kg	5	60000	400000	397	529	360	31	443	17	256	27	92	38	187	88	35	21	

Legend: LOR - Limit of reporting

~	ED Field	Dunlingto
g	FD - Field	Duplicate

- Not analysed

PS - Primary Sample

FT - Field Triplicate * As Chromium VI ** As Mercury Inorganic

	•		
Health Based Investigati	on Level - NEPI	M - HILs B - Resident	ial with minimal
opportunity for soil acce	ss (NEPM 1999	- Amend 2013)	
Health Based Investigati	on Level - NEPI	M - HILs D - Commei	<u>cial / Industrial</u>
(NEPM 1999 - Amend 20	13)		

Location:			TP	TP14 TP15		TP16A		TP20_0.5-0.6		TP	24	TP25						
				Sample ID :	TP14_0.0-0.1	TP14_0.5-0.6	TP15_0.0-0.1	TP15_0.9-1.0	TP16A_0.2-0.3	TP16A_0.5-0.6	TP20_0.5-0.6	TP20_0.9-1.0	TP24_0.0-0.1	TP24_0.5-0.6	TP25_0.0-0.1	QC100	QC200	TP25_0.9-1.0
			5	Sample Depth:	0.0-0.1	0.5-0.6	0.0-0.1	0.9-1.0	0.2-0.3	0.5-0.6	0.5-0.6	0.9-1.0	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1	0.9-1.0
			S	ample Matrix:	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Fill/Sand	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
				Sample Date:	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
				Sample Type:	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS
			NEPM - HIL	NEPM - HIL														
Analyte	Units	LOR	В	<u>D</u>														
Moisture																		
Moisture Content	%	1			21.4	28.5	31	12.4	44	35.3	29.8	32.8	31.3	27.1	34.8	33	29	23
Total Metals																		
Arsenic	mg/kg	5	500	3000	11	<5	8	<5	11	33	166	<5	16	<5	10	7	6	209
Cadmium	mg/kg	1	150	900	<1	<1	4	<1	10	5	4	<1	4	<1	3	2	2.4	4
Chromium	mg/kg	2	500*	3600*	8	18	8	20	12	13	19	27	13	29	9	6	7	11
Copper	mg/kg	5	30000	240000	660	60	1620	139	320	335	1330	110	1480	123	791	521	540	1060
Lead	mg/kg	5	1200	1500	415	6	239	10	48	61	489	7	191	70	243	124	130	253
Manganese	mg/kg	5	14000	60000	123	6	549	202	1580	122	164	50	475	61	296	319	360	154
Mercury	mg/kg	0.1	120**	730**	0.3	<0.1	0.2	<0.1	0.1	0.2	0.8	<0.1	0.5	<0.1	0.2	0.1	0.1	0.4
Nickel	mg/kg	2	1200	6000	5	2	10	18	24	6	7	10	9	7	12	10	9	6
Selenium	mg/kg	5	1400	10000	5	<5	<5	<5	<5	<5	<5	<5	5	<5	<5	<5	3	<5
Zinc	mg/kg	5	60000	400000	85	13	231	98	369	145	237	76	286	258	514	190	300	200

Legend: LOR - Limit of reporting

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FD - Field Duplicate
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- Not analysed

PS - Primary Sample FT - Field Triplicate

* As Chromium VI ** As Mercury Inorganic

Health Based Investigation Level - NEPM - HILs B - Residential with minimal opportunity for soil access (NEPM 1999 - Amend 2013)
Health Based Investigation Level - NEPM - HILs D - Commercial / Industrial
NEPM 1999 - Amend 2013)

																Off-site	Locations		1	
				Location:	TF	P26	TF	27	TF	28	TF	29	TP	30	0	L1	0	L2	В	H1
				Sample ID :	TP26_0.5-0.6	TP26_1.5-1.6	TP27_0.0-0.1	TP27_0.5-0.6	TP28_0.0-0.1	TP28_0.9-1.0	TP29_0.3-0.4	TP29_0.9-1.0	TP30_0.0-0.1	TP30_0.5-0.6	OL1_0.0-0.2	OL1_0.3-0.5	OL2_0.0-0.2	OL2_0.3-0.5	BH1-0.5	BH1-1.0
			S	ample Depth:	0.5-0.6	1.5-1.6	0.0-0.1	0.5-0.6	0.0-0.1	0.9-1.0	0.3-0.4	0.9-1.0	0.0-0.1	0.5-0.6	0.0-0.2	0.3-0.5	0.0-0.2	0.3-0.5	0.5	1
			Sa	ample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay						
				Sample Date:	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	09/10/2013	09/10/2013
				Sample Type:	PS															
			NEPM - HIL	NEPM - HIL																
Analyte	Units	LOR	В	<u>D</u>										-						
Moisture																				
Moisture Content	%	1			25.9	22.3	30.5	29.2	41.3	30.2	21.3	25.1	33.4	35.9	23.3	25	21.9	30.8	29.2	19
Total Metals																				
Arsenic	mg/kg	5	500	3000	9	22	<5	35	26	<5	13	6	201	<5	<5	<5	32	<5	<5	<5
Cadmium	mg/kg	1	150	900	<1	2	<1	8	2	<1	13	<1	10	1	<1	<1	8	<1	<1	<1
Chromium	mg/kg	2	500*	3600*	22	17	6	12	9	14	5	17	13	21	17	21	10	20	32	11
Copper	mg/kg	5	30000	240000	132	923	262	479	2240	72	333	99	2820	249	48	66	1150	111	74	49
Lead	mg/kg	5	1200	1500	66	156	38	155	397	22	44	14	657	67	10	9	383	18	8	7
Manganese	mg/kg	5	14000	60000	121	334	231	89	442	142	20	35	296	32	24	12	148	26	19	<5
Mercury	mg/kg	0.1	120**	730**	0.1	0.1	<0.1	0.2	0.4	<0.1	0.1	<0.1	1.2	<0.1	<0.1	<0.1	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	2	1200	6000	5	22	8	13	12	6	7	6	11	4	3	5	12	6	6	<2
Selenium	mg/kg	5	1400	10000	<5	<5	<5	<5	<5	<5	<5	<5	7	<5	<5	<5	<5	<5	<5	<5
Zinc	mg/kg	5	60000	400000	154	179	132	404	176	107	154	54	415	157	13	20	498	78	28	17
Legend:																				

LOR - Limit of reporting

FD - Field Duplicate	 Not analysed

PS - Primary Sample

FT - Field Triplicate * As Chromium VI ** As Mercury Inorganic

	•		
Health Based Investigati	on Level - NEPI	M - HILs B - Resident	ial with minimal
opportunity for soil acce	ss (NEPM 1999	- Amend 2013)	
Health Based Investigati	on Level - NEPI	M - HILs D - Commei	<u>cial / Industrial</u>
(NEPM 1999 - Amend 20	13)		

				Location:		2	BH	3	BH	4	BH	5	BI	16
				Sample ID :	BH2-0.1	BH2-1.0	BH3-0.1	BH3-1.0	BH4-0.4	BH4-1.0	BH5-0.1	BH5-1.0	BH6-0.3	BH6-1.0
			Sa	ample Depth:	0.1	1	0.1	1	0.4	1	0.1	1	0.3	1
			Sa	mple Matrix:	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Fill/Sand	Natural/Clay	Natural/Clay
			:	Sample Date:	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013
			:	Sample Type:	PS	PS								
			NEPM - HIL	NEPM - HIL										
Analyte	Units	LOR	В	<u>D</u>										
Moisture														
Moisture Content	%	1			11.6	18.8	16.3	27.2	19.5	20.1	11.5	20.9	12.1	13.4
Total Metals														
Arsenic	mg/kg	5	500	3000	6	<5	37	<5	73	<5	5	11	<5	<5
Cadmium	mg/kg	1	150	900	<1	<1	3	<1	5	<1	1	<1	<1	<1
Chromium	mg/kg	2	500*	3600*	9	30	20	26	26	31	6	26	32	25
Copper	mg/kg	5	30000	240000	82	68	436	102	717	79	574	83	130	137
Lead	mg/kg	5	1200	1500	219	7	350	9	404	14	92	44	10	8
Manganese	mg/kg	5	14000	60000	92	21	147	16	248	75	161	103	550	87
Mercury	mg/kg	0.1	120**	730**	0.2	<0.1	0.2	<0.1	<0.1	<0.1	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	1200	6000	4	15	8	3	24	9	3	7	30	15
Selenium	mg/kg	5	1400	10000	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	mg/kg	5	60000	400000	1150	38	257	54	798	76	190	31	111	90

Legend:

LOR - Limit of reporting FD - Field Duplicate

FT - Field Triplicate

- Not analysed

PS - Primary Sample

* As Chromium VI ** As Mercury Inorganic

Health Based Investigation Level - NEPM - HILs B - Residential with minimal opportunity for soil access (NEPM 1999 - Amend 2013)
Health Based Investigation Level - NEPM - HILs D - Commercial / Industrial
(NEPM 1999 - Amend 2013)

Table 2 - Soil Analytical Results - TRH and BTEXN Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP1	TP2	TP3	TP4		TP5		TP6	TP7		TP8		TP9	TP10	TP11
					Sam	ple ID (Primary):	TP1_0.0-0.1	TP2_0.2-0.4	TP3_0.0-0.1	TP4_0.0-0.1	TP5_0.5-0.6	QC102	QC202	TP6_0.2-0.3	TP7_0.3-0.4	TP8_0.0-0.1	QC101	QC102	TP9_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2
						Sample Depth:	0.0-0.1	0.2-0.4	0.0-0.1	0.0-0.1	0.5-0.6	0.5-0.6	0.5-0.6	0.2-0.3	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1	0.3-0.4	0.0-0.1	0.1-0.2
						Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
						Sample Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
						Sample Type:	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	FD	FT	PS	PS	PS
			CCME_Soil-	CCME_Soil-	CCME_Soil-	CCME_Soil-															
			Residential -	Residential -	Commercial -	Commercial -															
			Sand - Direct	Sand - Vapour	Sand - Direct	Sand - Vapour															
Analyte	Units	LOR	Contact	Inhalation	Contact	Inhalation															
Total Petroleum Hydrocarbons	"	10									.10		- 25		10			-25			.10
C6 - C9 Fraction	mg/kg	10					<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
C10 - C14 Fraction	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (suff)	mg/kg	50					<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	-	<50	<50	<50
Total Recoverable Hydrocarbons - NEPI	VI 2010 DR	απ 10	12,000	40	10,000	220	-10	-10	-10	-10	-10	-10	-25	-10	-10	-10	-10	-25	-10	-10	-10
C6 - C10 Fraction (F1)	mg/kg	10	12,000	40	19,000	320	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10	C 000	100	10,000	1 700	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
SCIU - CI6 Fraction (F2)	mg/kg	50	6,800	190	10,000	1,700	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10 - C16 Fraction minus Napht	mg/kg	100	15.000	NA	22,000	NA	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C10 - C34 Hattion (F3)	mg/kg	100	21,000	NA	23,000 DES	NA	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	mg/kg	50	21,000	in A	NL3	INA	<100	<100	<100	<100	<50	<100	<100	<100	<50	<100	<100	<100	<50	<50	<50
BTEXN	1116/16	50					< 5 0	< 5 0	<50	< 5 0	100	< 5 0		< 50	< 50	< 5 0	< 50		< 5 0	100	50
Benzene	ma/ka	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	<0.2	<0.2	<0.2
Toluene	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2	<0.5	<0.5	<0.2	<0.2	<0.2	<0.5	<0.2	<0.2
Ethylbenzene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & nara-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5		1			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5					<0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	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	<0.2
Naphthalene	mg/kg	1		1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Logondu						i	i	i	í	i			ı	i			i	i		í	

Legend: LOR - Limit of reporting

FD - Field Duplicate - Not analysed

PS - Primary Sample FT - Field Triplicate NA - Not Applicable

RES - Residual petroleum hydrocarbon formation. Calculated value exceeds 30,000 mg/kg and solubility limit for petroleum

hydrocarbon fraction.

CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Direct Contact (Ingestion and Dermal Contact)
CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Vapour Inhalation
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial - Sand/coarse - Exposure Pathway Direct Contact (Ingestion and Dermal Contact)
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial

Table 2 - Soil Analytical Results - TRH and BTEXN Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP12	TP13	TP14	TP15	TP16A	TP16A	TP20	TP24		TP25		TP26	TP27	TP28	TP29
					Sam	ple ID (Primary):	TP12_0.00.1	TP13_0.5-0.6	TP14_0.0-0.1	TP15_0.0-0.1	TP16A_0.2-0.3	TP16A_0.5-0.6	TP20_0.5-0.6	TP24_0.5-0.6	TP25_0.0-0.1	QC100	QC200	TP26_1.5-1.6	TP27_0.5-0.6	TP28_0.0-0.1	TP29_0.3-0.4
						Sample Depth:	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1	1.5-1.6	0.5-0.6	0.0-0.1	0.3-0.4
						Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
						Sample Date:	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013
						Sample Type:	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS
			CCME_Soil-	CCME_Soil-	CCME_Soil-	CCME_Soil-															
			Residential -	Residential -	Commercial -	Commercial -															
			Sand - Direct	Sand - Vapour	Sand - Direct	Sand - Vapour															
Analyte	Units	LOK	Contact	Innalation	Contact	Innalation															
10tal Petroleum Hydrocarbons		10			-		-10	-10	-10	-10	-10	-10	-10	-10	-10	-10	-25	-10	-10	-10	-10
C6 - C9 Fraction	mg/kg	10			-		<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10
C10 - C14 Flaction	mg/kg	100			-		<100	<100	<100	<100	<100	<100	<100	<100	360	50	<100	<100	<100	1000	<100
C13 - C28 Flaction	mg/kg	100			-		<100	<100	<100	<100	<100	<100	<100	<100	180	330	<100	<100	<100	1000	<100
C10 - C26 Fraction (sum)	mg/kg	50			-		<100	<100	<100	<100	<100	<100	<50	<100	E40	790	<100	<100	<100	1490	<50
Total Pacovarable Hydrocarbons - NEPI	111g/ Ng	- 50 - ft			-		<50	<50	<50	<50	<50	<50	<50	<50	540	750	-	<50	<50	1450	<50
C6 - C10 Fraction (F1)	ma/ka	10	12 000	40	19.000	320	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10	12,000	40	15,000	520	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10
>C10 - C16 Fraction (F2)	mg/kg	50	6 800	190	10 000	1 700	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	70	<50
C10 - C16 Fraction minus Napht	mg/kg	calc.	0,000	190	10,000	1,700	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	70	<50
>C16 - C34 Fraction (F3)	mg/kg	100	15.000	NA	23.000	NA	<100	<100	<100	<100	<100	<100	<100	<100	480	700	100	<100	<100	1330	<100
>C34 - C40 Fraction (F4)	mg/kg	100	21,000	NA	RES	NA	<100	<100	<100	<100	<100	<100	<100	<100	<100	110	<100	<100	<100	220	<100
>C10 - C40 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	480	810	-	<50	<50	1620	<50
BTEXN																					
Benzene	mg/kg	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	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5					<0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	< 0.5	0.6	<0.5
Ethylbenzene	mg/kg	0.5					<0.5	< 0.5	< 0.5	< 0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<1	<0.5	< 0.5	< 0.5	<0.5
meta- & para-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	0.5	<0.5
ortho-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	-	< 0.5	<0.5	0.5	<0.5
Sum of BTEX	mg/kg	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	1.1	<0.2
Naphthalene	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Legend:																					

Legend: LOR - Limit of reporting

FD - Field Duplicate - Not analysed

PS - Primary Sample FT - Field Triplicate NA - Not Applicable

RES - Residual petroleum hydrocarbon formation. Calculated value exceeds 30,000 mg/kg and solubility limit for petroleum

hydrocarbon fraction.

CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Direct Contact (Ingestion and Dermal Contact)
CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Vapour Inhalation
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial - Sand/coarse - Exposure Pathway Direct Contact (Ingestion and Dermal Contact)
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial

Table 2 - Soil Analytical Results - TRH and BTEXN Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP30	BH1	BH2	BH3	BH4	BH5	BH6
					Sam	ple ID (Primary):	TP30 0.0-0.1	BH1-1.0	BH2-0.1	BH3-0.1	BH4-0.4	BH5-0.1	BH6-0.3
						Sample Depth:	0.0-0.1	1	0.1	0.1	0.4	0.1	0.3
						Sample Matrix:	Fill/Sand	Natural/Clav	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Natural/Clav
						Sample Date:	25/06/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013
						Sample Type:	PS	PS	PS	PS	PS	PS	PS
			CCME_Soil-	CCME_Soil-	CCME_Soil-	CCME_Soil-							
			Residential -	Residential -	Commercial -	Commercial -							
			Sand - Direct	Sand - Vapour	Sand - Direct	Sand - Vapour							
Analyte	Units	LOR	Contact	Inhalation	Contact	Inhalation							
Total Petroleum Hydrocarbons													
C6 - C9 Fraction	mg/kg	10					<10	<10	<10	<10	<10	<10	<10
C10 - C14 Fraction	mg/kg	50					<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEP	VI 2010 Dra	aft											
C6 - C10 Fraction (F1)	mg/kg	10	12,000	40	19,000	320	<10	<10	<10	<10	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10					<10	<10	<10	<10	<10	<10	<10
>C10 - C16 Fraction (F2)	mg/kg	50	6,800	190	10,000	1,700	<50	<50	<50	<50	<50	<50	<50
C10 - C16 Fraction minus Napht	mg/kg	calc.					<50	<50	<50	<50	<50	<50	<50
>C16 - C34 Fraction (F3)	mg/kg	100	15,000	NA	23,000	NA	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction (F4)	mg/kg	100	21,000	NA	RES	NA	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	<50
BTEXN													
Benzene	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5					<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	mg/kg	1					<1	<1	<1	<1	<1	<1	<1

Legend: LOR - Limit of reporting

FD - Field Duplicate - Not analysed

FT - Field Triplicate NA - Not Applicable

RES - Residual petroleum hydrocarbon formation. Calculated value exceeds 30,000 mg/kg and solubility limit for petroleum

PS - Primary Sample RES - Residual petroleu hydrocarbon fraction.

CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Direct Contact (ingestion and Dermal Contact)
CCME (2008b) Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Residential - Sand/coarse - Exposure Pathway Vapour Inhalation
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial - Sand/coarse - Exposure Pathway Direct Contact (Ingestion and Dermal Contact)
CCME (2008b). Canadian Council of Ministers of the Environment, Canada Wide Standards for Petroleum Hydrocarbons - Commercial Sand (coarse - Exposure Pathway Vapour Inhalation.

				L	ocation	TP1	TP2	TP3	TP4		TP5		TP6	TP7		TP8		TP9	TP10	TP11	TP12	TP13
			Sa	ample ID (Pi	rimary):	TP1_0.0-0.1	TP2_0.2-0.4	TP3_0.0-0.1	TP4_0.0-0.1	TP5_0.5-0.6	QC102	QC202	TP6_0.2-0.3	TP7_0.3-0.4	TP8_0.0-0.1	QC101	QC102	TP9_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2	TP12_0.00.1	TP13_0.5-0.6
				Samp	le Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
				Samp	le Type:	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	FD	FT	PS	PS	PS	PS	PS
			NEPM -	NEPM -																		
Analyte	Units	LOR	HIL B	<u>HIL D</u>	LOR																	
Organochlorine Pesticides (OCP)																						
alpha-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	15	80	0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	<0.05	< 0.05	< 0.05	< 0.05
beta-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
gamma-BHC	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
delta-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	mg/kg	0.05	10	50	0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	<0.05	<0.1	< 0.05	< 0.05	<0.05	< 0.05	< 0.05
Aldrin	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	< 0.05
Dieldrin	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	< 0.05	< 0.05
Sum of Aldrin + Dieldrin	mg/kg	0.05	10	45	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
Heptachlor epoxide	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
cis-Chlordane	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	<0.05	< 0.05	< 0.05	< 0.05
trans-Chlordane	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	< 0.05
Total Chlordane (sum)	mg/kg	0.05	90	530	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
alpha-Endosulfan	mg/kg	0.05			0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	<0.05	< 0.05	< 0.05	< 0.05
4.4`-DDE	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	< 0.05
4.4`-DDD	mg/kg	0.05			0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	< 0.05	< 0.05	<0.05
4.4`-DDT	mg/kg	0.2			0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of DDD + DDE + DDT	mg/kg	0.05	600	3600	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
Endrin	mg/kg	0.05	20	100	0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	< 0.05	< 0.05	<0.05
beta-Endosulfan	mg/kg	0.05			0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	400	2000	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
Endrin aldehyde	mg/kg	0.05			0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	<0.05	< 0.05	< 0.05
Endosulfan sulfate	mg/kg	0.05			0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	< 0.05	<0.05	< 0.05	< 0.05
Endrin ketone	mg/kg	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	< 0.05
Methoxychlor	mg/kg	0.2	500	2500	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2
Organophosphorus Pesticides (OPP)	6																					
Dichlorvos	mg/kg	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	< 0.05
Demeton-S-methyl	mg/kg	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	< 0.05
Monocrotophos	mg/kg	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	<0.2	<0.2	<0.2	<0.2
Dimethoate	mg/kg	0.05			0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Diazinon Chiarra sifa a sa athul	mg/kg	0.05	├ ──	l	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Chiorpyrilos-methyl	mg/kg	0.05			0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	۲0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Paratriion-metnyi	mg/kg	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	<0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	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	<0.05
Fentinion	mg/kg	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	<0.05
Chiorpyrilos	mg/kg	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	<0.05
Paratnion	mg/kg	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	<0.2	<0.2	<0.2	<0.2
Chlorfonvinnboc	mg/kg	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	<0.05
Riomonhos-ethyl	mg/kg	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	<0.05
Eenaminhos	mg/kg	0.05			0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Drothiofor	mg/kg	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	<0.05
Ethion	mg/kg	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	<0.05
Carbonhapothion	mg/kg	0.05	+	+	0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	×0.1	<0.05	<0.05	<0.05	<0.05	×0.1	<0.05	<0.05	<0.05	<0.05	<0.05
Azinphos Methyl	mg/kg	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	<0.05
Azinphos Methyl	IIIg/ Kg	0.05			0.05	NU.U5	NU.U5	NU.U5	NU.U5	NU.U5	NU.U5	-	NU.U5	NU.U5	NU.U5	NU.U5	-	NU.U5	NU.U5	NU.U5	NU.U5	NU.U5

				Lo	cation	TP1	TP2	TP3	TP4		TP5		TP6	TP7		TP8		TP9	TP10	TP11	TP12	TP13
			Sa	ample ID (Pri	mary):	TP1_0.0-0.1	TP2_0.2-0.4	TP3_0.0-0.1	TP4_0.0-0.1	TP5_0.5-0.6	QC102	QC202	TP6_0.2-0.3	TP7_0.3-0.4	TP8_0.0-0.1	QC101	QC102	TP9_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2	TP12_0.00.1	TP13_0.5-0.6
				Sample	Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
				Sample	Type:	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	FD	FT	PS	PS	PS	PS	PS
			NEPM -	NEPM -																		
Analyte	Units	LOR	HIL B	<u>HIL D</u>	LOR																	
Phenolic Compounds																						
Phenol	mg/kg	0.5	45000	240000	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	mg/kg	1			1	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	-	<1	<1	<1	<1	<1
2-Nitrophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2	130	660	2	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	-	<2	<2	<2	<2	<2
Polynuclear Aromatic Hydrocarbons																						
Naphthalene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	0.9	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	1.1	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	0.8	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	<0.5	<0.5	<0.5	<0.05	<0.5	0.6	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	0.6	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	400	4000	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	ND	<0.5	<0.5	<0.5	<0.5	ND	<0.5	4.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	4	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<0.5
Ammonia																						
Ammonia as N	mg/kg	20			20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	-	<20	<20	<20	<20	<20

Legend:

LOR - Limit of reporting

FD - Field Duplicate

-Not Analysed

PS - Primary Sample FT - Field Triplicate Values that exceed the investigations level are highlighted as:

values that exceed the investigations level are inginighted as.
Health Based Investigation Level - NEPM - HILs B - Residential with minimal opportunity for soil access (NEPM 2013)
Health Based Investigation Level - NEPM - HILs D - Commercial / Industrial (NEPM 2013)

				L	ocation	n TP14	TP15	TP16A	TP16A	TP20	TP24		TP25		TP26	TP27	TP28	TP29	TP30	BH1	BH2	BH3
			Sa	Imple ID (Pr	rimary):	TP14 0.0-0.1	TP15 0.0-0.1	TP16A 0.2-0.3	TP16A 0.5-0.6	TP20 0.5-0.6	TP24 0.5-0.6	TP25 0.0-0.1	QC100	QC200	TP26 1.5-1.6	TP27 0.5-0.6	TP28 0.0-0.1	TP29 0.3-0.4	TP30 0.0-0.1	BH1-1.0	BH2-0.1	BH3-0.1
				Sampl	le Date:	: 26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	09/10/2013	09/10/2013	09/10/2013
				Sampl	le Type:	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	PS	PS	PS	PS
			NEPM -	NEPM -																		
Analyte	Units	LOR	HIL B	HIL D	LOR																	
Organochlorine Pesticides (OCP)																						
alpha-BHC	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	15	80	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
beta-BHC	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
gamma-BHC	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
delta-BHC	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Heptachlor	mg/kg	0.05	10	50	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aldrin	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Dieldrin	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Sum of Aldrin + Dieldrin	mg/kg	0.05	10	45	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	< 0.05
Heptachlor epoxide	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
cis-Chlordane	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
trans-Chlordane	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
Total Chlordane (sum)	mg/kg	0.05	90	530	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	< 0.05
alpha-Endosulfan	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4`-DDE	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4`-DDD	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
4.4`-DDT	mg/kg	0.2			0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Sum of DDD + DDE + DDT	mg/kg	0.05	600	3600	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	< 0.05
Endrin	mg/kg	0.05	20	100	0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
beta-Endosulfan	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan (sum)	mg/kg	0.05	400	2000	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	< 0.05
Endrin aldehyde	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	<0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulfate	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	mg/kg	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	< 0.05	< 0.05
Methoxychlor	mg/kg	0.2	500	2500	0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.1	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Organophosphorus Pesticides (OPP)																						
Dichlorvos	mg/kg	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	-	-	-
Demeton-S-methyl	mg/kg	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	-	-	-
Monocrotophos	mg/kg	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	<0.2	<0.2	-	-	-
Dimethoate	mg/kg	0.05			0.05	< 0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	< 0.05	<0.05	<0.1	<0.05	< 0.05	< 0.05	< 0.05	<0.05	-	-	-
Diazinon	mg/kg	0.05			0.05	< 0.05	<0.05	<0.05	<0.05	< 0.05	<0.05	< 0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-
Chlorpyrifos-methyl	mg/kg	0.05			0.05	< 0.05	<0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	<0.05	<0.05	< 0.05	<0.05	< 0.05	-	-	-
Parathion-methyl	mg/kg	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	<0.2	<0.2	-	-	-
Malathion	mg/kg	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	-	-	-
Fenthion	mg/kg	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	-	-	-
Chlorpyrifos	mg/kg	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	-	-	-
Parathion	mg/kg	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	<0.2	<0.2	-	-	-
Pirimphos-ethyl	mg/kg	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	-	-	-
Chlorfenvinphos	mg/kg	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	-	-	-
Bromophos-ethyl	mg/kg	0.05			0.05	< 0.05	< 0.05	<0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	<0.05	<0.05	-	-	-
Fenamiphos	mg/kg	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	-	-	-
Prothiofos	mg/kg	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	-	-	-
Ethion	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05	<0.05	< 0.05	< 0.05	< 0.05	< 0.05	<0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	-	-	-
Carbophenothion	mg/kg	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	-	-	-
Azinphos Methyl	mg/kg	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	-	-	-

				L	ocatior	n TP14	TP15	TP16A	TP16A	TP20	TP24		TP25		TP26	TP27	TP28	TP29	TP30	BH1	BH2	BH3
			Sa	imple ID (Pr	imary)	: TP14_0.0-0.1	TP15_0.0-0.1	TP16A_0.2-0.3	TP16A_0.5-0.6	TP20_0.5-0.6	TP24_0.5-0.6	TP25_0.0-0.1	QC100	QC200	TP26_1.5-1.6	TP27_0.5-0.6	TP28_0.0-0.1	TP29_0.3-0.4	TP30_0.0-0.1	BH1-1.0	BH2-0.1	BH3-0.1
				Sampl	e Date	: 26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	09/10/2013	09/10/2013	09/10/2013
				Sampl	е Туре	: PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	PS	PS	PS	PS	PS
			NEPM -	<u>NEPM -</u>																		
Analyte	Units	LOR	HIL B	<u>HIL D</u>	LOR																	
Phenolic Compounds																						
Phenol	mg/kg	0.5	45000	240000	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Chlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2-Methylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	mg/kg	1			1	<1	<1	<1	<1	<1	<1	<1	<1	-	<1	<1	<1	<1	<1	<1	<1	<1
2-Nitrophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2	130	660	2	<2	<2	<2	<2	<2	<2	<2	<2	-	<2	<2	<2	<2	<2	<2	<2	<2
Polynuclear Aromatic Hydrocarbons																						
Naphthalene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	0.8	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	1.8	3.2	0.4	<0.5	<0.5	5.6	<0.5	<0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	0.9	0.1	<0.5	<0.5	1.6	<0.5	0.9	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	0.8	1.4	0.1	<0.5	<0.5	2.7	<0.5	0.9	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	0.1	<0.5	<0.5	1.7	<0.5	<0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	1.2	2	0.2	<0.5	<0.5	4.3	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.5	-	<0.5	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.05	<0.5	<0.5	0.7	<0.5	<0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)perylene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.1	<0.5	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	400	4000	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	4.3	8.7	1	<0.5	<0.5	19.7	<0.5	1.8	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	4	40	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1	<0.5	<0.5	<0.5	<0.5	<0.5
Ammonia																						
Ammonia as N	mg/kg	20			20	<20	<20	<20	<20	<20	<20	<20	<20	-	<20	<20	<20	<20	<20	<20	<20	<20
			•			-				-		-								-		-

Legend: LOR - Limit of reporting

FD - Field Duplicate FT - Field Triplicate -Not Analysed

PS - Primary Sample FT - Field T Values that exceed the investigations level are highlighted as:

values that exceed the investigations level are highlighted as.
Health Based Investigation Level - NEPM - HILs B - Residential with minimal opportunity for soil access (NEPM 2013)
Health Based Investigation Level - NEPM - HILs D - Commercial / Industrial (NEPM 2013)

				Lo	ocation	BH4	BH5	BH6
			Sa	mple ID (Pri	mary):	BH4-0.4	BH5-0.1	BH6-0.3
				Sample	e Date:	09/10/2013	09/10/2013	09/10/2013
				Sample	e Type:	PS	PS	PS
			NEPM -	<u>NEPM -</u>				
Analyte	Units	LOR	HIL B	<u>HIL D</u>	LOR			
Organochlorine Pesticides (OCP)								
alpha-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05
Hexachlorobenzene (HCB)	mg/kg	0.05	15	80	0.05	<0.05	< 0.05	<0.05
beta-BHC	mg/kg	0.05			0.05	<0.05	<0.05	<0.05
gamma-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	< 0.05
delta-BHC	mg/kg	0.05			0.05	<0.05	< 0.05	<0.05
Heptachlor	mg/kg	0.05	10	50	0.05	<0.05	< 0.05	<0.05
Aldrin	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Dieldrin	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Sum of Aldrin + Dieldrin	mg/kg	0.05	10	45	0.05	<0.05	< 0.05	<0.05
Heptachlor epoxide	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
cis-Chlordane	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
trans-Chlordane	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Total Chlordane (sum)	mg/kg	0.05	90	530	0.05	< 0.05	< 0.05	< 0.05
alpha-Endosulfan	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
4.4`-DDE	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
4.4`-DDD	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
4.4`-DDT	mg/kg	0.2			0.2	<0.2	<0.2	<0.2
Sum of DDD + DDE + DDT	mg/kg	0.05	600	3600	0.05	< 0.05	< 0.05	< 0.05
Endrin	mg/kg	0.05	20	100	0.05	< 0.05	< 0.05	< 0.05
beta-Endosulfan	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Endosulfan (sum)	mg/kg	0.05	400	2000	0.05	< 0.05	< 0.05	< 0.05
Endrin aldehyde	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulfate	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Endrin ketone	mg/kg	0.05			0.05	< 0.05	< 0.05	< 0.05
Methoxychlor	mg/kg	0.2	500	2500	0.2	<0.2	<0.2	<0.2
Organophosphorus Pesticides (OPP)	0.0							
Dichlorvos	mg/kg	0.05			0.05	-	-	-
Demeton-S-methyl	mg/kg	0.05			0.05	-	-	-
Monocrotophos	mg/kg	0.2			0.2	-	-	-
Dimethoate	mg/kg	0.05			0.05	-	-	-
Diazinon	mg/kg	0.05			0.05	-	-	-
Chlorpyrifos-methyl	mg/kg	0.05			0.05	-	-	-
Parathion-methyl	mg/kg	0.2			0.2	-	-	-
Malathion	mg/kg	0.05			0.05	-	-	-
Fenthion	mg/kg	0.05			0.05	-	-	-
Chlorpyrifos	mg/kg	0.05			0.05	-	-	-
Parathion	mg/kg	0.2			0.2	-	-	-
Pirimphos-ethyl	mg/kg	0.05			0.05	-	-	-
Chlorfenvinghos	mg/kg	0.05			0.05	-	-	-
Bromophos-ethyl	mg/kg	0.05			0.05	-	-	-
Fenamiphos	mg/kg	0.05			0.05	-	-	-
Prothiofos	mg/kg	0.05	1		0.05	-	-	-
Ethion	mg/kg	0.05	1		0.05	-	-	-
Carbophenothion	mg/kg	0.05			0.05	-	-	-
Azinphos Methyl	mg/kg	0.05	İ		0.05	-	-	-

				Lo	cation	BH4	BH5	BH6
			Sa	mple ID (Pri	mary):	BH4-0.4	BH5-0.1	BH6-0.3
				Sample	Date:	09/10/2013	09/10/2013	09/10/2013
				Sample	Type:	PS	PS	PS
			NEPM -	NEPM -				
Analyte	Units	LOR	HIL B	<u>HIL D</u>	LOR			
Phenolic Compounds								
Phenol	mg/kg	0.5	45000	240000	0.5	<0.5	<0.5	<0.5
2-Chlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
2-Methylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	mg/kg	1			1	<1	<1	<1
2-Nitrophenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
2.4-Dimethylphenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
2.4.6-Trichlorophenol	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
2.4.5-Trichlorophenol	mg/kg	0.5			0.5	< 0.5	<0.5	< 0.5
Pentachlorophenol	mg/kg	2	130	660	2	<2	<2	<2
Polynuclear Aromatic Hydrocarbons								
Naphthalene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
Anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Benz(a)anthracene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Chrysene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5			0.5	<0.5	< 0.5	<0.5
Benzo(g.h.i)perylene	mg/kg	0.5			0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	400	4000	0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	4	40	0.5	<0.5	<0.5	<0.5
Ammonia	-							
Ammonia as N	mg/kg	20			20	<20	<20	<20

-Not Analysed

Legend: LOR - Limit of reporting

ng

FD - Field Duplicate FT - Field Triplicate

PS - Primary Sample FT - Field T Values that exceed the investigations level are highlighted as:

Health Based Investigation Level - NEPM - HILs B - Residential with minimal opportunity for soil access (NEPM 2013)
Health Based Investigation Level - NEPM - HILs D - Commercial / Industrial (NEPM 2013)

Tables 4a & 4b - Soil Analytical Results - Organics for EILs purposes Phase II ESA_PKC Primary School Golder Project No. 137623028

	Samp	le Matrix:			Geometric Mean						
	Sample ID	(Primary):	TP1_0.0-0.1	TP8_0.0-0.1	TP10_0.0-0.1	TP14_0.0-0.1	TP20_0.5-0.6	TP24_0.5-0.6	TP25_0.0-0.1	TP29_0.3-0.4	Geometric Mean
	Samp	ole Depth:	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6	0.5-0.6	0.0-0.1	0.3-0.4	0.0-0.5
	Sam	ple Date:	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	
Analyte	Units	LOR									
pH											
pH Value	pH Unit	0.1	6.1	5.7	6.8	4.4	4.8	5	5.6	6.3	5.59
Soil Classification based on Particle Siz	e										
Clay (<2 μm)	%	1	13	18	24	10	29	47	12	11	20.50
Exchangeable Cations											
Exchangeable Calcium	meq/100g	0.1	9.9	7.2	21.7	0.8	7.7	3.8	2.6	1.2	6.86
Exchangeable Magnesium	meq/100g	0.1	2.6	2	1.7	0.2	2.1	8.3	0.8	1.1	2.35
Exchangeable Potassium	meq/100g	0.1	0.3	0.4	0.7	<0.1	0.3	0.1	0.1	<0.1	0.32
Exchangeable Sodium	meq/100g	0.1	0.2	0.3	0.2	<0.1	0.2	1.1	0.1	0.2	0.33
Cation Exchange Capacity	meq/100g	0.1	13	10	24.3	1.1	10.4	13.3	3.6	2.5	9.78
Organic Matter											
Organic Matter	%	0.5	3.8	5.1	5.5	1.5	2.7	1.3	5.8	2.5	3.53
Total Organic Carbon	%	0.5	2.2	3	3.2	0.9	1.6	0.8	3.4	1.4	2.06
Iron											
Iron	mg/kg		20300	38500	34800	12000	31700	56900	12000	15500	27713

Legend:

LOR - Limit of reporting

	Samp	le Matrix:			Geometric Mean					
	Sample ID (Primary):	TP9_0.5-0.6	TP3_0.5-0.6	TP5_0.9-1.0	TP7_0.5-0.6	TP11_0.9-1.0	TP15_0.9-1.0	TP28_0.9-1.0	Geometric Mean
	Samp	le Depth:	0.5-0.6	0.5-0.6	0.9-1.0	0.5-0.6	0.9-1.0	0.9-1.0	0.9-1.0	0.5-1.0
	Sam	ple Date:	26/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	25/06/2013	
Analyte	Units	LOR								
pH										
pH Value	pH Unit	0.1	5.1	5.2	5.3	6.9	6.2	5.1	7	5.83
Soil Classification based on Particle Size	e									
Clay (<2 μm)	%	1	60	54	43	60	22	18	48	43.57
Exchangeable Cations										
Exchangeable Calcium	meq/100g	0.1	11.2	3.6	2.5	17.5	0.7	1.2	15.1	7.40
Exchangeable Magnesium	meq/100g	0.1	12.2	9.1	11.6	10.5	12.6	11.7	9.7	11.06
Exchangeable Potassium	meq/100g	0.1	0.3	0.2	0.2	0.1	<0.1	0.2	0.2	0.20
Exchangeable Sodium	meq/100g	0.1	1.8	2.9	1.1	1.7	6.3	0.6	0.8	2.17
Cation Exchange Capacity	meq/100g	0.1	25.4	15.8	15.4	29.9	19.7	13.7	25.9	20.83
Organic Matter										
Organic Matter	%	0.5	1.2	1.9	1	1.8	0.6	<0.5	1	1.25
Total Organic Carbon	%	0.5	0.7	1.1	0.6	1.1	<0.5	<0.5	0.6	0.82
Iron										
Iron	mg/kg		42400	59000	33500	59200	22800	50100	42200	44171

Legend:

	Lo	ocation	TP20	TP	26	BH4		
S	ample ID (Pri	mary):	TP20_0.5-0.6	TP26_0.5-0.6	TP26_1.5-1.6	BH4-0.4	BH4-1.0	
	Sample	e Date:	26/06/2013	25/06/2013	25/06/2013	09/10/2013	09/10/2013	
	Sample	e Type:	PS	PS	PS	PS	PS	
Analyte	Units	LOR						
Nutrients								
Ammonia as N	mg/kg	20	<20	<20	<20	<20	30	
Nitrite as N (Sol.)	mg/kg	0.1	<1.0	<1.0	<0.1	<1.0	<1.0	
Nitrate as N (Sol.)	mg/kg	0.1	<1.0	<1.0	<0.1	<1.0	<1.0	
Nitrite + Nitrate as N (Sol.)	mg/kg	0.1	<1.0	<1.0	<0.1	<1.0	<1.0	
Total Kjeldahl Nitrogen as N	mg/kg	20	1590	1040	470	120	880	
Total Nitrogen as N	mg/kg	20	1590	1040	470	120	880	
Total Phosphorus as P	mg/kg	2	667	261	888	338	186	

Legend:

LOR - Limit of reporting

PS - Primary Sample

FD - Field Duplicate FT - Field Triplicate Table 6 - Asbestos Analytical Results Phase II ESA_PKC Primary School Golder Project No. 137623028

				Location:	TP3_0.0-0.1	TP7_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2	TP12_0.00.1
				Sample ID :	TP3_0.0-0.1	TP7_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2	TP12_0.00.1
				Sample Date:	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013
			NEPM - Health Screening Level -	<u>NEPM - Health</u> Screening Level -					
Analyte	Units	LOR	Residential B	Residential D					
Identification of Asbestos in bulk samples									
Asbestos Detected	-	-			No	No	Yes	Yes	No
Asbestos detected in surface soil (0.1m)	-	-	No visible	No visible	No	No	<u>Yes</u>	NA	No
Asbestos Type	-	-					Ch	Ch + Am	-
Sample weight (dry)	g	0.01			599	7320	6290	9040	7660
Description	-	1			Dark grey-brown clay soil with some small grey rocks plus some vegetation	Dark grey-brown clay soil with some small red rocks plus some vegetation	Mid brown clay soil with some grey rocks plus some concrete debris and plenty of pieces of bonded asbestos vinyl tile like material approx 40 x 25 x 3mm and several small friable asbestos fibre bundles approx 4 x 1 x 1mm	Mid brown clay soil with some concrete debris plus some slag grains and two small fragments of bonded asbestos cement sheeting approx 6 x 4 x 3mm	Mid grey-brown clay soil with some quartz and slag grains and plenty of vegetation
APPROVED IDENTIFIER:	-	1			C.OWLER	C.OWLER	C.OWLER	C.OWLER	C.OWLER
Asbestos Quantification (non-NATA)									
Weight Used for % Calculation	kg	0.0001			6	7.32	6.29	9.04	7.66
Asbestos Containing Material (ACM)	g	0.1			<0.1	<0.1	64.6	<0.1	<0.1
Fibrous Asbestos (FA)	g	0.002			<0.002	<0.002	0.008	0.007	<0.002
Asbestos Fines (AF)	-	-			No	No	Yes	Yes	No
Asbestos Containing Material (ACM >7mm)	%	0.01	0.04	0.05	<0.01	<0.01	<u>0.10</u>	<0.01	<0.01
Asbestos Fines and Fibrous Asbestos (<7mm)	%	0.001	0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001

Legend: LOR - Limit of reporting

w/w - weight for weight

Cr - Crocidolite (blue asbestos)

Asbestos Identification:

Am - Amosite (brown asbestos)

Ch - Chrysotile (white asbestos)

Values that exceed the investigations level are highlighted as:

Health Screening Levels for Asbestos Contamination in Soil - Residential B -
(NEPM 1999 - Amend 2013)
Health Screening Levels for Asbestos Contamination in Soil -
Commercial/Inductrial D (NEDM 1999 Amond 2012)

Table 6 - Asbestos Analytical Results Phase II ESA_PKC Primary School Golder Project No. 137623028

Location:			TP12A_0.1-0.2	TP15_0.0-0.1	TP16A_0.9-1.0	TP16B_0.1-0.2	TP20_0.5-0.6		
Sample ID :			TP12A_0.1-0.2	TP15_0.0-0.1	TP16A_0.9-1.0	TP16B_0.1-0.2	TP20_0.5-0.6		
Sample Date:				26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	
			NEPM - Health	<u>NEPM - Health</u>					
			Screening Level -	Screening Level -					
Analyte	Units	LOR	Residential B	Residential D					
Identification of Asbestos in bulk samples									
Asbestos Detected	-	-			Yes	Yes	Yes	Yes	Yes
Asbestos detected in surface soil (0.1m)	-	-	No visible	No visible	NA	Yes	NA	NA	NA
Asbestos Type	-	-			Ch + Am	Ch + Am	Ch + Am	Ch + Am + Cr	Ch
Sample weight (dry)	g	0.01			27.1	6390	86.3	28.5	7840
Description	_	1			One piece of bonded asbestos cement sheeting approx 90 x 39 x 5mm	Mid brown clay soil with some slag grains plus plenty of vegetation and one small piece of degraded and friable asbestos fibre board approx 6 x 5 x 3mm	Three pieces of bonded asbestos cement sheeting approx 118 x 40 x 5mm	Several pieces of bonded asbestos cement sheeting approx 45 x 30 x 5mm	Mid grey-brown clay soil with some grey rocks plus some glass debris and several small friable fragments of asbestos fibre board approx 5 x 5 x 2mm
APPROVED IDENTIFIER:	-	1			C.OWLER	C.OWLER	C.OWLER	C.OWLER	C.OWLER
Asbestos Quantification (non-NATA)									
Weight Used for % Calculation	kg	0.0001			-	6.39	-	-	7.84
Asbestos Containing Material (ACM)	g	0.1			-	<0.1	-	-	<0.1
Fibrous Asbestos (FA)	g	0.002			-	0.004	-	-	0.023
Asbestos Fines (AF)	-	-			-	Yes	-	-	Yes
Asbestos Containing Material (ACM >7mm)	%	0.01	0.04	0.05	-	<0.01	-	-	<0.01
Asbestos Fines and Fibrous Asbestos (<7mm)	%	0.001	0.001	0.001	-	<0.001	-	-	0.001

Legend:

w/w - weight for weight

Cr - Crocidolite (blue asbestos)

LOR - Limit of reporting Asbestos Identification:

Am - Amosite (brown asbestos)

Ch - Chrysotile (white asbestos)

Values that exceed the investigations I	level are highlighted as:
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Health Screening Levels for Asbestos Contamination in Soil - Residential B -
(NEPM 1999 - Amend 2013)
Health Screening Levels for Asbestos Contamination in Soil -

Table 7a - QAQC Analytical Results - Rinsate Blanks Phase II ESA_PKC Primary School Golder Project No. 137623028

		Rinsate Blank	Rinsate Blank	Rinsate Blank	
		Sample ID :	QC300	QC301	QC302
	Sa	ample Date:	25/06/2013	26/06/2013	27/06/2013
Analyte	Units	LOR			
BTEXN					
Benzene	μg/L	1	<1	<1	<1
Toluene	ug/L	2	<2	<2	<2
Ethylbenzene	ug/L	2	<2	<2	<2
meta- & para-Xylene	ug/L	2	<2	<2	<2
ortho-Xvlene	ug/I	2	<2	<2	<2
Total Xylenes	ug/L	2	<2	<2	<2
Sum of BTEX	ug/L	1	<1	<1	<1
Naphthalene	ug/L	5	<5	<5	<5
Total Petroleum Hydrocarbons	P0/ -				
C6 - C9 Fraction	ug/L	20	<20	<20	<20
C10 - C14 Fraction	ug/L	50	<50	<50	<50
C15 - C28 Fraction	ug/L	100	<100	<100	<100
C29 - C36 Fraction	ug/L	50	<50	<50	<50
C10 - C36 Fraction (sum)	ug/L	50	<50	<50	<50
Total Recoverable Hydrocarbons - NEI	PM 2010 Dra	oft			
C6 - C10 Fraction	ug/L	20	<20	<20	<20
C6 - C10 Fraction minus BTEX (F1)	μg/L	20	<20	<20	<20
>C10 - C16 Fraction	μg/L	100	<100	<100	<100
>C16 - C34 Fraction	μg/l	100	<100	<100	<100
>C34 - C40 Fraction	ug/L	100	<100	<100	<100
>C10 - C40 Fraction (sum)	ug/I	100	<100	<100	<100
Total Metals	r6/ -	100	.100	.100	.100
Arsenic	mg/l	0.001	<0.001	<0.001	<0.001
Cadmium	mg/l	0.0001	<0.0001	<0.0001	<0.0001
Chromium	mg/L	0.001	<0.001	<0.001	<0.001
Copper	mg/l	0.001	<0.001	<0.001	<0.001
Lead	mg/l	0.001	<0.001	<0.001	<0.001
Manganese	mg/l	0.001	<0.001	<0.001	<0.001
Mercury	mg/l	0.0001	<0.0001	<0.0001	<0.0001
Nickel	mg/l	0.001	<0.001	<0.001	<0.001
Selenium	mg/l	0.01	<0.01	<0.01	<0.01
Zinc	mg/l	0.005	<0.005	<0.005	<0.005
Organochlorine Pesticides (OC)		0.000			
alpha-BHC	ug/L	0.5	<0.5	<0.5	<0.5
Hexachlorobenzene (HCB)	ug/I	0.5	<0.5	<0.5	<0.5
beta-BHC	ug/I	0.5	<0.5	<0.5	<0.5
gamma-BHC	ug/I	0.5	<0.5	<0.5	<0.5
delta-BHC	<u>го/с</u> цу/Г	0.5	<0.5	<0.5	<0.5
Heptachlor	ug/I	0.5	<0.5	<0.5	<0.5
Aldrin	<u>го/с</u> цу/Г	0.5	<0.5	<0.5	<0.5
Heptachlor epoxide	<u>۲۵/۲</u>	0.5	<0.5	<0.5	<0.5
trans-Chlordane	цg/I	0.5	<0.5	<0.5	<0.5
alpha-Endosulfan	<u>го/с</u> цр/Г	0.5	<0.5	<0.5	<0.5
cis-Chlordane	ug/I	0.5	<0.5	<0.5	<0.5
Dieldrin	цg/I	0.5	<0.5	<0.5	<0.5
4.4`-DDE	ug/I	0.5	<0.5	<0.5	<0.5
Endrin	ug/I	0.5	<0.5	<0.5	<0.5
beta-Endosulfan	<u>۲۵/۲</u>	0.5	<0.5	<0.5	<0.5
4.4`-DDD	ug/I	0.5	<0.5	<0.5	<0.5
Endrin aldehvde	μg/L	0.5	<0.5	<0.5	<0.5
Endosulfan sulfate	110/L	0.5	<0.5	<0.5	<0.5
4.4`-DDT	110/L	2	<2.0	<2.0	<2.0
Endrin ketone	<u>гълг</u> Цб/I	0.5	<0.5	<0.5	<0.5
Methoxychlor	110/L	2	<2.0	<2.0	<2.0
Total Chlordane (sum)	110/I	0.5	<0.5	<0.5	<0.5
Sum of DDD + DDF + DDT	100/I	0.5	<0.5	<0.5	<0.5
Sum of Aldrin + Dieldrin	μg/L	0.5	<0.5	<0.5	<0.5

Table 7a - QAQC Analytical Results - Rinsate Blanks Phase II ESA_PKC Primary School Golder Project No. 137623028

		Rinsate Blank	Rinsate Blank	Rinsate Blank	
		Sample ID :	QC300	QC301	QC302
	Sa	ample Date:	25/06/2013	26/06/2013	27/06/2013
Analyte	Units	LOR			
Organophosphorus Pesticides (OP)					
Dichlorvos	μg/L	0.5	<0.5	<0.5	<0.5
Demeton-S-methyl	μg/L	0.5	<0.5	<0.5	<0.5
Monocrotophos	ug/L	2	<2.0	<2.0	<2.0
Dimethoate	μg/L	0.5	<0.5	<0.5	<0.5
Diazinon	ug/L	0.5	<0.5	<0.5	<0.5
Chlorpyrifos-methyl	ug/L	0.5	<0.5	<0.5	<0.5
Parathion-methyl	ug/L	2	<2.0	<2.0	<2.0
Malathion	ug/L	0.5	<0.5	<0.5	<0.5
Fenthion	ug/L	0.5	<0.5	<0.5	<0.5
Chlorpyrifos	ug/l	0.5	<0.5	<0.5	<0.5
Parathion	ug/I	2	<2.0	<2.0	<2.0
Pirimphos-ethyl	11g/l	0.5	<0.5	<0.5	<0.5
Chlorfenvinnhos	μσ/I	0.5	<0.5	<0.5	<0.5
Bromonhos-ethyl	μσ/I	0.5	<0.5	<0.5	<0.5
Fenaminhos	μσ/I	0.5	<0.5	<0.5	<0.5
Prothiofos	μσ/I	0.5	<0.5	<0.5	<0.5
Ethion	μσ/I	0.5	<0.5	<0.5	<0.5
Carbonhenothion	<u>μα/Ι</u>	0.5	<0.5	<0.5	<0.5
	μσ/I	0.5	<0.5	<0.5	<0.5
Phenolic Compounds	με/ -	0.5	NU.5	<0.5	NO.5
Phenol	ug/I	1	<10	<10	<1.0
2 Chlorophonol	μg/L	1	<1.0	<1.0	<1.0
2 Mothylphonol	μg/L	1	<1.0	<1.0	<1.0
2 & 4 Mothylphonol	μg/L	1 2	<1.0	<1.0	<1.0
3- & 4-Methylphenol	μg/L	2	<2.0	<2.0	<2.0
2.4 Dimethylphenel	μg/L	1	<1.0	<1.0	<1.0
2.4 Dichlorophonol	μg/L	1	<1.0	<1.0	<1.0
2.4-Dichlorophenol	μg/L	1	<1.0	<1.0	<1.0
2.6-Dichlorophenol	μg/L	1	<1.0	<1.0	<1.0
4-Chioro-3-Wethylphenol	μg/L	1	<1.0	<1.0	<1.0
	μg/L	1	<1.0	<1.0	<1.0
2.4.5-Trichlorophenol	μg/L	1	<1.0	<1.0	<1.0
	µg/L	2	<2.0	<2.0	<2.0
Polynuclear Aromatic Hydrocarbons		1	-1.0	-1.0	
Naphthalene	μg/L	1	<1.0	<1.0	<1.0
Acenaphthylene	μg/L	1	<1.0	<1.0	<1.0
Acenaphthene	μg/L	1	<1.0	<1.0	<1.0
Fluorene	μg/L	1	<1.0	<1.0	<1.0
Phenanthrene	μg/L	1	<1.0	<1.0	<1.0
Anthracene	μg/L	1	<1.0	<1.0	<1.0
Fluorantnene	μg/L	1	<1.0	<1.0	<1.0
	μg/L	1	<1.0	<1.0	<1.0
Benz(a)anthracene	μg/L	1	<1.0	<1.0	<1.0
Chrysene	μg/L	1	<1.0	<1.0	<1.0
Benzo(b)fluoranthene	μg/L	1	<1.0	<1.0	<1.0
Benzo(k)fluoranthene	μg/L	1	<1.0	<1.0	<1.0
Benzo(a)pyrene	μg/L	0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	μg/L /·	1	<1.0	<1.0	<1.0
Dibenz(a.h)anthracene	μg/L ,.	1	<1.0	<1.0	<1.0
Benzo(g.h.i)perylene	μg/L	1	<1.0	<1.0	<1.0
Sum of polycyclic aromatic hydrocarbo	μg/L /.	0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	μg/L	0.5	<0.5	<0.5	<0.5

Legend:

LOR - Limit of reporting

Table 7b - QAQC Analytical Results - Trip Blanks Phase II ESA_PKC Primary School Golder Project No. 137623028

		Location:	Trip Blank	Trip Blank	Trip Blank
	Sample ID :		QC400	QC401	QC402
	Sa	mple Date:	25/06/2013	26/06/2013	27/06/2013
Moisture					
Moisture Content (dried @ 103°C)	%	1	21.5	5.5	2.8
BTEXN					
Benzene	mg/kg	0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	<0.5
meta- & para-xylene	mg/kg	0.5	<0.5	<0.5	<0.5
Total Yulanas	mg/kg	0.5	<0.5	<0.5	<0.5
Sum of PTEV	mg/kg	0.3	<0.3	<0.3	<0.3
Nanhthalene	mg/kg	1	<0.2	<0.2	<0.2
Total Petroleum Hydrocarbons	116/16	1	1	1	1
C6 - C9 Fraction	mg/kg	10	<10	<10	<10
C10 - C14 Fraction	mg/kg	50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPN	/ 2010 Draft				
C6 - C10 Fraction	mg/kg	10	<10	<10	<10
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	<10	<10	<10
>C10 - C16 Fraction	mg/kg	50	<50	<50	<50
>C16 - C34 Fraction	mg/kg	100	<100	<100	<100
>C34 - C40 Fraction	mg/kg	100	<100	<100	<100
>C10 - C40 Fraction (sum)	mg/kg	50	<50	<50	<50
Total Metals					
Arsenic	mg/kg	5	<5	<5	<5
Cadmium	mg/kg	1	<1	<1	<1
Chromium	mg/kg	2	<2	<2	<2
Copper	mg/kg	5	<5	<5	<5
Iron	mg/kg	50	-	-	-
Lead	mg/kg	5	<5	<5	<5
Manganese	mg/kg	5	10	12	8
Mercury	mg/kg	0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	<2	<2	<2
Selenium	mg/kg	5	<5	<5	<5
	mg/kg	5	<5	<5	<5
Ammonia Ammonia os N	malka	20	<20	<20	<20
Ammonia as N Organachlarina Bastisidas (OC)	під/кд	20	<20	<20	<20
alpha-BHC	ma/ka	0.05	<0.05	<0.05	<0.05
Heyachlorobenzene (HCB)	mg/kg	0.05	<0.05	<0.05	<0.05
beta-BHC	mg/kg	0.05	<0.05	<0.05	<0.05
gamma-BHC	mg/kg	0.05	<0.05	<0.05	<0.05
delta-BHC	mg/kg	0.05	< 0.05	< 0.05	<0.05
Heptachlor	mg/kg	0.05	<0.05	<0.05	<0.05
Aldrin	mg/kg	0.05	<0.05	<0.05	<0.05
Heptachlor epoxide	mg/kg	0.05	<0.05	< 0.05	< 0.05
Total Chlordane (sum)	mg/kg	0.05	<0.05	<0.05	<0.05
trans-Chlordane	mg/kg	0.05	<0.05	<0.05	<0.05
alpha-Endosulfan	mg/kg	0.05	<0.05	<0.05	<0.05
cis-Chlordane	mg/kg	0.05	<0.05	<0.05	<0.05
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.05
4.4`-DDE	mg/kg	0.05	<0.05	<0.05	<0.05
Endrin	mg/kg	0.05	<0.05	<0.05	<0.05
beta-Endosulfan	mg/kg	0.05	<0.05	<0.05	<0.05
Endosulfan (sum)	mg/kg	0.05	<0.05	<0.05	<0.05
4.4`-DDD	mg/kg	0.05	<0.05	<0.05	<0.05
Endrin aldehyde	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Endosulfan sulfate	mg/kg	0.05	<0.05	<0.05	<0.05
4.4 -DUI	mg/kg	0.2	<0.2	<0.2	<0.2
Enumi Ketone Mothomichlor	mg/kg	0.05	<0.05	<0.05	<0.05
Sum of Aldrin + Dieldrin	mg/kg	0.2		<0.2	
Sum of DDD + DDF + DDT	mø/kg	0.05	<0.05	<0.05	<0.05

Table 7b - QAQC Analytical Results - Trip Blanks Phase II ESA_PKC Primary School Golder Project No. 137623028

		Location:	Trip Blank	Trip Blank	Trip Blank
		Sample ID :	QC400	QC401	QC402
	Sa	ample Date:	25/06/2013	26/06/2013	27/06/2013
Organophosphorus Pesticides (OP)					
Dichlorvos	mg/kg	0.05	<0.05	<0.05	<0.05
Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	<0.05
Monocrotophos	mg/kg	0.2	<0.2	<0.2	<0.2
Dimethoate	mg/kg	0.05	<0.05	<0.05	<0.05
Diazinon	mg/kg	0.05	<0.05	<0.05	<0.05
Chlorpyrifos-methyl	mg/kg	0.05	<0.05	<0.05	<0.05
Parathion-methyl	mg/kg	0.2	<0.2	<0.2	<0.2
Malathion	mg/kg	0.05	<0.05	<0.05	<0.05
Fenthion	mg/kg	0.05	<0.05	<0.05	<0.05
Chlorpyrifos	mg/kg	0.05	<0.05	<0.05	<0.05
Parathion	mg/kg	0.2	<0.2	<0.2	<0.2
Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	<0.05
Chlorfenvinphos	mg/kg	0.05	<0.05	<0.05	<0.05
Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	<0.05
Fenamiphos	mg/kg	0.05	<0.05	<0.05	<0.05
Prothiofos	mg/kg	0.05	<0.05	< 0.05	< 0.05
Ethion	mg/kg	0.05	<0.05	< 0.05	< 0.05
Carbophenothion	mg/kg	0.05	<0.05	<0.05	< 0.05
Azinphos Methyl	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Phenolic Compounds					
Phenol	mg/kg	0.5	<0.5	<0.5	<0.5
2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5
2-Methylphenol	mg/kg	0.5	<0.5	<0.5	<0.5
3- & 4-Methylphenol	mg/kg	1	<1	<1	<1
2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	<0.5
2.4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	<0.5
2.4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5
2.6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5
4-Chloro-3-Methylphenol	mg/kg	0.5	<0.5	<0.5	<0.5
2.4.6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5
2.4.5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	<0.5
Pentachlorophenol	mg/kg	2	<2	<2	<2
Polynuclear Aromatic Hydrocarbons					
Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.5
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.5
Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.5
Fluorene	mg/kg	0.5	<0.5	<0.5	<0.5
Phenanthrene	mg/kg	0.5	<0.5	<0.5	<0.5
Anthracene	mg/kg	0.5	<0.5	<0.5	<0.5
Fluoranthene	mg/kg	0.5	<0.5	<0.5	< 0.5
Pyrene	mg/kg	0.5	<0.5	<0.5	< 0.5
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	< 0.5
Chrysene	mg/kg	0.5	<0.5	<0.5	<0.5
Benzo(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.5
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	<0.5
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.5
Dibenz(a.h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.5
Benzo(g.h.i)pervlene	mg/kg	0.5	<0.5	<0.5	<0.5
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	<0.5	<0.5	<0.5

Legend:

LOR - Limit of reporting

- Not Analysed
Table 8 - Ecological Screening Levels (ESL) and Management Limits (MLs) Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP1	TP2	TP3	TP4		TP5		TP6	TP7		TP8		TP9	TP10	TP11
					Sa	mple ID (Primary):	TP1_0.0-0.1	TP2_0.2-0.4	TP3_0.0-0.1	TP4_0.0-0.1	TP5_0.5-0.6	QC102	QC202	TP6_0.2-0.3	TP7_0.3-0.4	TP8_0.0-0.1	QC101	QC102	TP9_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2
						Sample Depth:	0.0-0.1	0.2-0.4	0.0-0.1	0.0-0.1	0.5-0.6	0.5-0.6	0.5-0.6	0.2-0.3	0.3-0.4	0.0-0.1	0.0-0.1	0.0-0.1	0.3-0.4	0.0-0.1	0.1-0.2
						Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
						Sample Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
						Sample Type:	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS	FD	FT	PS	PS	PS
			ECOLOGICAL SCREE	ENING LEVELS (ESL)	MANAGEMENT	LIMITS (MLs)															
			Urban Residential	Commercial /	Urban Residential	Commercial /															
Analyte	Units	LOR	(Coarse)	Industrial (Coarse)	(Coarse)	Industrial (Coarse)															
Total Petroleum Hydrocarbons																					
C6 - C9 Fraction	mg/kg	10					<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
C10 - C14 Fraction	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	-	<50	<50	<50
Total Recoverable Hydrocarbons - NEPN	1 2010 Dr	aft																			
C6 - C10 Fraction (F1)	mg/kg	10	180	215	700	700	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10					<10	<10	<10	<10	<10	<10	<25	<10	<10	<10	<10	<25	<10	<10	<10
>C10 - C16 Fraction (F2)	mg/kg	50	120	170	1000	1000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C10 - C16 Fraction minus Napht	mg/kg	calc.					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
>C16 - C34 Fraction (F3)	mg/kg	100	300	1700	2500	3500	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction (F4)	mg/kg	100	2800	3300	10000	10000	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	-	<50	<50	<50	<50	-	<50	<50	<50
BTEXN																					
Benzene	mg/kg	0.2	50	75	-	-	<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	<0.2	<0.2
Toluene	mg/kg	0.5	85	135	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	70	165	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5	105	180	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	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	<0.2
Naphthalene	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons																					
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	1.4	1.4	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5
Legend:																					

LOR - Limit of reporting

PS - Primary Sample

- Not analysed / Not guideline available

N	Values for ESL - Urban Residential - Open Space (coarse) were obtained from Table
1	1B (6) in the NEPM 1999 - Amend 2013
١	Values for ESL - Commercial/Industrial (coarse) were obtained from Table 1B (6) in
t	the NEPM 1999 - Amend 2013
V	Values for Management Limits - Urban Residential (Coarse) were obtained from
٦	Table 1B (7) in the NEPM 1999 - Amend 2013
	Management Limits - Commercial / Industrial (Coarse) were obtained from Table 1E
((7) in the NEPM 1999 - Amend 2013

FD - Field Duplicate FT - Field Triplicate

Table 8 - Ecological Screening Levels (ESL) and Management Limits (MLs) Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP12	TP13	TP14	TP15	TP16A	TP16A	TP20	TP24		TP25		TP26	TP27	TP28
					Sa	imple ID (Primary):	TP12_0.00.1	TP13_0.5-0.6	TP14_0.0-0.1	TP15_0.0-0.1	TP16A_0.2-0.3	TP16A_0.5-0.6	TP20_0.5-0.6	TP24_0.5-0.6	TP25_0.0-0.1	QC100	QC200	TP26_1.5-1.6	TP27_0.5-0.6	TP28_0.0-0.1
						Sample Depth:	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.2-0.3	0.5-0.6	0.5-0.6	0.5-0.6	0.0-0.1	0.0-0.1	0.0-0.1	1.5-1.6	0.5-0.6	0.0-0.1
						Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
						Sample Date:	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	25/06/2013	25/06/2013
						Sample Type:	PS	PS	PS	PS	PS	PS	PS	PS	PS	FD	FT	PS	PS	PS
			ECOLOGICAL SCREE	ENING LEVELS (ESL)	MANAGEMEN	LIMITS (MLs)														
			Urban Residential	Commercial /	Urban Residential	Commercial /														
Analyte	Units	LOR	(Coarse)	Industrial (Coarse)	(Coarse)	Industrial (Coarse)														
Total Petroleum Hydrocarbons																				
C6 - C9 Fraction	mg/kg	10					<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10
C10 - C14 Fraction	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	360	550	<100	<100	<100	1000
C29 - C36 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100	<100	<100	180	240	<100	<100	<100	490
C10 - C36 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	540	790	-	<50	<50	1490
Total Recoverable Hydrocarbons - NEPN	1 2010 Dra	aft																		
C6 - C10 Fraction (F1)	mg/kg	10	180	215	700	700	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10					<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<25	<10	<10	<10
>C10 - C16 Fraction (F2)	mg/kg	50	120	170	1000	1000	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	70
C10 - C16 Fraction minus Napht	mg/kg	calc.					<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	70
>C16 - C34 Fraction (F3)	mg/kg	100	300	1700	2500	3500	<100	<100	<100	<100	<100	<100	<100	<100	480	700	100	<100	<100	1330
>C34 - C40 Fraction (F4)	mg/kg	100	2800	3300	10000	10000	<100	<100	<100	<100	<100	<100	<100	<100	<100	110	<100	<100	<100	220
>C10 - C40 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50	<50	<50	480	810	-	<50	<50	1620
BTEXN																				
Benzene	mg/kg	0.2	50	75	-	-	<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	<0.2
Toluene	mg/kg	0.5	85	135	-	-	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	< 0.5	<0.5	<0.5	0.6
Ethylbenzene	mg/kg	0.5	70	165	-	-	<0.5	< 0.5	<0.5	<0.5	< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<2	<0.5	<0.5	0.5
ortho-Xylene	mg/kg	0.5					< 0.5	< 0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1	<0.5	<0.5	<0.5
Total Xylenes	mg/kg	0.5	105	180	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	<0.5	<0.5	0.5
Sum of BTEX	mg/kg	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	1.1
Naphthalene	mg/kg	1					<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons																				
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	1.4	1.4	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	1
Legend:																				

LOR - Limit of reporting

PS - Primary Sample

- Not analysed / Not guideline available

Values for ESL - Urban Residential - Open Space (coarse) were obtained from Table
1B (6) in the NEPM 1999 - Amend 2013
Values for ESL - Commercial/Industrial (coarse) were obtained from Table 1B (6) in
the NEPM 1999 - Amend 2013
Values for Management Limits - Urban Residential (Coarse) were obtained from
Table 1B (7) in the NEPM 1999 - Amend 2013
Management Limits - Commercial / Industrial (Coarse) were obtained from Table 1E
(7) in the NEPM 1999 - Amend 2013

FD - Field Duplicate

FT - Field Triplicate

Table 8 - Ecological Screening Levels (ESL) and Management Limits (MLs) Phase II ESA_PKC Primary School Golder Project No. 137623028

						Location	TP29	TP30	BH2	BH3	BH4	BH5
					Si	ample ID (Primary):	TP29_0.3-0.4	TP30_0.0-0.1	BH2-0.1	BH3-0.1	BH4-0.4	BH5-0.1
						Sample Depth:	0.3-0.4	0.0-0.1	0.1	0.1	0.4	0.1
1						Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand
						Sample Date:	25/06/2013	25/06/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013
						Sample Type:	PS	PS	PS	PS	PS	PS
			ECOLOGICAL SCRE	ENING LEVELS (ESL)	MANAGEMEN	T LIMITS (MLs)						
			Urban Residential	Commercial /	Urban Residential	Commercial /						
Analyte	Units	LOR	(Coarse)	Industrial (Coarse)	(Coarse)	Industrial (Coarse)						
Total Petroleum Hydrocarbons												
C6 - C9 Fraction	mg/kg	10					<10	<10	<10	<10	<10	<10
C10 - C14 Fraction	mg/kg	50					<50	<50	<50	<50	<50	<50
C15 - C28 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100
C29 - C36 Fraction	mg/kg	100					<100	<100	<100	<100	<100	<100
C10 - C36 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50
Total Recoverable Hydrocarbons - NEPN	A 2010 Dra	aft										
C6 - C10 Fraction (F1)	mg/kg	10	180	215	700	700	<10	<10	<10	<10	<10	<10
C6 - C10 Fraction minus BTEX	mg/kg	10					<10	<10	<10	<10	<10	<10
>C10 - C16 Fraction (F2)	mg/kg	50	120	170	1000	1000	<50	<50	<50	<50	<50	<50
C10 - C16 Fraction minus Napht	mg/kg	calc.					<50	<50	<50	<50	<50	<50
>C16 - C34 Fraction (F3)	mg/kg	100	300	1700	2500	3500	<100	<100	<100	<100	<100	<100
>C34 - C40 Fraction (F4)	mg/kg	100	2800	3300	10000	10000	<100	<100	<100	<100	<100	<100
>C10 - C40 Fraction (sum)	mg/kg	50					<50	<50	<50	<50	<50	<50
BTEXN												
Benzene	mg/kg	0.2	50	75	-	-	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	0.5	85	135	-	-	<0.5	<0.5	< 0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	0.5	70	165	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
meta- & para-Xylene	mg/kg	0.5					<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
ortho-Xylene	mg/kg	0.5					<0.5	<0.5	< 0.5	<0.5	<0.5	< 0.5
Total Xylenes	mg/kg	0.5	105	180	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Sum of BTEX	mg/kg	0.2					<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Naphthalene	mg/kg	1					<1	<1	<1	<1	<1	<1
Polynuclear Aromatic Hydrocarbons												
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	1.4	1.4	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Legend:												

LOR - Limit of reporting

PS - Primary Sample

- Not analysed / Not guideline available

Values for ESL - Urban Residential - Open Space (coarse) were obtained from Table
1B (6) in the NEPM 1999 - Amend 2013
Values for ESL - Commercial/Industrial (coarse) were obtained from Table 1B (6) in
the NEPM 1999 - Amend 2013
Values for Management Limits - Urban Residential (Coarse) were obtained from
Table 1B (7) in the NEPM 1999 - Amend 2013
Management Limits - Commercial / Industrial (Coarse) were obtained from Table 18
(7) in the NEPM 1999 - Amend 2013

FD - Field Duplicate

FT - Field Triplicate

Table 9 - Ecological Investigation Levels (EIL) for the Site Phase II ESA_PKC Primary School Golder Project No. 137623028

Fill / Sand material

				Location:	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14	TP15	TP	16A
				Sample ID :	TP1_0.0-0.1	TP2_0.0-0.1	TP3_0.0-0.1	TP4_0.0-0.1	TP5_0.5-0.6	TP6_0.2-0.3	TP7_0.3-0.4	TP8_0.0-0.1	TP9_0.3-0.4	TP10_0.0-0.1	TP11_0.1-0.2	TP12_0.00.1	TP13_0.5-0.6	TP14_0.0-0.1	TP15_0.0-0.1	TP16A_0.2-0.3	TP16A_0.5-0.6
				Sample Depth:	0.0-0.1	0.0-0.1	0.0-0.1	0.0-0.1	0.5-0.6	0.2-0.3	0.3-0.4	0.0-0.1	0.3-0.4	0.0-0.1	0.1-0.2	0.0-0.1	0.5-0.6	0.0-0.1	0.0-0.1	0.2-0.3	0.5-0.6
				Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand									
				Sample Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
				Sample Type:	PS	PS	PS	PS	PS	PS	PS	PS									
Analyte	Units	LOR	Site EIL - Urban Residential (Coarse/Sand)	Site EIL - Commercial / Industrial (Coarse/Sand)																	
Total Metals																					
Arsenic	mg/kg	5	100	160	6	<5	8	<5	33	37	7	44	36	31	<5	10	17	11	8	11	33
Cadmium	mg/kg	1			<1	<1	3	<1	4	27	<1	14	11	3	<1	3	<1	<1	4	10	5
Chromium	mg/kg	2	420	680	13	10	7	3	13	5	20	23	21	16	19	10	10	8	8	12	13
Copper	mg/kg	5	205	265	140	10	589	287	467	2740	66	2280	1020	422	201	961	171	660	1620	320	335
Lead	mg/kg	5	1100	1800	29	9	120	126	71	216	19	677	192	124	21	173	38	415	239	48	61
Manganese	mg/kg	5			374	428	135	216	94	362	50	609	111	88	39	456	72	123	549	1580	122
Mercury	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.6	0.3	0.2	<0.1	0.3	<0.1	0.3	0.2	0.1	0.2
Nickel	mg/kg	2	175	295	11	7	6	2	6	14	3	12	9	6	6	8	4	5	10	24	6
Selenium	mg/kg	5			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	6	<5	5	<5	<5	<5
Zinc	mg/kg	5	310	455	68	18	152	32	112	500	41	529	443	256	92	187	35	85	231	369	145
Naphthalene	mg/kg	1	170	370	<1	-	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Legend: LOR - Limit of reporting

-Not Analysed

Lead, arsenic and naphthalene values were obtained from Table 1B (4) and Table 1B (5).

All the other parameters were calculated as EILs (ABC + ACL)

Natural / Clay material

				Location:	TP1	TP2	TP3	TP4	TP5	TP6	TP7	TP8	TP9	TP10	TP11	TP12	TP13	TP14	TP15	TP20	TP24
				Sample ID :	TP1 0 0 1 0	TD2 0 2 0 4	TD2 0 5 0 6	TRADEDE	TDE 0.0.1.0	TREDEDE	TD7 0 5 0 6	TD9 0010		TR10.05.06	TD11 0010	TD12 0010	TD12 1 E 1 6	TD14 0 5 0 6	TD15 0.0 1.0	TD20 0.0 1.0	TD24 0 5 0 6
				Sample ID .	111_0.5-1.0	1F2_0.2-0.4	1F3_0.3-0.0	1F4_0.3-0.0	1F5_0.5-1.0	1F0_0.3-0.0	1F7_0.3-0.0	16_0.5-1.0	1F9_0.3-0.0	1110_0.3-0.0	111_0.5-1.0	112_0.5-1.0	1F15_1.5-1.0	1114_0.3-0.0	1115_0.5-1.0	1F20_0.3-1.0	0.5-0.0
				Sample Depth:	0.9-1.0	0.2-0.4	0.5-0.6	0.5-0.6	0.9-1.0	0.5-0.6	0.5-0.6	0.9-1.0	0.5-0.6	0.5-0.6	0.9-1.0	0.9-1.0	1.5-1.6	0.5-0.6	0.9-1.0	0.9-1.0	0.5-0.6
				Sample Matrix:	Natural/Clay																
				Sample Date:	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	27/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013	26/06/2013
				Sample Type:	PS																
									•						•			•			
			Site EIL - Urban	Site EIL - Commercial																	
			Residential	/ Industrial																	
Analyte	Units	LOR	(Fine/Clay)	(Fine/Clay)																	
Total Metals																					
Arsenic	mg/kg	5	100	160	<5	<5	<5	9	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Cadmium	mg/kg	1			<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium	mg/kg	2	420	680	14	20	25	16	17	22	24	12	21	24	14	19	15	18	20	27	29
Copper	mg/kg	5	355	355	87	82	80	78	69	61	77	76	82	88	73	116	63	60	139	110	123
Lead	mg/kg	5	1100	1800	<5	7	12	22	<5	7	9	<5	10	9	6	6	6	6	10	7	70
Manganese	mg/kg	5			38	<5	19	21	<5	48	20	28	9	15	21	64	35	6	202	50	61
Mercury	mg/kg	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	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	275	465	9	3	4	3	<2	4	4	5	2	4	5	14	2	2	18	10	7
Selenium	mg/kg	5			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	mg/kg	5	435	655	33	12	25	16	15	9	24	31	17	27	38	88	21	13	98	76	258
Naphthalene	mg/kg	1	170	370	-	<1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<1

Legend: LOR - Limit of reporting -Not Analysed

Lead, arsenic and naphthalene values were obtained from Table 1B (4) and Table 1B (5).

All the other parameters were calculated as EILs (ABC + ACL)

Table 9 - Ecological Investigation Levels (EIL) for the Site Phase II ESA_PKC Primary School Golder Project No. 137623028

Fill / Sand material

	Loca				TP20	TP24	TP	25	TP	26	TI	P27	TP28	TP29	TP30	BH2-1.0	BH3-1.0	BH4-1.0	BH5-1.0
				Sample ID :	TP20_0.5-0.6	TP24_0.0-0.1	TP25_0.0-0.1	TP25_0.9-1.0	TP26_0.5-0.6	TP26_1.5-1.6	TP27_0.0-0.1	TP27_0.5-0.6	TP28_0.0-0.1	TP29_0.3-0.4	TP30_0.0-0.1	BH2-1.0	BH3-1.0	BH4-1.0	BH5-1.0
				Sample Depth:	0.5-0.6	0.0-0.1	0.0-0.1	0.9-1.0	0.5-0.6	1.5-1.6	0.0-0.1	0.5-0.6	0.0-0.1	0.3-0.4	0.0-0.1	1	1	1	1
				Sample Matrix:	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand	Fill/Sand										
				Sample Date:	26/06/2013	26/06/2013	26/06/2013	26/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	25/06/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013
				Sample Type:	PS	PS	PS	PS	PS										
Analyte	Units	LOR	Site EIL - Urban Residential (Coarse/Sand)	Site EIL - Commercial / Industrial (Coarse/Sand)															
Total Metals																			
Arsenic	mg/kg	5	100	160	166	16	10	209	9	22	<5	35	26	13	201	<5	<5	<5	11
Cadmium	mg/kg	1			4	4	3	4	<1	2	<1	8	2	13	10	<1	<1	<1	<1
Chromium	mg/kg	2	420	680	19	13	9	11	22	17	6	12	9	5	13	30	26	31	26
Copper	mg/kg	5	205	265	1330	1480	791	1060	132	923	262	479	2240	333	2820	68	102	79	83
Lead	mg/kg	5	1100	1800	489	191	243	253	66	156	38	155	397	44	657	7	9	14	44
Manganese	mg/kg	5			164	475	360	154	121	334	231	89	442	20	296	21	16	75	103
Mercury	mg/kg	0.1			0.8	0.5	0.2	0.4	0.1	0.1	<0.1	0.2	0.4	0.1	1.2	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	2	175	295	7	9	12	6	5	22	8	13	12	7	11	15	3	9	7
Selenium	mg/kg	5			<5	5	<5	<5	<5	<5	<5	<5	<5	<5	7	<5	<5	<5	<5
Zinc	mg/kg	5	310	455	237	286	514	200	154	179	132	404	176	154	415	38	54	76	31
Naphthalene	mg/kg	1	170	370	<1	<1	<1	-	-	<1	-	<1	<1	<1	<1	<1	<1	<1	<1

Legend:

LOR - Limit of reporting -Not Analysed

Lead, arsenic and naphthalene values were obtained from Table 1B (4) and Table 1B (5).

All the other parameters were calculated as EILs (ABC + ACL)

Natural / Clay material

				Location:	TP28	TP29	TP30	E	H1	BH2	BH3	BH4	BH5	BI	H6
				Sample ID :	TP28_0.9-1.0	TP29_0.9-1.0	TP30_0.5-0.6	BH1-0.5	BH1-1.0	BH2-0.1	BH3-0.1	BH4-0.4	BH5-0.1	BH6-0.3	BH6-1.0
				Sample Depth:	0.9-1.0	0.9-1.0	0.5-0.6	0.5	1	0.1	0.1	0.4	0.1	0.3	1
				Sample Matrix:	Natural/Clay										
				Sample Date:	25/06/2013	25/06/2013	25/06/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013	09/10/2013
				Sample Type:	PS										
Analyte	Units	LOR	Site EIL - Urban Residential (Fine/Clay)	Site EIL - Commercial / Industrial (Fine/Clay)											
Total Metals															
Arsenic	mg/kg	5	100	160	<5	6	<5	<5	<5	6	37	73	5	<5	<5
Cadmium	mg/kg	1			<1	<1	1	<1	<1	<1	3	5	1	<1	<1
Chromium	mg/kg	2	420	680	14	17	21	32	11	9	20	26	6	32	25
Copper	mg/kg	5	355	355	72	99	249	74	49	82	436	717	574	130	137
Lead	mg/kg	5	1100	1800	22	14	67	8	7	219	350	404	92	10	8
Manganese	mg/kg	5			142	35	32	19	<5	92	147	248	161	550	87
Mercury	mg/kg	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	0.2	0.2	<0.1	0.1	<0.1	<0.1
Nickel	mg/kg	2	275	465	6	6	4	6	<2	4	8	24	3	30	15
Selenium	mg/kg	5			<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Zinc	mg/kg	5	435	655	107	54	157	28	17	1150	257	798	190	111	90
Naphthalene	mg/kg	1	170	370	-	-	-	-	<1	<1	<1	<1	<1	-	-

Legend: LOR - Limit of reporting -Not Analysed

Lead, arsenic and naphthalene values were obtained from Table 1B (4) and Table 1B (5).

All the other parameters were calculated as EILs (ABC + ACL)

Table 10 - Groundwater Gauging Results DSI_PKC Primary School Golder Project No. 137623028

Well_ID	Location	X (m MGA)	Y (m MGA)	RL_TOC (mAHD)	RL_Ground (mAHD)	TOS (mBGS)	BOS (mBGS)	Date Guaged	DTW (mBTOC)	SWL (mAHD)	Comments
					DE	EP WELLS					
D1	School,Bakery	307904.9	6182141.6	33.47	33.5	1.9	8	17/07/2013	1.700	31.77	
D4	School,Bakery	307761.7	6182225.3	31.41	31.48	5	8	17/07/2013	0.450	30.96	

Legend: MGA= the Map Grid of Australia * - the coordinates are ISG system

* - the coordinates are ISG system RL_TOC= Relative Level Top of the Casing mAHD= Meters Australian Height Datum TOS= Top of the screen BOS= Bottom of the screen mBGS = Meters below ground surface mBTOC = Meters below top of the casing DTW= Dorit to Water

DTW= Depth to Water "-" - No data

Table 11 - Groundwater Field Parameters DSI_PKC Primary School Golder Project No. 137623028

Monitorin g Well_ID	Date	Volume removed (L)	DO (mg/L)	EC (us/cm)	TDS (calc)	рН	ORP (mV)	Eh (mV)	Temp (°C)	Comments
		1	0.33	981	589	6.16	336.5	535.5	19.2	
D1	17 Jul 12	2	0.30	969	581	5.82	349.3	548.3	18.9	Clear, no adour
DI	17-Jui-13	3	0.28	958	575	5.66	356.4	555.4	19.0	clear, no oddur.
		4	0.26	943	566	5.58	371.2	570.2	19.1	
		1	5.58	2743	1646	5.43	372.2	571.2	21.0	
D4	17 1.1 12	2	5.53	2757	1654	5.21	388.9	587.9	21.0	Clear no adaur
D4	17-Jui-13	3	5.56	2758	1655	5.18	393.1	592.1	21.1	Clear, no odour.
		4	5.81	2760	1656	5.15	397.2	596.2	21.0	

 4
 5.01
 2.001
 .001

 Legend:
 ORP - oxidation reduction potential as measured with a platinum electrode and silver-chloride reference electrode.

 Eh - redox potential relative to the standard hydrogen electrode (calculated as Eh = ORP + 199 mV)

 TDS - total dissolved solids (calculated as TDS = EC x 0.6).

 D0 - Dissolved Oxygen

 EC - Electrical Conductivity

Table 12 Groundwater Analytical Results DSI_PKC Primary School Golder Project No. 137623028

					Sample ID ·	D1	D4
					Sample Date:	17/07/2013	17/07/2013
					Sample Date.	17/07/2013	0.45m
					Depth of the water	1.7m	0.45m
	1				Sample Type	PS	PS
			10 x NHMRC 2011	ANZECC 2000	ANZECC 2000 Marine		
Analysis	LOR	Unit	Drinking Water	Freshwater 95%	95%		
Total Petroleum Hydrocarbons							
C6 - C9 Fraction	20	ug/L				<20	<20
C10 - C14 Fraction	50	<u>µg/l</u>				<50	<50
	100	μ <u>6</u> /L				<50	-100
C15 - C28 Fraction	100	µg/L				<100	<100
C29 - C36 Fraction	50	μg/L				<50	<50
C10 - C36 Fraction (sum)	50	μg/L				<50	<50
Total Recoverable Hydrocarbons - NEPM 20	10 Draft						
C6 - C10 Fraction	20	ug/L				<20	<20
C6 - C10 Fraction minus BTEX (E1)	20	110/				<20	<20
C10 C16 Fraction	100	μg/L				<100	<100
	100	μg/L				<100	<100
>C16 - C34 Fraction	100	µg/L				<100	<100
>C34 - C40 Fraction	100	μg/L				<100	<100
>C10 - C40 Fraction (sum)	100	μg/L				<100	<100
BTEXN							
Benzene	1	цg/L	10	950	700	<1	<1
Toluene	2	110/L	8000		. 50	<2	
Ethylhonzono	2	μ6/L	2000			~2	~2
	2	μg/L	5000			×2	×2
meta- & para-Xylene	2	μg/L				<2	<2
ortho-Xylene	2	µg/L				<2	<2
Total Xylenes	2	μg/L	6000			<2	<2
Sum of BTEX	1	μg/L				<1	<1
Naphthalene	5	μg/L		16	70	<5	<5
Total Metals		r:0/ =		-0		5	
	0.001		0.1	0.010		0.004	0.005
Arsenic	0.001	mg/L	0.1	0.013		0.004	0.005
Cadmium	0.0001	mg/L	0.02	0.0002	0.0055	0.0011	< 0.0001
Chromium	0.001	mg/L	0.5	0.001	0.0044	0.003	0.003
Copper	0.001	mg/L	20	0.0014	0.0013	0.163	0.062
Lead	0.001	mg/L	0.1	0.0034	0.0044	0.004	0.003
Manganese	0.001	mg/l	1			0.042	0.15
Nickel	0.001	mg/L	0.2	0.011	0.07	0.008	0.015
Calarium	0.001	111g/ L	0.2	0.011	0.07	0.000	0.013
Selenium	0.01	mg/L	0.1			<0.01	<0.01
Zinc	0.005	mg/L		0.008	0.015	0.105	0.055
Mercury	0.0001	mg/L	0.01	0.0006	0.0004	<0.0001	< 0.0001
Phenolic Compounds							
Phenol	1	ug/L		320	400	<1.0	<1.0
2-Chlorophenol	1	110/	3000			<10	<10
2 Mothylphonol	1	μg/L	5000			<1.0	<1.0
	1	μg/L				<1.0	<1.0
3- & 4-ivietnyiphenoi	2	µg/L				<2.0	<2.0
2-Nitrophenol	1	μg/L				<1.0	<1.0
2.4-Dimethylphenol	1	μg/L				<1.0	<1.0
2.4-Dichlorophenol	1	μg/L	2000			<1.0	<1.0
2.6-Dichlorophenol	1	ug/L				<1.0	<1.0
4-Chloro-3-Methylphenol	1	μσ/I				<1.0	<1.0
2.4.6-Trichlorophonol	1	μα/i	200			~1.0	<1.0
	1	μg/L	200			×1.0	×1.0
2.4.5-1 ricnioropnenoi	1	μg/L		-		<1.0	<1.0
Pentachlorophenol	2	μg/L	100	10	22	<2.0	<2.0
Polynuclear Aromatic Hydrocarbons							
Naphthalene	1	μg/L		16	70	<1.0	<1.0
Acenaphthylene	1	μg/L				<1.0	<1.0
Acenaphthene	1	ις, με/Ι				<1.0	<10
Eluorene	1	100/ L				<1.0	<1.0
Dhananthrana	1	μg/L				×1.0	×1.0
Phenanthrene	1	μg/L				<1.0	<1.0
Anthracene	1	μg/L				<1.0	<1.0
Fluoranthene	1	μg/L				<1.0	<1.0
Pyrene	1	μg/L				<1.0	<1.0
Benz(a)anthracene	1	μg/L				<1.0	<1.0
Chrysene	1	110/L				<10	<10
Bonzo(b)fluoronthere	1	μg/ L				~1.0	×1.0
	1	μg/L				<1.0	<1.0
Benzo(k)fluoranthene	1	μg/L				<1.0	<1.0
Benzo(a)pyrene	0.5	μg/L	0.01			<0.5	<0.5
Indeno(1.2.3.cd)pyrene	1	μg/L				<1.0	<1.0
Dibenz(a.h)anthracene	1	μg/L				<1.0	<1.0
Benzo(g.h.i)pervlene	1	ις, με/Ι				<1.0	<10
Sum of polycyclic aromatic hydrocarbons	05	100/ L				<05	<0.5
	0.5	μg/L				×0.5	×0.5
Benzo(a)pyrene IEQ (WHO)	0.5	μg/L	1			<0.5	<0.5

Table 12 Groundwater Analytical Results DSI_PKC Primary School Golder Project No. 137623028

					Sample ID ·	D1	D4
					Sample Date:	17/07/2013	17/07/2013
					Donth of the water	17/07/2013 1.7m	0.45m
					Sample Tupe	1.711	0.45111
			40	1117500 2000	Sample Type	P3	P3
Amelanta	100	11.24	10 X NHIVIRC 2011	ANZECC 2000	ANZECC 2000 Marine		
Analysis	LOK	Unit	Drinking Water	Freshwater 95%	95%		
Nutrients	0.01	4					0.04
Ammonia as N	0.01	mg/L				0.08	<0.01
Nitrite as N	0.01	mg/L	30			<0.01	<0.01
Nitrate as N	0.01	mg/L	500			0.02	120
Nitrite + Nitrate as N	0.01	mg/L				0.02	120
Total Kjeldahl Nitrogen as N	0.1	mg/L				0.8	29.8
Total Nitrogen as N	0.1	mg/L				0.8	150
Total Phosphorus as P	0.01	mg/L				0.47	0.62
Organochlorine Pesticides (OC)							
alpha-BHC	0.5	μg/L				<0.5	<0.5
Hexachlorobenzene (HCB)	0.5	μg/L				<0.5	<0.5
beta-BHC	0.5	μg/L				<0.5	<0.5
gamma-BHC	0.5	μg/L				<0.5	<0.5
delta-BHC	0.5	μg/L				<0.5	<0.5
Heptachlor	0.5	ug/L	3			<0.5	<0.5
Aldrin	0.5	ug/L				<0.5	<0.5
Heptachlor epoxide	0.5	11g/l				<0.5	<0.5
trans-Chlordane	0.5	110/L				<0.5	<0.5
alpha-Endosulfan	0.5	μσ/I				<0.5	<0.5
cic Chlordana	0.5	μα/Ι				<0.5	<0.5
Dioldrin	0.5	μg/L				<0.5	<0.5
	0.5	µg/L				<0.5	<0.5
4.4 -DDE	0.5	µg/L		0.02	0.000	<0.5	<0.5
Endrin hata Fastanulfas	0.5	µg/L		0.02	0.008	<0.5	<0.5
beta-Endosulfan	0.5	µg/L				<0.5	<0.5
	0.5	μg/L				<0.5	<0.5
Endrin aldehyde	0.5	μg/L				<0.5	<0.5
Endosulfan sulfate	0.5	μg/L	300	0.2	0.01	<0.5	<0.5
4.4`-DDT	2	μg/L	200			<2.0	<2.0
Endrin ketone	0.5	μg/L				<0.5	<0.5
Methoxychlor	2	μg/L	3000			<2.0	<2.0
Total Chlordane (sum)	0.5	μg/L				<0.5	<0.5
Sum of DDD + DDE + DDT	0.5	μg/L				<0.5	<0.5
Sum of Aldrin + Dieldrin	0.5	μg/L	3			<0.5	<0.5
Organophosphorus Pesticides (OP)							
Dichlorvos	0.5	μg/L				<0.5	<0.5
Demeton-S-methyl	0.5	μg/L				<0.5	<0.5
Monocrotophos	2	μg/L				<2.0	<2.0
Dimethoate	0.5	μg/L				<0.5	< 0.5
Diazinon	0.5	μg/L	30		1	<0.5	<0.5
Chlorpyrifos-methyl	0.5	μg/L				<0.5	<0.5
Parathion-methyl	2	ug/L				<2.0	<2.0
, Malathion	0.5	μg/L				<0.5	<0.5
Fenthion	0.5	ug/L				<0.5	<0.5
Chlorpyrifos	0.5	ug/I	100	0.01	0.009	<0.5	<0.5
Parathion	2	110/L	100	0.01	0.005	<2.0	<2.0
Pirimphos-ethyl	0.5	110/L	100			<0.5	<0.5
Chlorfenvinnhos	0.5	μσ/L			+	<0.5	-0.5 -0.5
Promonbos otbul	0.5	μg/L				<0.5	<0.5
Fonominhos	0.5	μg/L				<0.5	<u.5< td=""></u.5<>
Prestaliniphos	0.5	μg/L			+	<0.5	<0.5
	0.5	μg/L	20			<0.5	<0.5
Etnion	0.5	μg/L	30			<0.5	<0.5
Carbophenothion	0.5	μg/L			<u>↓</u>	<0.5	<0.5
Azınphos Methyl	0.5	μg/L	30			<0.5	<0.5

Legend: LOR - Limit of Reporting

PS - Primary Sample

FD - Field Duplicate FT - Field Triplicate

- Not Analysed ND - Not Detected

Values that exceed the investigations level are highlighted as: 10 x NHMRC 2011 Drinking Water (as per Section 2.8 NEPM - Risk in Recreational Water 2008 GMRRW)

ANZECC/ARMCANZ 2000 Freshwater 95% Guideline

ANZECC/ARMCANZ 2000 Marine 95% Guideli

Table 13 - Groundwater QAQC Analytical Results DSI_PKC Primary School Golder Project No. 137623028

		Sample ID :	QC300_17/07/13/
		Sample Date:	17/07/2013
		Sample Type	Rinsate Blank
Analysis	LOR	Unit	
Total Petroleum Hydrocarbons			20
C6 - C9 Fraction	20	μg/L	<20
C10 - C14 Fraction	50	μg/L	<50
C15 - C28 Fraction	100	μg/L	<100
C10 C26 Fraction (sum)	50	μg/L	<50
Total Recoverable Hydrocarbons - NEPM 20	10 Draft	μg/ L	<20
C6 - C10 Fraction	20	σ/I	<20
C6 - C10 Fraction minus BTEX (E1)	20	<u>µв/с</u> ця/Г	<20
>C10 - C16 Fraction	100	<u>µg/1</u> ug/L	<100
>C16 - C34 Fraction	100	ug/L	<100
>C34 - C40 Fraction	100	μg/L	<100
>C10 - C40 Fraction (sum)	100	μg/L	<100
BTEXN			
Benzene	1	μg/L	<1
Toluene	2	μg/L	<2
Ethylbenzene	2	μg/L	<2
meta- & para-Xylene	2	μg/L	<2
ortho-Xylene	2	μg/L	<2
Total Xylenes	2	μg/L	<2
Sum of BTEX	1	μg/L	<1
Naphthalene	5	μg/L	<5
Total Metals			
Arsenic	0.001	mg/L	<0.001
Cadmium	0.0001	mg/L	<0.0001
Corpor	0.001	mg/L	<0.001
Copper	0.001	mg/L	<0.001
	0.001	mg/L	<0.001
Zinc	0.001	mg/L	<0.001
Manganese	0.003	mg/L	<0.003
Selenium	0.001	mg/L	<0.001
Mercury	0.0001	mg/L	<0.001
Phenolic Compounds			
Phenol	1	μg/L	<1.0
2-Chlorophenol	1	μg/L	<1.0
2-Methylphenol	1	μg/L	<1.0
3- & 4-Methylphenol	2	μg/L	<2.0
2-Nitrophenol	1	μg/L	<1.0
2.4-Dimethylphenol	1	μg/L	<1.0
2.4-Dichlorophenol	1	μg/L	<1.0
2.6-Dichlorophenol	1	μg/L	<1.0
4-Chloro-3-Methylphenol	1	μg/L	<1.0
2.4.6-Trichlorophenol	1	μg/L	<1.0
2.4.5-Trichlorophenol	1	μg/L	<1.0
Pentachlorophenol	2	μg/L	<2.0
Polynuclear Aromatic Hydrocarbons	1		~1.0
	1	μg/L	<1.0
Acenaphthene	1	μg/L	<1.0
Fluorene	1	μg/L μg/l	<1.0
Phenanthrene	1	μg/L μσ/Ι	<1.0
Anthracene	1	μσ/I	<1.0
Fluoranthene	1	μg/L	<1.0
Pyrene	1	μg/L	<1.0
, Benz(a)anthracene	1	μg/L	<1.0
Chrysene	1	μg/L	<1.0
Benzo(b)fluoranthene	1	μg/L	<1.0
Benzo(k)fluoranthene	1	μg/L	<1.0
Benzo(a)pyrene	0.5	μg/L	<0.5
Indeno(1.2.3.cd)pyrene	1	μg/L	<1.0
Dibenz(a.h)anthracene	1	μg/L	<1.0
Benzo(g.h.i)perylene	1	μg/L	<1.0
Sum of polycyclic aromatic hydrocarbons	0.5	μg/L	<0.5
Benzo(a)pyrene TEQ (WHO)	0.5	μg/L	<0.5

Logend: LOR - Limit of reporting





Laboratory Certificates of Analysis and Data Validation







Environmental Division

	CE	RTIFICATE OF ANALYSIS	
Work Order	EW1301886	Page	: 1 of 70
Client		Laboratory	: Environmental Division NSW South Coast
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	: SYDNEY	Address	99 Kenny Street, Wollongong 2500 Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541 AUSTRALIA
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project Order number	: 137623028	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
C-O-C number		Date Samples Received	: 27-JUN-2013
Sampler	: KE YE	Issue Date	: 10-JUL-2013
Site	: PKC-PRIMARY SCHOOL		
		No. of samples received	: 103
Quote number	:	No. of samples analysed	: 64

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

Address 99 Kenny Street, Wollongong 2500

Environmental Division NSW South Coast Riace Popper for National State And ALS Limited Company



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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.

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 A = This result is computed from individual analyte detections at or above the level 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 at levels below 0.1g/kg. 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 2011 NEPM for Assessment of Site Contamination
- EA200Q: Estimations of Asbestos weight and percentages are not covered under the Scope of NATA Accreditation.
 Weights and percentages of Asbestos are approximate estimates only. Weights are based on extracted fibre bundles and ACM, and percentages are estimated based on the NEPM default Asbestos content in ACM. All numerical results under this method are approximate and should be used as a guide only.
- EG005T: Poor precision and poor spike recovery was obtained for some elements on sample EW1301886 1. Results have been confirmed by re-extraction and reanalysis.
- EG005T: Poor precision was obtained for Lead on sample EW1301886 1. Results have been confirmed by re-extraction and reanalysis.
- EK057G/EK059G:LOR raised for Nitrite/NOx analysis on various samples due to sample matrix.
- EK067G: Poor duplicate precision due to sample heterogeneity. Confirmed by re-extraction and re-analysis.

Page Work Order Client Project	2 3 of 70 2 EW1301886 2 PORT KEMBLA COPPER 2 137623028				ALS
	NATA Accredited Laboratory 825	Signatories This document has been electronically	signed by the authorized signatories	indicated below. Electronic signing has been c	carried out in
NATA	Accredited for compliance with	compliance with procedures specified in 21	CFR Part 11.		
	ISO/IEC 17025.	Signatories	Position	Accreditation Category	
		Ankit Joshi	Inorganic Chemist	Sydney Inorganics Sydney Inorganics	
WORLD RECOGNISED		Celine Conceicao	Senior Spectroscopist	Sydney Inorganics	
ACCREDITATION		Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos	
		Di-An Dao		Sydney Inorganics	
		Edwandy Fadjar	Organic Coordinator	Sydney Inorganics	
		Hamish Murray	Supervisor - Soils	Newcastle - Inorganics	

Hoa Nguyen

Pabi Subba

Phalak Inthaksone

Senior Inorganic Chemist

Senior Organic Chemist

Laboratory Manager - Organics

Sydney Inorganics

Sydney Inorganics

Sydney Organics Sydney Organics Sydney Organics

Sydney Organics



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP30_0.0-0.1_25/06/1 3	TP30_0.5-0.6_25/06/1 3	TP29_0.3-0.4_25/06/1 3	TP29_0.9-1.0_25/06/1	TP27_0.0-0.1_25/06/1 3
	Cl	ient sampli	ing date / time	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-001	EW1301886-002	EW1301886-005	EW1301886-007	EW1301886-008
FA002 : pH (Soils)	er te ritamber							
pH Value		0.1	pH Unit			6.3		
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	33.4	35.9	21.3	25.1	30.5
EA150: Soil Classification based on Partic	cle Size							
Clay (<2 μm)		1	%			11		
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g			1.2		
Exchangeable Magnesium		0.1	meq/100g			1.1		
Exchangeable Potassium		0.1	meq/100g			<0.1		
Exchangeable Sodium		0.1	meq/100g			0.2		
Cation Exchange Capacity		0.1	meq/100g			2.5		
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	201	<5	13	6	<5
Cadmium	7440-43-9	1	mg/kg	10	1	13	<1	<1
Chromium	7440-47-3	2	mg/kg	13	21	5	17	6
Copper	7440-50-8	5	mg/kg	2820	249	333	99	262
Iron	7439-89-6	50	mg/kg			15500		
Lead	7439-92-1	5	mg/kg	657	67	44	14	38
Manganese	7439-96-5	5	mg/kg	296	32	20	35	231
Nickel	7440-02-0	2	mg/kg	11	4	7	6	8
Selenium	7782-49-2	5	mg/kg	7	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	415	157	154	54	132
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	1.2	<0.1	0.1	<0.1	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20		<20		
EP004: Organic Matter								
Organic Matter		0.5	%			2.5		
Total Organic Carbon		0.5	%			1.4		
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<0.05		<0.05		
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05		<0.05		
beta-BHC	319-85-7	0.05	mg/kg	<0.05		<0.05		



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP30_0.0-0.1_25/06/1	TP30_0.5-0.6_25/06/1	TP29_0.3-0.4_25/06/1	TP29_0.9-1.0_25/06/1	TP27_0.0-0.1_25/06/1
		iont compli	an data (tima	3 25 ILIN 2012 10:00	3	3	3	3 25. ILIN 2012 15:00
	Cii	ent sampli	ig date / time	25-JUN-2013 10.00	25-3019-2013 10.00	20-3010-2013 10.00	25-JUN-2013 10.00	25-JUN-2013 15.00
Compound	CAS Number	LOR	Unit	EW1301886-001	EW1301886-002	EW1301886-005	EW1301886-007	EW1301886-008
EP068A: Organochlorine Pesticides (OC) - 0	Continued							
gamma-BHC	58-89-9	0.05	mg/kg	<0.05		<0.05		
delta-BHC	319-86-8	0.05	mg/kg	<0.05		<0.05		
Heptachlor	76-44-8	0.05	mg/kg	<0.05		<0.05		
Aldrin	309-00-2	0.05	mg/kg	<0.05		<0.05		
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05		<0.05		
[^] Total Chlordane (sum)		0.05	mg/kg	<0.05		<0.05		
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05		<0.05		
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05		<0.05		
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05		<0.05		
Dieldrin	60-57-1	0.05	mg/kg	<0.05		<0.05		
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05		<0.05		
Endrin	72-20-8	0.05	mg/kg	<0.05		<0.05		
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05		<0.05		
[^] Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05		<0.05		
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05		<0.05		
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05		<0.05		
Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05		<0.05		
4.4`-DDT	50-29-3	0.2	mg/kg	<0.2		<0.2		
Endrin ketone	53494-70-5	0.05	mg/kg	<0.05		<0.05		
Methoxychlor	72-43-5	0.2	mg/kg	<0.2		<0.2		
[^] Sum of Aldrin + Dieldrin 309	9-00-2/60-57-1	0.05	mg/kg	<0.05		<0.05		
[^] Sum of DDD + DDE + DDT		0.05	mg/kg	<0.05		<0.05		
EP068B: Organophosphorus Pesticides (OF	P)							
Dichlorvos	62-73-7	0.05	mg/kg	<0.05		<0.05		
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05		<0.05		
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2		<0.2		
Dimethoate	60-51-5	0.05	mg/kg	<0.05		<0.05		
Diazinon	333-41-5	0.05	mg/kg	<0.05		<0.05		
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05		<0.05		
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2		<0.2		
Malathion	121-75-5	0.05	mg/kg	<0.05		<0.05		
Fenthion	55-38-9	0.05	mg/kg	<0.05		<0.05		
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05		<0.05		



Sub-Matrix: SOIL (Matrix: SOIL)	Clie	ent sample ID	TP30_0.0-0.1_25/06/1	TP30_0.5-0.6_25/06/1	TP29_0.3-0.4_25/06/1	TP29_0.9-1.0_25/06/1	TP27_0.0-0.1_25/06/1
Q	lient samnli	na date / time	3 25IUN-2013 10:00	3 25IUN-2013 10:00	3 25IUN-2013 10:00	3 25IUN-2013 10:00	3 25IUN-2013 15:00
			EW1301886-001	EW1301886-002	EW1301886-005	EW1301886-007	EW1301886-008
Compound CAS Number	LOR	Unit	EW1301000-001	2001000-002	2001301000-003	211301000-007	2001000-000
EP068B: Organophosphorus Pesticides (OP) - Continued	0.0		10.0		-0.0		
Parathion 56-38-2	0.2	mg/kg	<0.2		<0.2		
Pirimphos-ethyl 23505-41-1	0.05	mg/kg	<0.05		<0.05		
Chlortenvinphos 470-90-6	0.05	mg/kg	<0.05		<0.05		
Bromophos-ethyl 4824-78-6	0.05	mg/kg	<0.05		<0.05		
Fenamiphos 22224-92-6	0.05	mg/kg	<0.05		<0.05		
Prothiofos 34643-46-4	0.05	mg/kg	<0.05		<0.05		
Ethion 563-12-2	0.05	mg/kg	< 0.05		<0.05		
Carbophenothion 786-19-6	0.05	mg/kg	<0.05		<0.05		
Azinphos Methyl 86-50-0	0.05	mg/kg	<0.05		<0.05		
EP075(SIM)A: Phenolic Compounds							
Phenol 108-95-2	0.5	mg/kg	<0.5		<0.5		
2-Chlorophenol 95-57-8	0.5	mg/kg	<0.5		<0.5		
2-Methylphenol 95-48-7	0.5	mg/kg	<0.5		<0.5		
3- & 4-Methylphenol 1319-77-3	1	mg/kg	<1		<1		
2-Nitrophenol 88-75-5	0.5	mg/kg	<0.5		<0.5		
2.4-Dimethylphenol 105-67-9	0.5	mg/kg	<0.5		<0.5		
2.4-Dichlorophenol 120-83-2	0.5	mg/kg	<0.5		<0.5		
2.6-Dichlorophenol 87-65-0	0.5	mg/kg	<0.5		<0.5		
4-Chloro-3-Methylphenol 59-50-7	0.5	mg/kg	<0.5		<0.5		
2.4.6-Trichlorophenol 88-06-2	0.5	mg/kg	<0.5		<0.5		
2.4.5-Trichlorophenol 95-95-4	0.5	mg/kg	<0.5		<0.5		
Pentachlorophenol 87-86-5	2	mg/kg	<2		<2		
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Naphthalene 91-20-3	0.5	mg/kg	<0.5		<0.5		
Acenaphthylene 208-96-8	0.5	mg/kg	<0.5		<0.5		
Acenaphthene 83-32-9	0.5	mg/kg	<0.5		<0.5		
Fluorene 86-73-7	0.5	mg/kg	<0.5		<0.5		
Phenanthrene 85-01-8	0.5	mg/kg	<0.5		<0.5		
Anthracene 120-12-7	0.5	mg/kg	<0.5		<0.5		
Fluoranthene 206-44-0	0.5	mg/kg	0.9		<0.5		
Pyrene 129-00-0	0.5	mg/kg	0.9		<0.5		
Benz(a)anthracene 56-55-3	0.5	mg/kg	<0.5		<0.5		
Chrysene 218-01-9	0.5	mg/kg	<0.5		<0.5		



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP30_0.0-0.1_25/06/1	TP30_0.5-0.6_25/06/1	TP29_0.3-0.4_25/06/1	TP29_0.9-1.0_25/06/1	TP27_0.0-0.1_25/06/1
	Cli	ient sampl	ina date / time	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 10:00	3 25-JUN-2013 10:00	25-JUN-2013 15:00
Commonwed	CAC Number	LOR	Linit	EW1301886-001	EW1301886-002	EW1301886-005	EW1301886-007	EW1301886-008
	CAS Number	LOR	Offic					
Benzo(b)fluoranthene	205-99-2	0 5	ma/ka	<0.5		<0.5		
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5		<0.5		
Benzo(a)pyrene	50-32-8	0.5	ma/ka	<0.5		<0.5		
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5		<0.5		
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5		<0.5		
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5		<0.5		
[^] Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	1.8		<0.5		
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5		<0.5		
EP080/071: Total Petroleum Hydrocarb	ons							
C6 - C9 Fraction		10	mg/kg	<10		<10		
C10 - C14 Fraction		50	mg/kg	<50		<50		
C15 - C28 Fraction		100	mg/kg	<100		<100		
C29 - C36 Fraction		100	mg/kg	<100		<100		
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50		<50		
EP080/071: Total Recoverable Hydroca	rbons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10		<10		
[^] C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10		<10		
>C10 - C16 Fraction		50	mg/kg	<50		<50		
>C16 - C34 Fraction		100	mg/kg	<100		<100		
>C34 - C40 Fraction		100	mg/kg	<100		<100		
>C10 - C40 Fraction (sum)		50	mg/kg	<50		<50		
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2		<0.2		
Toluene	108-88-3	0.5	mg/kg	<0.5		<0.5		
Ethylbenzene	100-41-4	0.5	mg/kg	<0.5		<0.5		
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg	<0.5		<0.5		
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5		<0.5		
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5		<0.5		
Sum of BTEX		0.2	mg/kg	<0.2		<0.2		
Naphthalene	91-20-3	1	mg/kg	<1		<1		
EP068S: Organochlorine Pesticide Sur	rogate							
Dibromo-DDE	21655-73-2	0.1	%	81.7		74.0		



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP30_0.0-0.1_25/06/1 3	TP30_0.5-0.6_25/06/1 3	TP29_0.3-0.4_25/06/1 3	TP29_0.9-1.0_25/06/1 3	TP27_0.0-0.1_25/06/1 3
	Client sampling date / time			25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 10:00	25-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-001	EW1301886-002	EW1301886-005	EW1301886-007	EW1301886-008
EP068T: Organophosphorus Pesticide Su	urrogate							
DEF	78-48-8	0.1	%	93.0		87.8		
EP075(SIM)S: Phenolic Compound Surroy	gates							
Phenol-d6	13127-88-3	0.1	%	82.0		83.6		
2-Chlorophenol-D4	93951-73-6	0.1	%	90.0		88.4		
2.4.6-Tribromophenol	118-79-6	0.1	%	92.2		90.4		
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	98.8		95.9		
Anthracene-d10	1719-06-8	0.1	%	95.4		96.8		
4-Terphenyl-d14	1718-51-0	0.1	%	82.3		94.0		
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	95.9		93.6		
Toluene-D8	2037-26-5	0.1	%	99.4		99.0		
4-Bromofluorobenzene	460-00-4	0.1	%	92.6		97.2		



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP27_0.5-0.6_25/06/1 3	TP28_0.0-0.1_25/06/1 3	TP28_0.9-1.0_25/06/1 3	TP26_0.5-0.6_25/06/1 3	TP26_1.5-1.6_25/06/1 3
	Cl	ient sampli	ing date / time	25-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EW1301886-009	EW1301886-012	EW1301886-014	EW1301886-017	EW1301886-019
EA002 : pH (Soils)								
pH Value		0.1	pH Unit			7.0		
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	29.2	41.3	30.2	25.9	22.3
EA150: Soil Classification based on Partic	le Size							
Clay (<2 μm)		1	%			48		
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g			15.1		
Exchangeable Magnesium		0.1	meq/100g			9.7		
Exchangeable Potassium		0.1	meq/100g			0.2		
Exchangeable Sodium		0.1	meq/100g			0.8		
Cation Exchange Capacity		0.1	meq/100g			25.9		
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	35	26	<5	9	22
Cadmium	7440-43-9	1	mg/kg	8	2	<1	<1	2
Chromium	7440-47-3	2	mg/kg	12	9	14	22	17
Copper	7440-50-8	5	mg/kg	479	2240	72	132	923
Iron	7439-89-6	50	mg/kg			42200		
Lead	7439-92-1	5	mg/kg	155	397	22	66	156
Manganese	7439-96-5	5	mg/kg	89	442	142	121	334
Nickel	7440-02-0	2	mg/kg	13	12	6	5	22
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	404	176	107	154	179
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	0.2	0.4	<0.1	0.1	0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	<20		<20	<20
EK057G: Nitrite as N by Discrete Analyse	r							
Nitrite as N (Sol.)		0.1	mg/kg				<1.0	<0.1
EK058G: Nitrate as N by Discrete Analyse	ər							
Nitrate as N (Sol.)		0.1	mg/kg				<1.0	<0.1
EK059G: Nitrite plus Nitrate as N (NOx) b	y Discrete Ana	lyser						
Nitrite + Nitrate as N (Sol.)		0.1	mg/kg				<1.0	<0.1
EK061G: Total Kjeldahl Nitrogen By Discr	ete Analyser							



Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	TP27_0.5-0.6_25/06/1	TP28_0.0-0.1_25/06/1	TP28_0.9-1.0_25/06/1	TP26_0.5-0.6_25/06/1	TP26_1.5-1.6_25/06/1
	CI	ient samnli	na date / time	3 25- II IN-2013 15:00	3 25- IUN-2013 15:00	3 25- IUN-2013 15:00	3 25- ILINI-2013 15:00	25- IUN-2013 15:00
	Ci			EW/1301886 000	EW1301886 012	EW1301886 014	EW1301886 017	EW1301886 010
Compound	CAS Number	LOR	Unit	EW1501000-009	EWV1301000-012	EVV1301000-014	EW1501000-017	EVV1501886-019
EK061G: Total Kjeldahl Nitrogen By	y Discrete Analyser - 0	Continued						
Total Kjeldahl Nitrogen as N		20	mg/kg				1040	470
EK062: Total Nitrogen as N (TKN +	NOx)							
[^] Total Nitrogen as N		20	mg/kg				1040	470
EK067G: Total Phosphorus as P by	/ Discrete Analyser							
Total Phosphorus as P		2	mg/kg				261	888
EP004: Organic Matter								
Organic Matter		0.5	%			1.0		
Total Organic Carbon		0.5	%			0.6		
EP068A: Organochlorine Pesticides	s (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
^ 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
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Sub-Matrix: SOIL (Matrix: SOIL)	DIL (Matrix: SOIL) Client sample				TP28_0.0-0.1_25/06/1	TP28_0.9-1.0_25/06/1	TP26_0.5-0.6_25/06/1	TP26_1.5-1.6_25/06/1
		iont compli	na doto / timo	3	3	3	3	3 25 IUN 2012 15:00
	C/			23-JUN-2013 15.00	20-JUN-2013 15.00	23-JUN-2013 15.00	20-JUN-2013 15.00	20-JUN-2013 15.00
Compound	CAS Number	LOR	Unit	EW1301886-009	EW1301886-012	EW1301886-014	EW1301886-017	EW1301886-019
EP068A: Organochlorine Pesticides (OC) - Continued							
Sum of DDD + DDE + DDT		0.05	mg/kg	<0.05	<0.05			<0.05
EP068B: Organophosphorus Pesticid	es (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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5			<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5			<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5			<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1			<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5			<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5			<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5			<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5			<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5			<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5			<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5			<0.5



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP27_0.5-0.6_25/06/1	TP28_0.0-0.1_25/06/1	TP28_0.9-1.0_25/06/1	TP26_0.5-0.6_25/06/1	TP26_1.5-1.6_25/06/1
		iont compli	na data (tima	3 25. ILIN 2012 15:00	3	3	3	3 25. ILIN 2012 15:00
		ient sampli	ng date / time	25-JUN-2013 15.00	20-3010-2013 15.00	20-JUIN-2013 15.00	20-JUIN-2013 15.00	20-JUN-2013 15.00
Compound	CAS Number	LOR	Unit	EW1301886-009	EW1301886-012	EW1301886-014	EW1301886-017	EW1301886-019
EP075(SIM)A: Phenolic Compounds - Co	ntinued							
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2			<2
EP075(SIM)B: Polynuclear Aromatic Hyd	Irocarbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5	0.8			<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
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	5.6			<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	0.6			<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	1.6			<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5	2.7			<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	1.7			<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5	4.3			<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	1.1			<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	0.7			<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5			<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	0.6			<0.5
^ Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5	19.7			<0.5
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	1.0			<0.5
EP080/071: Total Petroleum Hydrocarbo	ns							
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	1000			<100
C29 - C36 Fraction		100	mg/kg	<100	490			<100
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50	1490			<50
EP080/071: Total Recoverable Hydrocarl	oons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10	<10			<10
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10	<10			<10
>C10 - C16 Fraction		50	mg/kg	<50	70			<50
>C16 - C34 Fraction		100	mg/kg	<100	1330			<100
>C34 - C40 Fraction		100	mg/kg	<100	220			<100
>C10 - C40 Fraction (sum)		50	mg/kg	<50	1620			<50
r								



Sub-Matrix: SOIL (Matrix: SOIL)	Sub-Matrix: SOIL (Matrix: SOIL) Client sample ID		ient sample ID	TP27_0.5-0.6_25/06/1	TP28_0.0-0.1_25/06/1	TP28_0.9-1.0_25/06/1	TP26_0.5-0.6_25/06/1	TP26_1.5-1.6_25/06/1	
				3	3	3	3	3	
	Cl	ient sampl	ing date / time	25-JUN-2013 15:00					
Compound	CAS Number	LOR	Unit	EW1301886-009	EW1301886-012	EW1301886-014	EW1301886-017	EW1301886-019	
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2			<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	0.6			<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	
EP080: BTEXN									
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	0.5			<0.5	
[^] Sum of BTEX		0.2	mg/kg	<0.2	1.1			<0.2	
Naphthalene	91-20-3	1	mg/kg	<1	<1			<1	
EP068S: Organochlorine Pesticide	Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	80.7	110			89.9	
EP068T: Organophosphorus Pestic	cide Surrogate								
DEF	78-48-8	0.1	%	91.5	95.2			88.6	
EP075(SIM)S: Phenolic Compound	Surrogates								
Phenol-d6	13127-88-3	0.1	%	76.0	82.9			83.4	
2-Chlorophenol-D4	93951-73-6	0.1	%	69.5	90.2			88.9	
2.4.6-Tribromophenol	118-79-6	0.1	%	43.4	86.4			92.5	
EP075(SIM)T: PAH Surrogates									
2-Fluorobiphenyl	321-60-8	0.1	%	98.4	103			99.4	
Anthracene-d10	1719-06-8	0.1	%	87.0	92.3			98.4	
4-Terphenyl-d14	1718-51-0	0.1	%	91.4	85.9			88.7	
EP080S: TPH(V)/BTEX Surrogates									
1.2-Dichloroethane-D4	17060-07-0	0.1	%	97.7	85.2			102	
Toluene-D8	2037-26-5	0.1	%	98.3	91.0			116	
4-Bromofluorobenzene	460-00-4	0.1	%	80.5	76.8			106	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			QC400_25/06/13	TP25_0.0-0.1_26/06/1	TP25_0.9-1.0_26/06/1	QC100_26/06/13	TP24_0.0-0.1_26/06/1		
	Cl	ient sampli	ng date / time	25-JUN-2013 15:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00		
Compound	CAS Number	LOR	Unit	EW1301886-023	EW1301886-024	EW1301886-026	EW1301886-029	EW1301886-030		
FA002 : pH (Soils)	or to Humbol									
pH Value		0.1	pH Unit		5.6					
EA055: Moisture Content										
Moisture Content (dried @ 103°C)		1.0	%	21.5	34.8	23.0	33.0	31.3		
EA150: Soil Classification based on Par	rticle Size									
Clay (<2 μm)		1	%		12					
ED008: Exchangeable Cations										
Exchangeable Calcium		0.1	meq/100g		2.6					
Exchangeable Magnesium		0.1	meq/100g		0.8					
Exchangeable Potassium		0.1	meq/100g		0.1					
Exchangeable Sodium		0.1	meq/100g		0.1					
Cation Exchange Capacity		0.1	meq/100g		3.6					
EG005T: Total Metals by ICP-AES										
Arsenic	7440-38-2	5	mg/kg	<5	10	209	7	16		
Cadmium	7440-43-9	1	mg/kg	<1	3	4	2	4		
Chromium	7440-47-3	2	mg/kg	<2	9	11	6	13		
Copper	7440-50-8	5	mg/kg	<5	791	1060	521	1480		
Iron	7439-89-6	50	mg/kg		12000					
Lead	7439-92-1	5	mg/kg	<5	243	253	124	191		
Manganese	7439-96-5	5	mg/kg	10	296	154	319	475		
Nickel	7440-02-0	2	mg/kg	<2	12	6	10	9		
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	5		
Zinc	7440-66-6	5	mg/kg	<5	514	200	190	286		
EG035T: Total Recoverable Mercury by	FIMS									
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	0.4	0.1	0.5		
EK055: Ammonia as N										
Ammonia as N	7664-41-7	20	mg/kg	<20	<20		<20			
EP004: Organic Matter										
Organic Matter		0.5	%		5.8					
Total Organic Carbon		0.5	%		3.4					
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			



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			QC400_25/06/13	TP25_0.0-0.1_26/06/1	TP25_0.9-1.0_26/06/1	QC100_26/06/13	TP24_0.0-0.1_26/06/1
	Cl	ient sampli	na date / time	25-JUN-2013 15:00	3 26-JUN-2013 10:00	3 26-JUN-2013 10:00	26-JUN-2013 10:00	3 26IUN-2013 10:00
				EW1301886-023	EW1301886-024	EW1301886-026	EW1301886-029	EW1301886-030
Compound	CAS Number	LUR	Unit	201001000-020	2111001000-024	2111001000-020	2111001000-023	2111001000-000
EP068A: Organochlorine Pesticides	(OC) - Continued	0.05		-0.05	10.05		-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	
^ 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 Pesticio	des (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	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			QC400_25/06/13	TP25_0.0-0.1_26/06/1	TP25_0.9-1.0_26/06/1	QC100_26/06/13	TP24_0.0-0.1_26/06/1			
	Cl	ient samplii	ng date / time	25-JUN-2013 15:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00			
Compound	CAS Number	LOR	Unit	EW1301886-023	EW1301886-024	EW1301886-026	EW1301886-029	EW1301886-030			
EP068B: Organophosphorus Pesticides (OF	P) - Continued										
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)A: Phenolic Compounds											
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5		<0.5				
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5		<0.5				
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5		<0.5				
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1		<1				
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5		<0.5				
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5		<0.5				
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5		<0.5				
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5		<0.5				
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5		<0.5				
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5		<0.5				
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5		<0.5				
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2		<2				
EP075(SIM)B: Polynuclear Aromatic Hydroc	arbons										
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				
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	1.8		3.2				
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5		<0.5				
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	0.5		0.9				
Pyrene	129-00-0	0.5	mg/kg	<0.5	0.8		1.4				
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5		0.7				
Chrysene	218-01-9	0.5	mg/kg	<0.5	1.2		2.0				



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			QC400_25/06/13	TP25_0.0-0.1_26/06/1 3	TP25_0.9-1.0_26/06/1 3	QC100_26/06/13	TP24_0.0-0.1_26/06/1 3			
	Cli	ient sampl	ing date / time	25-JUN-2013 15:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00			
Compound	CAS Number	LOR	Unit	EW1301886-023	EW1301886-024	EW1301886-026	EW1301886-029	EW1301886-030			
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons - Cont	inued									
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5		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	<0.5		<0.5				
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5				
Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5	4.3		8.7				
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5		<0.5				
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	360		550				
C29 - C36 Fraction		100	mg/kg	<100	180		240				
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50	540		790				
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft											
C6 - C10 Fraction		10	mg/kg	<10	<10		<10				
[^] C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10	<10		<10				
>C10 - C16 Fraction		50	mg/kg	<50	<50		<50				
>C16 - C34 Fraction		100	mg/kg	<100	480		700				
>C34 - C40 Fraction		100	mg/kg	<100	<100		110				
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	480		810				
EP080: BTEX											
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2		<0.2				
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				
EP080: BTEXN											
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5		<0.5				
[^] Sum of BTEX		0.2	mg/kg	<0.2	<0.2		<0.2				
Naphthalene	91-20-3	1	mg/kg	<1	<1		<1				
EP068S: Organochlorine Pesticide Sur	rogate										
Dibromo-DDE	21655-73-2	0.1	%	78.8	90.8		99.7				



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID		QC400_25/06/13	TP25_0.0-0.1_26/06/1	TP25_0.9-1.0_26/06/1	QC100_26/06/13	TP24_0.0-0.1_26/06/1	
					3	3		3
	Cl	ient sampl	ing date / time	25-JUN-2013 15:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-023	EW1301886-024	EW1301886-026	EW1301886-029	EW1301886-030
EP068T: Organophosphorus Pesticide Si	urrogate							
DEF	78-48-8	0.1	%	82.7	80.9		80.1	
EP075(SIM)S: Phenolic Compound Surro	gates							
Phenol-d6	13127-88-3	0.1	%	86.4	92.4		78.4	
2-Chlorophenol-D4	93951-73-6	0.1	%	91.4	90.4		85.9	
2.4.6-Tribromophenol	118-79-6	0.1	%	86.5	85.8		85.5	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	96.7	97.0		103	
Anthracene-d10	1719-06-8	0.1	%	89.6	90.0		92.8	
4-Terphenyl-d14	1718-51-0	0.1	%	88.6	87.5		88.7	
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	97.3	93.8		88.9	
Toluene-D8	2037-26-5	0.1	%	100	97.1		93.8	
4-Bromofluorobenzene	460-00-4	0.1	%	94.3	87.9		82.0	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP24_0.5-0.6_26/06/1	TP20_0.5-0.6_26/06/1	TP20_0.9-1.0_26/06/1	TP16A_0.2-0.3_26/06/	TP16A_0.5-0.6_26/06/			
		liand a annuli	ing data (tima	3	3	3	13	13			
	0	ient sampli		20-JUN-2013 10.00	20-3010-2013 10.00	20-JUN-2013 10.00		20-JUN-2013 10.00			
Compound	CAS Number	LOR	Unit	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039			
EA002 : pH (Soils)											
pH Value		0.1	pH Unit	5.0	4.8						
EA055: Moisture Content											
Moisture Content (dried @ 103°C)		1.0	%	27.1	29.8	32.8	44.0	35.3			
EA150: Soil Classification based on Particle	Size										
Clay (<2 μm)		1	%	47	29						
EA200: AS 4964 - 2004 Identification of Asbe	estos in bulk	samples									
Asbestos Detected	1332-21-4	0.1	g/kg		Yes						
Asbestos Type	1332-21-4	1			Ch						
Sample weight (dry)		0.01	g		7840						
APPROVED IDENTIFIER:		1			C.OWLER						
EA200Q: Asbestos Quantification (non-NATA)											
Weight Used for % Calculation		0.0001	kg		7.84						
Asbestos Containing Material	1332-21-4	0.1	g		<0.1						
Fibrous Asbestos		0.002	g		0.023						
Asbestos Fines	1332-21-4	-	-		Yes						
Asbestos Containing Material	1332-21-4	0.01	%		<0.01						
(ACM >7mm)											
Asbestos Fines and Fibrous	1332-21-4	0.001	%		0.001						
Asbestos (<7mm)											
ED008: Exchangeable Cations											
Exchangeable Calcium		0.1	meq/100g	3.8	7.7						
Exchangeable Magnesium		0.1	meq/100g	8.3	2.1						
Exchangeable Potassium		0.1	meq/100g	0.1	0.3						
Exchangeable Sodium		0.1	meq/100g	1.1	0.2						
Cation Exchange Capacity		0.1	meq/100g	13.3	10.4						
EG005T: Total Metals by ICP-AES											
Arsenic	7440-38-2	5	mg/kg	<5	166	<5	11	33			
Cadmium	7440-43-9	1	mg/kg	<1	4	<1	10	5			
Chromium	7440-47-3	2	mg/kg	29	19	27	12	13			
Copper	7440-50-8	5	mg/kg	123	1330	110	320	335			
Iron	7439-89-6	50	mg/kg	56900	31700						
Lead	7439-92-1	5	mg/kg	70	489	7	48	61			
Manganese	7439-96-5	5	mg/kg	61	164	50	1580	122			



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP24_0.5-0.6_26/06/1 3	TP20_0.5-0.6_26/06/1 3	TP20_0.9-1.0_26/06/1 3	TP16A_0.2-0.3_26/06/ 13	TP16A_0.5-0.6_26/06/ 13
	Cli	ient sampli	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039
EG005T: Total Metals by ICP-AES - Contin	ued							
Nickel	7440-02-0	2	mg/kg	7	7	10	24	6
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	258	237	76	369	145
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.8	<0.1	0.1	0.2
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	<20		<20	<20
EK057G: Nitrite as N by Discrete Analyse	er							
Nitrite as N (Sol.)		0.1	mg/kg		<1.0			
EK058G: Nitrate as N by Discrete Analys	er							
Nitrate as N (Sol.)		0.1	mg/kg		<1.0			
EK059G: Nitrite plus Nitrate as N (NOx)	by Discrete Ana	lyser						
Nitrite + Nitrate as N (Sol.)		0.1	mg/kg		<1.0			
EK061G: Total Kjeldahl Nitrogen By Discr	rete Analyser							
Total Kjeldahl Nitrogen as N		20	mg/kg		1590			
EK062: Total Nitrogen as N (TKN + NOx)								
[^] Total Nitrogen as N		20	mg/kg		1590			
EK067G: Total Phosphorus as P by Discre	ete Analyser							
Total Phosphorus as P		2	mg/kg		667			
EP004: Organic Matter								
Organic Matter		0.5	%	1.3	2.7			
Total Organic Carbon		0.5	%	0.8	1.6			
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg	<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
beta-BHC	319-85-7	0.05	mg/kg	<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
delta-BHC	319-86-8	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Heptachlor	76-44-8	0.05	mg/kg	<0.05	< 0.05		<0.05	< 0.05
Aldrin	309-00-2	0.05	mg/kg	<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
^ Total Chlordane (sum)		0.05	mg/kg	<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



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP24_0.5-0.6_26/06/1	TP20_0.5-0.6_26/06/1	TP20_0.9-1.0_26/06/1	TP16A_0.2-0.3_26/06/	TP16A_0.5-0.6_26/06/
	Cl	ient sampliı	na date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	13 26-JUN-2013 10:00	26-JUN-2013 10:00
			I Init	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039
Compound	CAS Number	LUR	Unit	2111001000 001	2111001000 004	2111001000 000	2111001000 000	201001000 000
EP068A: Organochlorine Pesticides (OC) -	Continued	0.05	malka	<0.05	<0.05		<0.05	<0.0E
	959-98-8	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Cis-Chiordane	5103-71-9	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
	60-57-1	0.05	mg/kg	<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
Endrin	72-20-8	0.05	mg/kg	<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
Characteristic Endosulfan (sum)	115-29-7	0.05	mg/kg	<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
Endrin aldehyde	7421-93-4	0.05	mg/kg	<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
4.4`-DDT	50-29-3	0.2	mg/kg	<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
Methoxychlor	72-43-5	0.2	mg/kg	<0.2	<0.2		<0.2	<0.2
[^] Sum of Aldrin + Dieldrin 30	9-00-2/60-57-1	0.05	mg/kg	<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
EP068B: Organophosphorus Pesticides (C	P)							
Dichlorvos	62-73-7	0.05	mg/kg	<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
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	<0.2		<0.2	<0.2
Dimethoate	60-51-5	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Diazinon	333-41-5	0.05	mg/kg	<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
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	<0.2		<0.2	<0.2
Malathion	121-75-5	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Fenthion	55-38-9	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Parathion	56-38-2	0.2	mg/kg	<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
Chlorfenvinphos	470-90-6	0.05	mg/kg	<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
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Prothiofos	34643-46-4	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05
Ethion	563-12-2	0.05	mg/kg	<0.05	<0.05		<0.05	<0.05



Sub-Matrix: SOIL (Matrix: SOIL)	ttrix: SOIL (Matrix: SOIL)				TP20_0.5-0.6_26/06/1	TP20_0.9-1.0_26/06/1	TP16A_0.2-0.3_26/06/	TP16A_0.5-0.6_26/06/ 13 26-JUN-2013 10:00 EW1301886-039 <0.05 <0.05 <0.05 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <0.5 <t< th=""></t<>
	Cl	ient samplii	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039
EP068B: Organophosphorus Pesticides (O	P) - Continued							
Carbophenothion	786-19-6	0.05	mg/kg	<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
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1		<1	<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2		<2	<2
EP075(SIM)B: Polynuclear Aromatic Hydro	carbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Acenaphthene	83-32-9	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Fluorene	86-73-7	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Anthracene	120-12-7	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Fluoranthene	206-44-0	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5
Pyrene	129-00-0	0.5	mg/kg	<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
Chrysene	218-01-9	0.5	mg/kg	<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
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<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
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<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
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<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



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP24_0.5-0.6_26/06/1	TP20_0.5-0.6_26/06/1	TP20_0.9-1.0_26/06/1	TP16A_0.2-0.3_26/06/	TP16A_0.5-0.6_26/06/	
	Client compling data / time			3	3	3	13	13	
			20-JUN-2013 10.00		20-JUN-2013 10.00	20-JUIN-2013 10.00	20-JUIN-2013 10.00		
Compound	CAS Number	LOR	Unit	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039	
EP075(SIM)B: Polynuclear Aromatic	Hydrocarbons - Cont	inued							
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5		<0.5	<0.5	
EP080/071: Total Petroleum Hydroca	arbons								
C6 - C9 Fraction		10	mg/kg	<10	<10		<10	<10	
C10 - C14 Fraction		50	mg/kg	<50	<50		<50	<50	
C15 - C28 Fraction		100	mg/kg	<100	<100		<100	<100	
C29 - C36 Fraction		100	mg/kg	<100	<100		<100	<100	
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50	<50		<50	<50	
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft									
C6 - C10 Fraction		10	mg/kg	<10	<10		<10	<10	
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10	<10		<10	<10	
>C10 - C16 Fraction		50	mg/kg	<50	<50		<50	<50	
>C16 - C34 Fraction		100	mg/kg	<100	<100		<100	<100	
>C34 - C40 Fraction		100	mg/kg	<100	<100		<100	<100	
>C10 - C40 Fraction (sum)		50	mg/kg	<50	<50		<50	<50	
EP080: BTEX									
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2		<0.2	<0.2	
Toluene	108-88-3	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg	<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	
ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5	
EP080: BTEXN									
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5		<0.5	<0.5	
[^] Sum of BTEX		0.2	mg/kg	<0.2	<0.2		<0.2	<0.2	
Naphthalene	91-20-3	1	mg/kg	<1	<1		<1	<1	
EP068S: Organochlorine Pesticide S	Surrogate								
Dibromo-DDE	21655-73-2	0.1	%	86.1	77.9		73.2	85.8	
EP068T: Organophosphorus Pesticide Surrogate									
DEF	78-48-8	0.1	%	102	83.0		80.3	98.4	
EP075(SIM)S: Phenolic Compound Surrogates									
Phenol-d6	13127-88-3	0.1	%	83.9	87.4		73.8	91.1	
2-Chlorophenol-D4	93951-73-6	0.1	%	87.9	91.1		76.9	87.8	
2.4.6-Tribromophenol	118-79-6	0.1	%	90.4	92.1		70.0	92.2	
EP075(SIM)T: PAH Surrogates									



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP24_0.5-0.6_26/06/1	TP20_0.5-0.6_26/06/1	TP20_0.9-1.0_26/06/1	TP16A_0.2-0.3_26/06/	TP16A_0.5-0.6_26/06/
				3	3	3	13	13
	Client sampling date / time				26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-031	EW1301886-034	EW1301886-035	EW1301886-038	EW1301886-039
EP075(SIM)T: PAH Surrogates - Continued								
2-Fluorobiphenyl	321-60-8	0.1	%	97.0	99.8		96.7	97.4
Anthracene-d10	1719-06-8	0.1	%	96.6	94.3		90.3	97.4
4-Terphenyl-d14	1718-51-0	0.1	%	90.0	83.2		88.1	85.8
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	99.7	84.6		91.4	99.8
Toluene-D8	2037-26-5	0.1	%	106	87.2		90.6	104
4-Bromofluorobenzene	460-00-4	0.1	%	97.1	85.1		72.6	98.6



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP16A_0.9-1.0_26/06/ 13	TP16B_0.1-0.2_26/06/ 13	TP15_0.0-0.1_26/06/1 3	TP15_0.9-1.0_26/06/1 3	TP14_0.0-0.1_26/06/1 3		
	Client sampling date / time			26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00		
Compound	CAS Number	LOR	Unit	EW1301886-040	EW1301886-041	EW1301886-042	EW1301886-044	EW1301886-045		
EA002 : pH (Soils)										
pH Value		0.1	pH Unit				5.1	4.4		
EA055: Moisture Content										
Moisture Content (dried @ 103°C)		1.0	%			31.0	12.4	21.4		
EA150: Soil Classification based on Particle Size										
Clay (<2 μm)		1	%				18	10		
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	0.1		Ch + Am	Ch + Am + Cr					
Asbestos Type	1332-21-4	1				Ch + Am				
Sample weight (dry)		0.01	g	86.3	28.5	6390				
APPROVED IDENTIFIER:		1				C.OWLER				
APPROVED IDENTIFIER:		-		C.OWLER	C.OWLER					
EA200Q: Asbestos Quantification (non-N	ATA)									
Weight Used for % Calculation		0.0001	kg			6.39				
Asbestos Containing Material	1332-21-4	0.1	g			<0.1				
Fibrous Asbestos		0.002	g			0.004				
Asbestos Fines	1332-21-4	-	-			Yes				
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%			<0.01				
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%			<0.001				
ED008: Exchangeable Cations										
Exchangeable Calcium		0.1	meq/100g				1.2	0.8		
Exchangeable Magnesium		0.1	meq/100g				11.7	0.2		
Exchangeable Potassium		0.1	meq/100g				0.2	<0.1		
Exchangeable Sodium		0.1	meq/100g				0.6	<0.1		
Cation Exchange Capacity		0.1	meq/100g				13.7	1.1		
EG005T: Total Metals by ICP-AES										
Arsenic	7440-38-2	5	mg/kg			8	<5	11		
Cadmium	7440-43-9	1	mg/kg			4	<1	<1		
Chromium	7440-47-3	2	mg/kg			8	20	8		
Copper	7440-50-8	5	mg/kg			1620	139	660		
Iron	7439-89-6	50	mg/kg				50100	12000		


Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP16A_0.9-1.0_26/06/ 13	TP16B_0.1-0.2_26/06/ 13	TP15_0.0-0.1_26/06/1 3	TP15_0.9-1.0_26/06/1 3	TP14_0.0-0.1_26/06/1 3
	Cli	ient sampli	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-040	EW1301886-041	EW1301886-042	EW1301886-044	EW1301886-045
EG005T: Total Metals by ICP-AES - Continu	ued							
Lead	7439-92-1	5	mg/kg			239	10	415
Manganese	7439-96-5	5	mg/kg			549	202	123
Nickel	7440-02-0	2	mg/kg			10	18	5
Selenium	7782-49-2	5	mg/kg			<5	<5	5
Zinc	7440-66-6	5	mg/kg			231	98	85
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg			0.2	<0.1	0.3
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg			<20		<20
EP004: Organic Matter								
Organic Matter		0.5	%				<0.5	1.5
Total Organic Carbon		0.5	%				<0.5	0.9
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg			<0.05		<0.05
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg			<0.05		<0.05
beta-BHC	319-85-7	0.05	mg/kg			<0.05		<0.05
gamma-BHC	58-89-9	0.05	mg/kg			<0.05		<0.05
delta-BHC	319-86-8	0.05	mg/kg			<0.05		<0.05
Heptachlor	76-44-8	0.05	mg/kg			<0.05		<0.05
Aldrin	309-00-2	0.05	mg/kg			<0.05		<0.05
Heptachlor epoxide	1024-57-3	0.05	mg/kg			<0.05		<0.05
[^] Total Chlordane (sum)		0.05	mg/kg			<0.05		<0.05
trans-Chlordane	5103-74-2	0.05	mg/kg			<0.05		<0.05
alpha-Endosulfan	959-98-8	0.05	mg/kg			<0.05		<0.05
cis-Chlordane	5103-71-9	0.05	mg/kg			<0.05		<0.05
Dieldrin	60-57-1	0.05	mg/kg			<0.05		<0.05
4.4`-DDE	72-55-9	0.05	mg/kg			<0.05		<0.05
Endrin	72-20-8	0.05	mg/kg			<0.05		<0.05
beta-Endosulfan	33213-65-9	0.05	mg/kg			<0.05		<0.05
↑ Endosulfan (sum)	115-29-7	0.05	mg/kg			<0.05		<0.05
4.4`-DDD	72-54-8	0.05	mg/kg			<0.05		<0.05
Endrin aldehyde	7421-93-4	0.05	mg/kg			<0.05		<0.05
Endosulfan sulfate	1031-07-8	0.05	mg/kg			<0.05		<0.05



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP16A_0.9-1.0_26/06/	TP16B_0.1-0.2_26/06/	TP15_0.0-0.1_26/06/1	TP15_0.9-1.0_26/06/1	TP14_0.0-0.1_26/06/1
	C	lient sampli	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	3 26-JUN-2013 10:00	26-JUN-2013 10:00
			Linit	EW1301886-040	EW1301886-041	EW1301886-042	EW1301886-044	EW1301886-045
Compound	CAS Number	LUR	Unit	2111001000 040	2111001000 041		2111001000 011	
EP068A: Organochlorine Pesticides	G (OC) - Continued	0.2	malka			<0.2		<0.2
4.4 -DDT	50-29-3	0.2	mg/kg			<0.05		<0.05
Methoxychlor	53494-70-5	0.05	mg/kg			<0.05		<0.05
A Sum of Aldrin + Dioldrin	72-43-5	0.2	mg/kg			<0.05		<0.05
	309-00-2/00-37-1	0.05	mg/kg			<0.05		<0.05
		0.00	mg/kg			-0.00		-0.00
EP068B: Organophosphorus Pestic	ides (OP)	0.05	ma/ka			<0.05		<0.05
Domoton S mothyl	02-73-7	0.05	mg/kg			<0.05		<0.05
Monocrotophos	919-00-0	0.00	mg/kg			<0.00		<0.00
Dimotheste	0923-22-4	0.2	mg/kg			<0.05		<0.05
Diazinon	00-51-5	0.05	mg/kg			<0.05		<0.05
Chlorovrifos mothyl	553-41-5	0.05	mg/kg			<0.05		<0.05
Parathion_methyl	308.00.0	0.00	mg/kg			<0.00		<0.00
Malathion	290-00-0	0.2	mg/kg			<0.05		<0.05
Eanthian	121-73-3 EE 28 0	0.05	mg/kg			<0.05		<0.05
Chlorpyrifos	2021 88 2	0.05	mg/kg			<0.05		<0.05
Parathion	56-38-2	0.00	mg/kg			<0.2		<0.2
Pirimphos-ethyl	23505-41-1	0.05	mg/kg			<0.02		<0.05
Chlorfenvinphos	470-90-6	0.05	ma/ka			<0.05		<0.05
Bromophos-ethyl	4824-78-6	0.05	ma/ka			<0.05		<0.05
Fenamiphos	22224-92-6	0.05	ma/ka			< 0.05		< 0.05
Prothiofos	34643-46-4	0.05	ma/ka			< 0.05		< 0.05
Ethion	563-12-2	0.05	ma/ka			< 0.05		< 0.05
Carbophenothion	786-19-6	0.05	mg/kg			<0.05		<0.05
Azinphos Methyl	86-50-0	0.05	mg/kg			<0.05		<0.05
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg			<0.5		<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg			<0.5		<0.5
2-Methylphenol	95-48-7	0.5	mg/kg			<0.5		<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg			<1		<1
2-Nitrophenol	88-75-5	0.5	mg/kg			<0.5		<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg			<0.5		<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg			<0.5		<0.5



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP16A_0.9-1.0_26/06/	TP16B_0.1-0.2_26/06/	TP15_0.0-0.1_26/06/1	TP15_0.9-1.0_26/06/1	TP14_0.0-0.1_26/06/1
	Cl	lient sampli	na date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	3 26-JUN-2013 10:00	26-JUN-2013 10:00
			Linit	EW1301886-040	EW1301886-041	EW1301886-042	EW1301886-044	EW1301886-045
	CAS Number	LUR	Unit		2111001000 041			2111001000 040
EP075(SIM)A: Phenolic Compounds - Cor	ntinued	0.5	ma/ka			<0.5		<0.5
4 Chlere 2 Methylphenel	87-05-0	0.5	mg/kg			<0.5		<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg			<0.5		<0.5
2.4.5-Trichlorophenol	88-06-2	0.5	mg/kg			<0.5		<0.5
Pentachlorophenol	95-95-4	2	mg/kg			<2		<2
	C-00-10	2	mg/kg			~2		~2
EP075(SIM)B: Polynuclear Aromatic Hyd	rocarbons	0.5	ma/ka			<0.5		<0.5
	91-20-3	0.5	mg/kg			<0.5		<0.5
Acenaphthono	206-90-6	0.5	mg/kg			<0.5		<0.5
Fluorene	03-32-9	0.5	mg/kg			<0.5		<0.5
Phonanthrono	00-73-7	0.5	mg/kg			<0.5		<0.5
Anthracene	120 12 7	0.5	mg/kg			<0.5		<0.5
Fluoranthene	206.44.0	0.5	mg/kg			<0.5		<0.5
Pyrene	129.00.0	0.5	mg/kg			<0.5		<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg			<0.5		<0.5
Chrysene	218-01-9	0.5	ma/ka			<0.5		<0.5
Benzo(b)fluoranthene	205-99-2	0.5	ma/ka			<0.5		<0.5
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg			<0.5		<0.5
Benzo(a)pyrene	50-32-8	0.5	mg/kg			<0.5		<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg			<0.5		<0.5
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg			<0.5		<0.5
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg			<0.5		<0.5
^ Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg			<0.5		<0.5
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg			<0.5		<0.5
EP080/071: Total Petroleum Hydrocarbor	ns							
C6 - C9 Fraction		10	mg/kg			<10		<10
C10 - C14 Fraction		50	mg/kg			<50		<50
C15 - C28 Fraction		100	mg/kg			<100		<100
C29 - C36 Fraction		100	mg/kg			<100		<100
C10 - C36 Fraction (sum)		50	mg/kg			<50		<50
EP080/071: Total Recoverable Hydrocarb	oons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg			<10		<10
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg			<10		<10



Sub-Matrix: SOIL (Matrix: SOIL)	atrix: SOIL) Client sample ID			TP16A_0.9-1.0_26/06/	TP16B_0.1-0.2_26/06/	TP15_0.0-0.1_26/06/1	TP15_0.9-1.0_26/06/1	TP14_0.0-0.1_26/06/1
	Cli	ient sampl	ina date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	3 26-JUN-2013 10:00	26-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-040	EW1301886-041	EW1301886-042	EW1301886-044	EW1301886-045
EP080/071: Total Recoverable Hydro	ocarbons - NEPM 201	0 Draft - (Continued					
>C10 - C16 Fraction		50	mg/kg			<50		<50
>C16 - C34 Fraction		100	mg/kg			<100		<100
>C34 - C40 Fraction		100	mg/kg			<100		<100
^ >C10 - C40 Fraction (sum)		50	mg/kg			<50		<50
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg			<0.2		<0.2
Toluene	108-88-3	0.5	mg/kg			<0.5		<0.5
Ethylbenzene	100-41-4	0.5	mg/kg			<0.5		<0.5
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg			<0.5		<0.5
ortho-Xylene	95-47-6	0.5	mg/kg			<0.5		<0.5
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg			<0.5		<0.5
[^] Sum of BTEX		0.2	mg/kg			<0.2		<0.2
Naphthalene	91-20-3	1	mg/kg			<1		<1
EP068S: Organochlorine Pesticide S	Surrogate							
Dibromo-DDE	21655-73-2	0.1	%			76.8		85.6
EP068T: Organophosphorus Pestici	de Surrogate							
DEF	78-48-8	0.1	%			85.1		93.9
EP075(SIM)S: Phenolic Compound S	Surrogates							
Phenol-d6	13127-88-3	0.1	%			82.6		68.4
2-Chlorophenol-D4	93951-73-6	0.1	%			86.4		78.6
2.4.6-Tribromophenol	118-79-6	0.1	%			73.8		67.6
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%			99.5		77.7
Anthracene-d10	1719-06-8	0.1	%			92.7		75.0
4-Terphenyl-d14	1718-51-0	0.1	%			86.2		67.1
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%			97.5		93.9
Toluene-D8	2037-26-5	0.1	%			108		91.8
4-Bromofluorobenzene	460-00-4	0.1	%			98.8		86.5



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP14_0.5-0.6_26/06/1 3	TP13_0.5-0.6_26/06/1 3	TP13_1.5-1.6_26/06/1 3	TP9_0.3-0.4_26/06/13	TP9_0.5-0.6_26/06/13
	Cli	ient sampli	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-046	EW1301886-050	EW1301886-052	EW1301886-054	EW1301886-055
EA002 : pH (Soils)								
pH Value		0.1	pH Unit					5.1
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	28.5	24.1	29.0	26.1	30.1
EA150: Soil Classification based on Partic	le Size							
Clay (<2 μm)		1	%					60
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g					11.2
Exchangeable Magnesium		0.1	meq/100g					12.2
Exchangeable Potassium		0.1	meq/100g					0.3
Exchangeable Sodium		0.1	meq/100g					1.8
Cation Exchange Capacity		0.1	meq/100g					25.4
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	17	<5	36	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	11	<1
Chromium	7440-47-3	2	mg/kg	18	10	15	21	21
Copper	7440-50-8	5	mg/kg	60	171	63	1020	82
Iron	7439-89-6	50	mg/kg					42400
Lead	7439-92-1	5	mg/kg	6	38	6	192	10
Manganese	7439-96-5	5	mg/kg	6	72	35	111	9
Nickel	7440-02-0	2	mg/kg	2	4	2	9	2
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	13	35	21	443	17
EG035T: Total Recoverable Mercury by Fl	MS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	0.3	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg		<20		<20	
EP004: Organic Matter								
Organic Matter		0.5	%					1.2
Total Organic Carbon		0.5	%					0.7
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg		<0.05		<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05		<0.05	
beta-BHC	319-85-7	0.05	mg/kg		<0.05		<0.05	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP14_0.5-0.6_26/06/1	TP13_0.5-0.6_26/06/1	TP13_1.5-1.6_26/06/1	TP9_0.3-0.4_26/06/13	TP9_0.5-0.6_26/06/13
	Cl	ient samnlii	na date / time	3 26IUN-2013 10:00	3 26IUN-2013 10:00	3 26IUN-2013 10:00	26IUN-2013 15:00	26ILIN-2013 15:00
			I lait	EW1301886-046	EW1301886-050	EW1301886-052	EW1301886-054	EW1301886-055
Compound	CAS Number	LUR	Unit	2111001000-040	2111001000-000	2111001000-002	2111001000-004	201001000-000
EP068A: Organochlorine Pesticides ((OC) - Continued	0.05			10.05		10.05	
gamma-BHC	58-89-9	0.05	mg/kg		<0.05		<0.05	
delta-BHC	319-86-8	0.05	mg/kg		<0.05		<0.05	
Heptachior	76-44-8	0.05	mg/kg		<0.05		<0.05	
Aldrin	309-00-2	0.05	mg/kg		<0.05		<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05		<0.05	
Total Chlordane (sum)		0.05	mg/kg		<0.05		<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05		<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05		<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05		<0.05	
Dieldrin	60-57-1	0.05	mg/kg		<0.05		<0.05	
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05		<0.05	
Endrin	72-20-8	0.05	mg/kg		<0.05		<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05		<0.05	
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05		<0.05	
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05		<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05		<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05		<0.05	
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2		<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05		<0.05	
Methoxychlor	72-43-5	0.2	mg/kg		<0.2		<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05		<0.05	
[^] Sum of DDD + DDE + DDT		0.05	mg/kg		<0.05		<0.05	
EP068B: Organophosphorus Pesticio	des (OP)							
Dichlorvos	62-73-7	0.05	mg/kg		<0.05		<0.05	
Demeton-S-methyl	919-86-8	0.05	mg/kg		<0.05		<0.05	
Monocrotophos	6923-22-4	0.2	mg/kg		<0.2		<0.2	
Dimethoate	60-51-5	0.05	mg/kg		<0.05		<0.05	
Diazinon	333-41-5	0.05	mg/kg		<0.05		<0.05	
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg		<0.05		<0.05	
Parathion-methyl	298-00-0	0.2	mg/kg		<0.2		<0.2	
Malathion	121-75-5	0.05	mg/kg		<0.05		<0.05	
Fenthion	55-38-9	0.05	mg/kg		<0.05		<0.05	
Chlorpyrifos	2921-88-2	0.05	mg/kg		<0.05		<0.05	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP14_0.5-0.6_26/06/1	TP13_0.5-0.6_26/06/1	TP13_1.5-1.6_26/06/1	TP9_0.3-0.4_26/06/13	TP9_0.5-0.6_26/06/13
	Cl	ient samplii	na date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Our and a second			Unit	EW1301886-046	EW1301886-050	EW1301886-052	EW1301886-054	EW1301886-055
Compound CAS	Number	LOR	Om					
EP068B: Organophosphorus Pesticides (OP) - C	ontinued	0.2	ma/ka		<0.2		<0.2	
Paraunion Birimphes athul	56-38-2	0.2	mg/kg		<0.05		<0.2	
Chlorfenvinnhoo	505-41-1	0.05	mg/kg		<0.05		<0.05	
Promonhoo othul	470-90-6	0.05	mg/kg		<0.05		<0.05	
Economichece con	824-78-0	0.05	mg/kg		<0.05		<0.05	
Prethinfors 222	224-92-6	0.05	mg/kg		<0.05		<0.05	
Prothiolos 34t	543-46-4	0.05	mg/kg		<0.05		<0.05	
	563-12-2	0.05	mg/kg		<0.05		<0.05	
Carbophenothion	786-19-6	0.05	mg/kg		<0.05		<0.05	
Azinphos Methyl	86-50-0	0.05	mg/kg		<0.05		<0.05	
EP075(SIM)A: Phenolic Compounds			ä					
Phenol	108-95-2	0.5	mg/kg		<0.5		<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5		<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5		<0.5	
3- & 4-Methylphenol 10	319-77-3	1	mg/kg		<1		<1	
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5		<0.5	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5		<0.5	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5		<0.5	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5		<0.5	
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg		<0.5		<0.5	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5		<0.5	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5		<0.5	
Pentachlorophenol	87-86-5	2	mg/kg		<2		<2	
EP075(SIM)B: Polynuclear Aromatic Hydrocarbo	ons							
Naphthalene	91-20-3	0.5	mg/kg		<0.5		<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5		<0.5	
Acenaphthene	83-32-9	0.5	mg/kg		<0.5		<0.5	
Fluorene	86-73-7	0.5	mg/kg		<0.5		<0.5	
Phenanthrene	85-01-8	0.5	mg/kg		<0.5		<0.5	
Anthracene	120-12-7	0.5	mg/kg		<0.5		<0.5	
Fluoranthene	206-44-0	0.5	mg/kg		<0.5		<0.5	
Pyrene	129-00-0	0.5	mg/kg		<0.5		<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5		<0.5	
Chrysene	218-01-9	0.5	mg/kg		<0.5		<0.5	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP14_0.5-0.6_26/06/1	TP13_0.5-0.6_26/06/1	TP13_1.5-1.6_26/06/1	TP9_0.3-0.4_26/06/13	TP9_0.5-0.6_26/06/13		
	Cli	ient sampli	ng date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 15:00	26-JUN-2013 15:00		
Compound	CAS Number	LOR	Unit	EW1301886-046	EW1301886-050	EW1301886-052	EW1301886-054	EW1301886-055		
EP075(SIM)B: Polynuclear Aromatic Hy	drocarbons - Cont	inued								
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5		<0.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5		<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5		<0.5			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5		<0.5			
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5		<0.5			
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5		<0.5			
A Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg		<0.5		<0.5			
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg		<0.5		<0.5			
EP080/071: Total Petroleum Hydrocarbo	ons									
C6 - C9 Fraction		10	mg/kg		<10		<10			
C10 - C14 Fraction		50	mg/kg		<50		<50			
C15 - C28 Fraction		100	mg/kg		<100		<100			
C29 - C36 Fraction		100	mg/kg		<100		<100			
[^] C10 - C36 Fraction (sum)		50	mg/kg		<50		<50			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft										
C6 - C10 Fraction		10	mg/kg		<10		<10			
[^] C6 - C10 Fraction minus BTEX (F1)		10	mg/kg		<10		<10			
>C10 - C16 Fraction		50	mg/kg		<50		<50			
>C16 - C34 Fraction		100	mg/kg		<100		<100			
>C34 - C40 Fraction		100	mg/kg		<100		<100			
>C10 - C40 Fraction (sum)		50	mg/kg		<50		<50			
EP080: BTEX										
Benzene	71-43-2	0.2	mg/kg		<0.2		<0.2			
Toluene	108-88-3	0.5	mg/kg		<0.5		<0.5			
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5		<0.5			
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5		<0.5			
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5		<0.5			
EP080: BTEXN										
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5		<0.5			
Sum of BTEX		0.2	mg/kg		<0.2		<0.2			
Naphthalene	91-20-3	1	mg/kg		<1		<1			
EP068S: Organochlorine Pesticide Surr	ogate									
Dibromo-DDE	21655-73-2	0.1	%		88.4		94.7			



Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		TP14_0.5-0.6_26/06/1 3	TP13_0.5-0.6_26/06/1 3	TP13_1.5-1.6_26/06/1 3	TP9_0.3-0.4_26/06/13	TP9_0.5-0.6_26/06/13
	Cl	ient sampli	ing date / time	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 10:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-046	EW1301886-050	EW1301886-052	EW1301886-054	EW1301886-055
EP068T: Organophosphorus Pesticide S	urrogate							
DEF	78-48-8	0.1	%		84.6		96.4	
EP075(SIM)S: Phenolic Compound Surro	ogates							
Phenol-d6	13127-88-3	0.1	%		79.6		86.6	
2-Chlorophenol-D4	93951-73-6	0.1	%		82.9		88.7	
2.4.6-Tribromophenol	118-79-6	0.1	%		77.0		91.0	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%		86.2		93.9	
Anthracene-d10	1719-06-8	0.1	%		89.8		98.2	
4-Terphenyl-d14	1718-51-0	0.1	%		78.8		89.8	
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%		89.0		86.4	
Toluene-D8	2037-26-5	0.1	%		85.5		87.2	
4-Bromofluorobenzene	460-00-4	0.1	%		83.9		83.0	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP10_0.0-0.1_26/06/1	TP10_0.5-0.6_26/06/1	TP11_0.1-0.2_26/06/1	TP11_0.9-1.0_26/06/1	TP12A_0.1-0.2_26/06/
	0		an data (tima	3	3	3	3	13
	CI	ient sampli	ng date / time	26-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EW1301886-056	EW1301886-057	EW1301886-059	EW1301886-061	EW1301886-063
EA002 : pH (Soils)								
pH Value		0.1	pH Unit	6.8			6.2	
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	31.2	29.7	27.1	13.9	
EA150: Soil Classification based on Partie	cle Size							
Clay (<2 μm)		1	%	24			22	
EA200: AS 4964 - 2004 Identification of As	sbestos in bulk	samples						
Asbestos Detected	1332-21-4	0.1	g/kg	Yes		Yes		Yes
Asbestos Type	1332-21-4	0.1						Ch + Am
Asbestos Type	1332-21-4	1		Ch		Ch + Am		
Sample weight (dry)		0.01	g	6290		9040		27.1
APPROVED IDENTIFIER:		1		C.OWLER		C.OWLER		
APPROVED IDENTIFIER:		-						C.OWLER
EA200Q: Asbestos Quantification (non-N								
Weight Used for % Calculation		0.0001	kg	6.29		9.04		
Asbestos Containing Material	1332-21-4	0.1	g	64.6		<0.1		
Fibrous Asbestos		0.002	g	0.008		0.007		
Asbestos Fines	1332-21-4	-	-	Yes		Yes		
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%			<0.01		
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%	0.10				
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%	<0.001		<0.001		
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g	21.7			0.7	
Exchangeable Magnesium		0.1	meq/100g	1.7			12.6	
Exchangeable Potassium		0.1	meq/100g	0.7			<0.1	
Exchangeable Sodium		0.1	meq/100g	0.2			6.3	
Cation Exchange Capacity		0.1	meq/100g	24.3			19.7	
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	31	<5	<5	<5	
Cadmium	7440-43-9	1	mg/kg	3	<1	<1	<1	
Chromium	7440-47-3	2	mg/kg	16	24	19	14	
Copper	7440-50-8	5	mg/kg	422	88	201	73	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP10_0.0-0.1_26/06/1 3	TP10_0.5-0.6_26/06/1	TP11_0.1-0.2_26/06/1	TP11_0.9-1.0_26/06/1	TP12A_0.1-0.2_26/06/ 13
	Cl	ient sampli	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	I OR	Unit	EW1301886-056	EW1301886-057	EW1301886-059	EW1301886-061	EW1301886-063
EG005T: Total Metals by ICP-AES - Conti	nued	2011						
Iron	7439-89-6	50	mg/kg	34800			22800	
Lead	7439-92-1	5	mg/kg	124	9	21	6	
Manganese	7439-96-5	5	mg/kg	88	15	39	21	
Nickel	7440-02-0	2	mg/kg	6	4	6	5	
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	
Zinc	7440-66-6	5	mg/kg	256	27	92	38	
EG035T: Total Recoverable Mercury by	FIMS							
Mercury	7439-97-6	0.1	mg/kg	0.2	<0.1	<0.1	<0.1	
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20		<20		
EP004: Organic Matter								
Organic Matter		0.5	%	5.5			0.6	
Total Organic Carbon		0.5	%	3.2			<0.5	
EP068A: Organochlorine Pesticides (OC	;)							
alpha-BHC	319-84-6	0.05	mg/kg	<0.05		<0.05		
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05		<0.05		
beta-BHC	319-85-7	0.05	mg/kg	<0.05		<0.05		
gamma-BHC	58-89-9	0.05	mg/kg	<0.05		<0.05		
delta-BHC	319-86-8	0.05	mg/kg	<0.05		<0.05		
Heptachlor	76-44-8	0.05	mg/kg	<0.05		<0.05		
Aldrin	309-00-2	0.05	mg/kg	<0.05		<0.05		
Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05		<0.05		
[^] Total Chlordane (sum)		0.05	mg/kg	<0.05		<0.05		
trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05		<0.05		
alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05		<0.05		
cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05		<0.05		
Dieldrin	60-57-1	0.05	mg/kg	<0.05		<0.05		
4.4`-DDE	72-55-9	0.05	mg/kg	<0.05		<0.05		
Endrin	72-20-8	0.05	mg/kg	<0.05		<0.05		
beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05		<0.05		
^ Endosulfan (sum)	115-29-7	0.05	mg/kg	<0.05		<0.05		
4.4`-DDD	72-54-8	0.05	mg/kg	<0.05		<0.05		
Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05		<0.05		



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP10_0.0-0.1_26/06/1	TP10_0.5-0.6_26/06/1	TP11_0.1-0.2_26/06/1	TP11_0.9-1.0_26/06/1	TP12A_0.1-0.2_26/06/ 13
	Cl	ient sampli	ng date / time	26-JUN-2013 15:00				
Compound	CAS Number	I OR	Unit	EW1301886-056	EW1301886-057	EW1301886-059	EW1301886-061	EW1301886-063
EP068A: Organochloring Posticidos (2011						
Endosulfan sulfate	1031-07-8	0.05	ma/ka	<0.05		<0.05		
4.4`-DDT	50-29-3	0.2	ma/ka	<0.2		<0.2		
Endrin ketone	53494-70-5	0.05	ma/ka	< 0.05		< 0.05		
Methoxychlor	72-43-5	0.2	mg/kg	<0.2		<0.2		
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg	<0.05		<0.05		
Sum of DDD + DDE + DDT		0.05	mg/kg	<0.05		<0.05		
EP068B: Organophosphorus Pesticid	les (OP)							
Dichlorvos	62-73-7	0.05	mg/kg	<0.05		<0.05		
Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05		<0.05		
Monocrotophos	6923-22-4	0.2	mg/kg	<0.2		<0.2		
Dimethoate	60-51-5	0.05	mg/kg	<0.05		<0.05		
Diazinon	333-41-5	0.05	mg/kg	<0.05		<0.05		
Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05		<0.05		
Parathion-methyl	298-00-0	0.2	mg/kg	<0.2		<0.2		
Malathion	121-75-5	0.05	mg/kg	<0.05		<0.05		
Fenthion	55-38-9	0.05	mg/kg	<0.05		<0.05		
Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05		<0.05		
Parathion	56-38-2	0.2	mg/kg	<0.2		<0.2		
Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05		<0.05		
Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05		<0.05		
Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05		<0.05		
Fenamiphos	22224-92-6	0.05	mg/kg	<0.05		<0.05		
Prothiofos	34643-46-4	0.05	mg/kg	<0.05		<0.05		
Ethion	563-12-2	0.05	mg/kg	<0.05		<0.05		
Carbophenothion	786-19-6	0.05	mg/kg	<0.05		<0.05		
Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05		<0.05		
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5		<0.5		
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5		<0.5		
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5		<0.5		
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1		<1		
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5		<0.5		
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5		<0.5		



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP10_0.0-0.1_26/06/1 3	TP10_0.5-0.6_26/06/1 3	TP11_0.1-0.2_26/06/1 3	TP11_0.9-1.0_26/06/1 3	TP12A_0.1-0.2_26/06/ 13
	Cl	ient sampli	ng date / time	26-JUN-2013 15:00				
Compound	CAS Number	LOR	Unit	EW1301886-056	EW1301886-057	EW1301886-059	EW1301886-061	EW1301886-063
EP075(SIM)A: Phenolic Compounds - Conti	nued							
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5		<0.5		
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5		<0.5		
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5		<0.5		
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5		<0.5		
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5		<0.5		
Pentachlorophenol	87-86-5	2	mg/kg	<2		<2		
EP075(SIM)B: Polynuclear Aromatic Hydro	carbons							
Naphthalene	91-20-3	0.5	mg/kg	<0.5		<0.5		
Acenaphthylene	208-96-8	0.5	mg/kg	<0.5		<0.5		
Acenaphthene	83-32-9	0.5	mg/kg	<0.5		<0.5		
Fluorene	86-73-7	0.5	mg/kg	<0.5		<0.5		
Phenanthrene	85-01-8	0.5	mg/kg	<0.5		<0.5		
Anthracene	120-12-7	0.5	mg/kg	<0.5		<0.5		
Fluoranthene	206-44-0	0.5	mg/kg	0.9		<0.5		
Pyrene	129-00-0	0.5	mg/kg	1.1		<0.5		
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5		<0.5		
Chrysene	218-01-9	0.5	mg/kg	0.5		<0.5		
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	0.8		<0.5		
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5		<0.5		
Benzo(a)pyrene	50-32-8	0.5	mg/kg	0.6		<0.5		
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5		<0.5		
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5		<0.5		
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	0.6		<0.5		
[^] Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	4.5		<0.5		
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	0.7		<0.5		
EP080/071: Total Petroleum Hydrocarbons								
C6 - C9 Fraction		10	mg/kg	<10		<10		
C10 - C14 Fraction		50	mg/kg	<50		<50		
C15 - C28 Fraction		100	mg/kg	<100		<100		
C29 - C36 Fraction		100	mg/kg	<100		<100		
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50		<50		
EP080/071: Total Recoverable Hydrocarbo	ns - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10		<10		



Sub-Matrix: SOIL (Matrix: SOIL)	Cli	ent sample ID	TP10_0.0-0.1_26/06/1	TP10_0.5-0.6_26/06/1	TP11_0.1-0.2_26/06/1	TP11_0.9-1.0_26/06/1	TP12A_0.1-0.2_26/06/
	ient sampli	ina data / tima	3 26 IUN 2013 15:00	3 26 IUN 2013 15:00	3	3	13
	en sampi		20-301-2013 13.00	20-301-2013 13.00	EW4204996 050	Z0-3011-2013 13.00	EW4204886.062
Compound CAS Number	LOR	Unit	EW1301000-050	EW1301000-057	EW1301000-039	EWV1301000-001	EW1301000-003
EP080/071: Total Recoverable Hydrocarbons - NEPM 201	0 Draft - (Continued					
C6 - C10 Fraction minus BTEX (F1)	10	mg/kg	<10		<10		
>C10 - C16 Fraction	50	mg/kg	<50		<50		
>C16 - C34 Fraction	100	mg/kg	<100		<100		
>C34 - C40 Fraction	100	mg/kg	<100		<100		
^ >C10 - C40 Fraction (sum)	50	mg/kg	<50		<50		
EP080: BTEX							
Benzene 71-43-2	0.2	mg/kg	<0.2		<0.2		
Toluene 108-88-3	0.5	mg/kg	<0.5		<0.5		
Ethylbenzene 100-41-4	0.5	mg/kg	<0.5		<0.5		
meta- & para-Xylene 108-38-3 106-42-3	0.5	mg/kg	<0.5		<0.5		
ortho-Xylene 95-47-6	0.5	mg/kg	<0.5		<0.5		
EP080: BTEXN							
[^] Total Xylenes 1330-20-7	0.5	mg/kg	<0.5		<0.5		
Sum of BTEX	0.2	mg/kg	<0.2		<0.2		
Naphthalene 91-20-3	1	mg/kg	<1		<1		
EP068S: Organochlorine Pesticide Surrogate							
Dibromo-DDE 21655-73-2	0.1	%	94.5		72.5		
EP068T: Organophosphorus Pesticide Surrogate							
DEF 78-48-8	0.1	%	91.8		76.5		
EP075(SIM)S: Phenolic Compound Surrogates							
Phenol-d6 13127-88-3	0.1	%	85.4		78.7		
2-Chlorophenol-D4 93951-73-6	0.1	%	92.3		91.9		
2.4.6-Tribromophenol 118-79-6	0.1	%	97.5		92.4		
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl 321-60-8	0.1	%	99.0		98.4		
Anthracene-d10 1719-06-8	0.1	%	102		97.4		
4-Terphenyl-d14 1718-51-0	0.1	%	94.2		89.7		
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4 17060-07-0	0.1	%	96.1		89.4		
Toluene-D8 2037-26-5	0.1	%	99.0		89.8		
4-Bromofluorobenzene 460-00-4	0.1	%	91.3		88.0		



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP12_0.0. -0.1_26/06/13	TP12_0.9-1.0_26/06/1 3	TP8_0.0-0.1_26/06/13	TP8_0.9-1.0_26/06/13	QC101_26/06/13
	Cl	ient sampli	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-064	EW1301886-066	EW1301886-067	EW1301886-069	EW1301886-070
EA002 : pH (Soils)								
pH Value		0.1	pH Unit			5.7		
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	39.0	19.2	26.6	21.6	32.8
EA150: Soil Classification based on Pa	article Size							
Clay (<2 μm)		1	%			18		
EA200: AS 4964 - 2004 Identification o	f Asbestos in bulk	samples						
Asbestos Detected	1332-21-4	0.1	g/kg	No				
Asbestos Type	1332-21-4	1		-				
Sample weight (dry)		0.01	g	7660				
APPROVED IDENTIFIER:		1		C.OWLER				
EA200Q: Asbestos Quantification (nor	n-NATA)							
Weight Used for % Calculation		0.0001	kg	7.66				
Asbestos Containing Material	1332-21-4	0.1	g	<0.1				
Fibrous Asbestos		0.002	g	<0.002				
Asbestos Fines	1332-21-4	-	-	No				
Asbestos Containing Material	1332-21-4	0.01	%	<0.01				
(ACM >7mm)								
Asbestos Fines and Fibrous	1332-21-4	0.001	%	<0.001				
Asbestos (<td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>								
ED008: Exchangeable Cations		0.1	mog/100g			7.0		
Exchangeable Calcium		0.1	meg/100g			7.2		
Exchangeable Magnesium		0.1	meg/100g			2.0		
Exchangeable Potassium		0.1	meg/100g			0.4		
Cotion Exchange Consoity		0.1	meg/100g			10.0		
		0.1	moq, roog			10.0		
Arsonic	7440 28 2	5	ma/ka	10	<5	41	<5	44
Cadmium	7440-38-2	1	mg/kg	3	<1	10	<1	14
Chromium	7//0_/7 2	2	ma/ka	10	19	22	12	23
Copper	7440-50-8	5	ma/ka	961	116	2280	76	1760
Iron	7439-80-6	50	ma/ka			38500		
Lead	7439-92-1	5	mg/kg	173	6	677	<5	628
Manganese	7439-96-5	5	ma/ka	456	64	609	28	492
	1-00-00-0	-			+ • •			



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP12_0.0. -0.1_26/06/13	TP12_0.9-1.0_26/06/1 3	TP8_0.0-0.1_26/06/13	TP8_0.9-1.0_26/06/13	QC101_26/06/13
	Cli	ient sampli	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-064	EW1301886-066	EW1301886-067	EW1301886-069	EW1301886-070
EG005T: Total Metals by ICP-AES - Contir	nued							
Nickel	7440-02-0	2	mg/kg	8	14	12	5	12
Selenium	7782-49-2	5	mg/kg	6	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	187	88	397	31	529
EG035T: Total Recoverable Mercury by	FIMS							
Mercury	7439-97-6	0.1	mg/kg	0.3	<0.1	0.3	<0.1	0.4
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20		<20		<20
EP004: Organic Matter								
Organic Matter		0.5	%			5.1		
Total Organic Carbon		0.5	%			3.0		
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
[^] 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



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP12_0.0. -0.1 26/06/13	TP12_0.9-1.0_26/06/1 3	TP8_0.0-0.1_26/06/13	TP8_0.9-1.0_26/06/13	QC101_26/06/13
	Cl	ient samplii	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-064	EW1301886-066	EW1301886-067	EW1301886-069	EW1301886-070
EP068A: Organochlorine Pesticides	(OC) - Continued							
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 Pestici	des (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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5		<0.5		<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5		<0.5		<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5		<0.5		<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1		<1		<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5		<0.5		<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5		<0.5		<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5		<0.5		<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5		<0.5		<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5		<0.5		<0.5



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP12_0.0.	TP12_0.9-1.0_26/06/1	TP8_0.0-0.1_26/06/13	TP8_0.9-1.0_26/06/13	QC101_26/06/13
	Cl	ient samplii	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-064	EW1301886-066	EW1301886-067	EW1301886-069	EW1301886-070
EP075(SIM)A: Phenolic Compounds - Conti	inued							
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5		<0.5		<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5		<0.5		<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2		<2		<2
EP075(SIM)B: Polynuclear Aromatic Hydro	ocarbons							
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
Phenanthrene	85-01-8	0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Pyrene	129-00-0	0.5	mg/kg	<0.5		<0.5		<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5		<0.5		<0.5
Chrysene	218-01-9	0.5	mg/kg	<0.5		<0.5		<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5		<0.5		<0.5
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5		<0.5		<0.5
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		<100		<100
C29 - C36 Fraction		100	mg/kg	<100		<100		<100
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50		<50		<50
EP080/071: Total Recoverable Hydrocarbo	ns - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10		<10		<10
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10		<10		<10
>C10 - C16 Fraction		50	mg/kg	<50		<50		<50
>C16 - C34 Fraction		100	mg/kg	<100		<100		<100



Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	TP12_0.0.	TP12_0.9-1.0_26/06/1	TP8_0.0-0.1_26/06/13	TP8_0.9-1.0_26/06/13	QC101_26/06/13
				-0.1_26/06/13	3	00 11 11 00 10 15 00	00.00000000	00 11 11 00 10 15 00
	Cli	ient sampli	ng date / time	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00	26-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-064	EW1301886-066	EW1301886-067	EW1301886-069	EW1301886-070
EP080/071: Total Recoverable Hydro	ocarbons - NEPM 201	0 Draft - 0	Continued					
>C34 - C40 Fraction		100	mg/kg	<100		<100		<100
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50		<50		<50
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2		<0.2		<0.2
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
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5		<0.5		<0.5
[^] Sum of BTEX		0.2	mg/kg	<0.2		<0.2		<0.2
Naphthalene	91-20-3	1	mg/kg	<1		<1		<1
EP068S: Organochlorine Pesticide S	Surrogate							
Dibromo-DDE	21655-73-2	0.1	%	86.6		80.9		94.2
EP068T: Organophosphorus Pestici	de Surrogate							
DEF	78-48-8	0.1	%	107		88.0		98.9
EP075(SIM)S: Phenolic Compound S	Surrogates							
Phenol-d6	13127-88-3	0.1	%	102		87.5		96.4
2-Chlorophenol-D4	93951-73-6	0.1	%	96.9		87.4		97.8
2.4.6-Tribromophenol	118-79-6	0.1	%	95.0		93.2		100
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	102		103		103
Anthracene-d10	1719-06-8	0.1	%	100		98.4		104
4-Terphenyl-d14	1718-51-0	0.1	%	92.5		88.0		94.6
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	92.1		89.0		96.7
Toluene-D8	2037-26-5	0.1	%	91.5		89.2		101
4-Bromofluorobenzene	460-00-4	0.1	%	85.4		85.5		100



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	QC401_26/06/13	TP7_0.3-0.4_27/06/13	TP7_0.5-0.6_27/06/13	TP6_0.2-0.3_27/06/13	TP6_0.5-0.6_27/06/13
	C	lient sampli	ng date / time	26-JUN-2013 15:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-071	EW1301886-074	EW1301886-075	EW1301886-078	EW1301886-079
EA002 : pH (Soils)	CAS Number	2011						
pH Value		0.1	pH Unit			6.9		
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	5.5	21.2	33.8	37.3	28.8
FA150: Soil Classification based on Pa	rticle Size							
Clay (<2 µm)		1	%			60		
EA200: AS 4964 - 2004 Identification of	Ashestos in bulk	samples						
Asbestos Detected	1332-21-4	0.1	g/kg		No			
Asbestos Type	1332-21-4	1			-			
Sample weight (dry)		0.01	g		7320			
APPROVED IDENTIFIER:		1			C.OWLER			
EA200Q: Asbestos Quantification (non	-NATA)							
Weight Used for % Calculation		0.0001	kg		7.32			
Asbestos Containing Material	1332-21-4	0.1	g		<0.1			
Fibrous Asbestos		0.002	g		<0.002			
Asbestos Fines	1332-21-4	-	-		No			
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%		<0.01			
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%		<0.001			
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g			17.5		
Exchangeable Magnesium		0.1	meq/100g			10.5		
Exchangeable Potassium		0.1	meq/100g			0.1		
Exchangeable Sodium		0.1	meq/100g			1.7		
Cation Exchange Capacity		0.1	meq/100g			29.9		
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	7	<5	37	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	27	<1
Chromium	7440-47-3	2	mg/kg	<2	20	24	5	22
Copper	7440-50-8	5	mg/kg	<5	66	77	2740	61
Iron	7439-89-6	50	mg/kg			59200		
Lead	7439-92-1	5	mg/kg	<5	19	9	216	7
Manganese	7439-96-5	5	mg/kg	12	50	20	362	48
Nickel	7440-02-0	2	mg/kg	<2	3	4	14	4



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	QC401_26/06/13	TP7_0.3-0.4_27/06/13	TP7_0.5-0.6_27/06/13	TP6_0.2-0.3_27/06/13	TP6_0.5-0.6_27/06/13
	Cl	ient samplii	ng date / time	26-JUN-2013 15:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	, I OR	Unit	EW1301886-071	EW1301886-074	EW1301886-075	EW1301886-078	EW1301886-079
EG005T: Total Metals by ICB-AES - Conti	inued							
Selenium	7782-49-2	5	ma/ka	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	ma/ka	<5	41	24	500	9
EG035T: Total Pocovorable Moreury by	FIMS	-						
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	<20		<20	
EP004: Organic Matter								
Organic Matter		0.5	%			1.8		
Total Organic Carbon		0.5	%			1.1		
EP068A: Organochlorine Pesticides (OC	2)							
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	
^ 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	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	QC401_26/06/13	TP7_0.3-0.4_27/06/13	TP7_0.5-0.6_27/06/13	TP6_0.2-0.3_27/06/13	TP6_0.5-0.6_27/06/13
	Cli	ent sampli	ng date / time	26-JUN-2013 15:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-071	EW1301886-074	EW1301886-075	EW1301886-078	EW1301886-079
EP068A: Organochlorine Pesticides	(OC) - Continued		UTIN					
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 Pestici	des (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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5		<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5		<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5		<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1		<1	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5		<0.5	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5		<0.5	
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5		<0.5	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	QC401_26/06/13	TP7_0.3-0.4_27/06/13	TP7_0.5-0.6_27/06/13	TP6_0.2-0.3_27/06/13	TP6_0.5-0.6_27/06/13
	Cli	ent samplir	ng date / time	26-JUN-2013 15:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	S Number	LOR	Unit	EW1301886-071	EW1301886-074	EW1301886-075	EW1301886-078	EW1301886-079
EP075(SIM)A: Phenolic Compounds - Continued	5 Humbol							
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5		<0.5	
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2		<2	
EP075(SIM)B: Polynuclear Aromatic Hydrocarb	ons							
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	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5		<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5		<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5		<0.5	
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5	
Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5	<0.5		<0.5	
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5		<0.5	
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	<100		<100	
C29 - C36 Fraction		100	mg/kg	<100	<100		<100	
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50	<50		<50	
EP080/071: Total Recoverable Hydrocarbons - N	NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10	<10		<10	
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10	<10		<10	
>C10 - C16 Fraction		50	mg/kg	<50	<50		<50	
>C16 - C34 Fraction		100	mg/kg	<100	<100		<100	
>C34 - C40 Fraction		100	mg/kg	<100	<100		<100	



Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	QC401_26/06/13	TP7_0.3-0.4_27/06/13	TP7_0.5-0.6_27/06/13	TP6_0.2-0.3_27/06/13	TP6_0.5-0.6_27/06/13
	Cli	ent sampli	ing date / time	26-JUN-2013 15:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-071	EW1301886-074	EW1301886-075	EW1301886-078	EW1301886-079
EP080/071: Total Recoverable Hydi	rocarbons - NEPM 201	0 Draft - (Continued					
>C10 - C40 Fraction (sum)		50	mg/kg	<50	<50		<50	
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2		<0.2	
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	
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5		<0.5	
[^] Sum of BTEX		0.2	mg/kg	<0.2	<0.2		<0.2	
Naphthalene	91-20-3	1	mg/kg	<1	<1		<1	
EP068S: Organochlorine Pesticide	Surrogate							
Dibromo-DDE	21655-73-2	0.1	%	100	95.4		105	
EP068T: Organophosphorus Pestic	cide Surrogate							
DEF	78-48-8	0.1	%	108	106		108	
EP075(SIM)S: Phenolic Compound	Surrogates							
Phenol-d6	13127-88-3	0.1	%	86.2	90.0		69.2	
2-Chlorophenol-D4	93951-73-6	0.1	%	93.8	94.1		81.9	
2.4.6-Tribromophenol	118-79-6	0.1	%	93.2	93.4		77.2	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	100	98.6		99.0	
Anthracene-d10	1719-06-8	0.1	%	99.1	101		96.2	
4-Terphenyl-d14	1718-51-0	0.1	%	91.7	93.8		91.3	
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	110	96.6		81.1	
Toluene-D8	2037-26-5	0.1	%	87.7	87.3		89.6	
4-Bromofluorobenzene	460-00-4	0.1	%	89.7	85.0		86.0	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP5_0.5-0.6_27/06/13	QC102_27/06/13	TP5_0.9-1.0_27/06/13	TP1_0.0-0.1_27/06/13	TP1_0.9-1.0_27/06/13
	Cl	ient sampli	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-082	EW1301886-083	EW1301886-084	EW1301886-086	EW1301886-088
FA002 : pH (Soils)	er te ritamber							
pH Value		0.1	pH Unit			5.3	6.1	
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	26.1	26.1	25.2	26.0	9.6
EA150: Soil Classification based on Partic	cle Size							
Clay (<2 μm)		1	%			43	13	
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g			2.5	9.9	
Exchangeable Magnesium		0.1	meq/100g			11.6	2.6	
Exchangeable Potassium		0.1	meq/100g			0.2	0.3	
Exchangeable Sodium		0.1	meq/100g			1.1	0.2	
Cation Exchange Capacity		0.1	meq/100g			15.4	13.0	
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	33	<5	<5	6	<5
Cadmium	7440-43-9	1	mg/kg	4	4	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	13	12	17	13	14
Copper	7440-50-8	5	mg/kg	467	59	69	140	87
Iron	7439-89-6	50	mg/kg			33500	20300	
Lead	7439-92-1	5	mg/kg	71	9	<5	29	<5
Manganese	7439-96-5	5	mg/kg	94	37	<5	374	38
Nickel	7440-02-0	2	mg/kg	6	5	<2	11	9
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	112	104	15	68	33
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg	<20	<20		<20	
EP004: Organic Matter								
Organic Matter		0.5	%			1.0	3.8	
Total Organic Carbon		0.5	%			0.6	2.2	
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	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP5_0.5-0.6_27/06/13	QC102_27/06/13	TP5_0.9-1.0_27/06/13	TP1_0.0-0.1_27/06/13	TP1_0.9-1.0_27/06/13
	Cli	ient sampli	na date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
			Linit	EW1301886-082	FW1301886-083	FW1301886-084	FW1301886-086	EW1301886-088
Compound	CAS Number	LUR	Unit		2111001000 000	2111001000 004	2111001000 000	201001000 000
EP068A: Organochlorine Pesticides	(OC) - Continued	0.05	malka	<0.0E	<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	
↑ 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 Pesticio	des (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	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP5_0.5-0.6_27/06/13	QC102_27/06/13	TP5_0.9-1.0_27/06/13	TP1_0.0-0.1_27/06/13	TP1_0.9-1.0_27/06/13
	Cl	ient samplii	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-082	EW1301886-083	EW1301886-084	EW1301886-086	EW1301886-088
EP068B: Organophosphorus Pesticide	es (OP) - Continued							
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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5		<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5		<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5		<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1		<1	
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5		<0.5	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5		<0.5	
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5		<0.5	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5		<0.5	
Pentachlorophenol	87-86-5	2	mg/kg	<2	<2		<2	
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons							
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	
Phenanthrene	85-01-8	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5	
Pyrene	129-00-0	0.5	mg/kg	<0.5	<0.5		<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	<0.5		<0.5	
Chrysene	218-01-9	0.5	mg/kg	<0.5	<0.5		<0.5	
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	<0.5		<0.5	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP5_0.5-0.6_27/06/13	QC102_27/06/13	TP5_0.9-1.0_27/06/13	TP1_0.0-0.1_27/06/13	TP1_0.9-1.0_27/06/13
	Cli	ent sampli	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00
Compound	CAS Number	LOR	Unit	EW1301886-082	EW1301886-083	EW1301886-084	EW1301886-086	EW1301886-088
EP075(SIM)B: Polynuclear Aromatic Hy	drocarbons - Conti	inued						
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	<0.5		<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	<0.5		<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	<0.5		<0.5	
^ Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg	<0.5	<0.5		<0.5	
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5		<0.5	
EP080/071: Total Petroleum Hydrocarbo	ons							
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	<100		<100	
C29 - C36 Fraction		100	mg/kg	<100	<100		<100	
[^] C10 - C36 Fraction (sum)		50	mg/kg	<50	<50		<50	
EP080/071: Total Recoverable Hydroca	rbons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg	<10	<10		<10	
[^] C6 - C10 Fraction minus BTEX (F1)		10	mg/kg	<10	<10		<10	
>C10 - C16 Fraction		50	mg/kg	<50	<50		<50	
>C16 - C34 Fraction		100	mg/kg	<100	<100		<100	
>C34 - C40 Fraction		100	mg/kg	<100	<100		<100	
^ >C10 - C40 Fraction (sum)		50	mg/kg	<50	<50		<50	
EP080: BTEX								
Benzene	71-43-2	0.2	mg/kg	<0.2	<0.2		<0.2	
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	
EP080: BTEXN								
^ Total Xylenes	1330-20-7	0.5	mg/kg	<0.5	<0.5		<0.5	
Sum of BTEX		0.2	mg/kg	<0.2	<0.2		<0.2	
Naphthalene	91-20-3	1	mg/kg	<1	<1		<1	
EP068S: Organochlorine Pesticide Sur	rogate							
Dibromo-DDE	21655-73-2	0.1	%	97.3	88.6		85.0	
EP068T: Organophosphorus Pesticide	Surrogate							



Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		TP5_0.5-0.6_27/06/13	QC102_27/06/13	TP5_0.9-1.0_27/06/13	TP1_0.0-0.1_27/06/13	TP1_0.9-1.0_27/06/13		
	Cl	ient sampl	ing date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 10:00		
Compound	CAS Number	LOR	Unit	EW1301886-082	EW1301886-083	EW1301886-084	EW1301886-086	EW1301886-088		
EP068T: Organophosphorus Pesticide Surrogate - Continued										
DEF	78-48-8	0.1	%	104	97.8		92.3			
EP075(SIM)S: Phenolic Compound Surr	ogates									
Phenol-d6	13127-88-3	0.1	%	92.5	91.6		99.0			
2-Chlorophenol-D4	93951-73-6	0.1	%	95.4	97.9		107			
2.4.6-Tribromophenol	118-79-6	0.1	%	96.3	96.1		106			
EP075(SIM)T: PAH Surrogates										
2-Fluorobiphenyl	321-60-8	0.1	%	103	105		117			
Anthracene-d10	1719-06-8	0.1	%	99.8	95.7		116			
4-Terphenyl-d14	1718-51-0	0.1	%	92.5	86.9		108			
EP080S: TPH(V)/BTEX Surrogates										
1.2-Dichloroethane-D4	17060-07-0	0.1	%	92.0	92.3		112			
Toluene-D8	2037-26-5	0.1	%	102	86.1		90.8			
4-Bromofluorobenzene	460-00-4	0.1	%	98.4	80.7		84.4			



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP2_0.0-0.1_27/06/13	TP2_0.2-0.4_27/06/13	TP3_0.0-0.1_27/06/13	TP3_0.5-0.6_27/06/13	TP4_0.0-0.1_27/06/13
	C	lient sampli	ng date / time	27-JUN-2013 10:00				
Compound	CAS Number	LOR	Unit	EW1301886-089	EW1301886-090	EW1301886-092	EW1301886-093	EW1301886-095
FA002 : pH (Soils)	CAO Number							
pH Value		0.1	pH Unit				5.2	
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	17.1	31.6	30.5	30.9	26.5
EA150: Soil Classification based on Pa	rticle Size							
Clay (<2 μm)		1	%				54	
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	1				-		
Sample weight (dry)		0.01	g			599		
APPROVED IDENTIFIER:		1				C.OWLER		
EA200Q: Asbestos Quantification (non-	-NATA)							
Weight Used for % Calculation		0.0001	kg			6.00		
Asbestos Containing Material	1332-21-4	0.1	g			<0.1		
Fibrous Asbestos		0.002	g			<0.002		
Asbestos Fines	1332-21-4	-	-			No		
Asbestos Containing Material (ACM >7mm)	1332-21-4	0.01	%			<0.01		
Asbestos Fines and Fibrous Asbestos (<7mm)	1332-21-4	0.001	%			<0.001		
ED008: Exchangeable Cations								
Exchangeable Calcium		0.1	meq/100g				3.6	
Exchangeable Magnesium		0.1	meq/100g				9.1	
Exchangeable Potassium		0.1	meq/100g				0.2	
Exchangeable Sodium		0.1	meq/100g				2.9	
Cation Exchange Capacity		0.1	meq/100g				15.8	
EG005T: Total Metals by ICP-AES								
Arsenic	7440-38-2	5	mg/kg	<5	<5	8	<5	<5
Cadmium	7440-43-9	1	mg/kg	<1	<1	3	<1	<1
Chromium	7440-47-3	2	mg/kg	10	20	7	25	3
Copper	7440-50-8	5	mg/kg	10	82	589	80	287
Iron	7439-89-6	50	mg/kg				59000	
Lead	7439-92-1	5	mg/kg	9	7	120	12	126
Manganese	7439-96-5	5	mg/kg	428	<5	135	19	216
Nickel	7440-02-0	2	mg/kg	7	3	6	4	2



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP2_0.0-0.1_27/06/13	TP2_0.2-0.4_27/06/13	TP3_0.0-0.1_27/06/13	TP3_0.5-0.6_27/06/13	TP4_0.0-0.1_27/06/13
	Cli	ient sampli	ng date / time	27-JUN-2013 10:00				
Compound	CAS Number	I OR	L Init	EW1301886-089	EW1301886-090	EW1301886-092	EW1301886-093	EW1301886-095
		LOIX	Onn					
Solonium		5	ma/ka	<5	<5	<5	<5	<5
Zine	7782-49-2	5	mg/kg	19	12	152	25	32
	7440-00-0	5	ilig/kg	10	12	152	20	52
EG0351: Total Recoverable Mercury by	7420.07.6	0.1	ma/ka	<0.1	<0.1	<0.1	<0.1	<0.1
	7439-97-0	0.1	ilig/kg	-0.1	-0.1	-0.1	-0.1	-0.1
EK055: Ammonia as N	7664 41 7	20	ma/ka		<20	<20		<20
	7004-41-7	20	iiig/kg		~20	~20		~20
EP004: Organic Matter		0.5	0/				10	
		0.5	70 0/				1.5	
Total Organic Carbon		0.5	70				1.1	
EP068A: Organochlorine Pesticides (O	C)	0.05	ma/ka		<0.05	<0.05		<0.05
	319-84-6	0.05	mg/kg		<0.05	<0.05		<0.05
Hexachiorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05	<0.05		<0.05
	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
Hentachler	319-86-8	0.05	mg/kg		<0.05	<0.05		<0.05
neptaction	76-44-8	0.05	mg/kg		<0.05	<0.05		<0.05
Alarin	309-00-2	0.05	mg/kg		<0.05	<0.05		<0.05
	1024-57-3	0.05	mg/kg		<0.05	<0.05		<0.05
trana Chlordane (sum)		0.05	mg/kg		<0.05	<0.05		<0.05
clabs Endecultar	5103-74-2	0.05	mg/kg		<0.05	<0.05		<0.05
aipna-Endosunan	959-98-8	0.05	mg/kg		<0.05	<0.05		<0.05
Dialdrin	5103-71-9	0.05	mg/kg		<0.05	<0.05		<0.05
	72.55.0	0.05	mg/kg		<0.05	<0.05		<0.05
Endrin	72-55-9	0.05	mg/kg		<0.05	<0.05		<0.05
bota Endosulfan	72-20-0	0.05	mg/kg		<0.05	<0.05		<0.05
^ Endosulfan (sum)	33213-03-9	0.05	mg/kg		<0.05	<0.05		<0.05
	72.54.9	0.05	mg/kg		<0.05	<0.05		<0.05
Endrin aldehyde	7424 02 4	0.05	mg/kg		<0.05	<0.05		<0.05
Endosulfan sulfate	1031 07 9	0.05	mg/kg		<0.05	<0.05		<0.05
	FO 20 2	0.00	mg/kg		<0.00	<0.2		<0.2
Endrin ketone	50-29-3	0.2	mg/kg		<0.05	<0.05		<0.2
Methoxychlor	53494-70-5	0.05	mg/kg		<0.00	<0.00		<0.00
wethoxychior	12-43-5	0.2	iiig/Kg		~ 0.2	~0.2		~0.2



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP2_0.0-0.1_27/06/13	TP2_0.2-0.4_27/06/13	TP3_0.0-0.1_27/06/13	TP3_0.5-0.6_27/06/13	TP4_0.0-0.1_27/06/13
	Cl	ient sampli	ng date / time	27-JUN-2013 10:00				
Compound	CAS Number	I OR	Unit	EW1301886-089	EW1301886-090	EW1301886-092	EW1301886-093	EW1301886-095
EP068A: Organochloring Posticidos								
Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	ma/ka		<0.05	<0.05		<0.05
^ Sum of DDD + DDE + DDT		0.05	mg/kg		< 0.05	< 0.05		<0.05
EP068B: Organophosphorus Pestici	des (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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg		<0.5	<0.5		<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	<0.5		<0.5
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	<0.5		<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	<1		<1
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	<0.5		<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	<0.5		<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	<0.5		<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	<0.5		<0.5
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg		<0.5	<0.5		<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	<0.5		<0.5



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP2_0.0-0.1_27/06/13	TP2_0.2-0.4_27/06/13	TP3_0.0-0.1_27/06/13	TP3_0.5-0.6_27/06/13	TP4_0.0-0.1_27/06/13
	Cli	ient samplii	ng date / time	27-JUN-2013 10:00				
Compound	CAS Number	LOR	Unit	EW1301886-089	EW1301886-090	EW1301886-092	EW1301886-093	EW1301886-095
EP075(SIM)A: Phenolic Compounds - Con	otinued							
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	<0.5		<0.5
Pentachlorophenol	87-86-5	2	mg/kg		<2	<2		<2
EP075(SIM)B: Polynuclear Aromatic Hydr	rocarbons							
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
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	<0.5		<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	<0.5		<0.5
Pyrene	129-00-0	0.5	mg/kg		<0.5	<0.5		<0.5
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	<0.5		<0.5
Chrysene	218-01-9	0.5	mg/kg		<0.5	<0.5		<0.5
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	<0.5		<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	<0.5		<0.5
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	<0.5		<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	<0.5		<0.5
[^] Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg		<0.5	<0.5		<0.5
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg		<0.5	<0.5		<0.5
EP080/071: Total Petroleum Hydrocarbon	ıs							
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	<100		<100
C29 - C36 Fraction		100	mg/kg		<100	<100		<100
[^] C10 - C36 Fraction (sum)		50	mg/kg		<50	<50		<50
EP080/071: Total Recoverable Hydrocarb	ons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg		<10	<10		<10
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg		<10	<10		<10
>C10 - C16 Fraction		50	mg/kg		<50	<50		<50
>C16 - C34 Fraction		100	mg/kg		<100	<100		<100
>C34 - C40 Fraction		100	mg/kg		<100	<100		<100



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID			TP2_0.0-0.1_27/06/13	TP2_0.2-0.4_27/06/13	TP3_0.0-0.1_27/06/13	TP3_0.5-0.6_27/06/13	TP4_0.0-0.1_27/06/13		
	Cl	ient sampl	ing date / time	27-JUN-2013 10:00						
Compound	CAS Number	LOR	Unit	EW1301886-089	EW1301886-090	EW1301886-092	EW1301886-093	EW1301886-095		
EP080/071: Total Recoverable Hyd	drocarbons - NEPM 201	0 Draft -	Continued							
>C10 - C40 Fraction (sum)		50	mg/kg		<50	<50		<50		
EP080: BTEX										
Benzene	71-43-2	0.2	mg/kg		<0.2	<0.2		<0.2		
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		
EP080: BTEXN										
1 Total Xylenes	1330-20-7	0.5	mg/kg		<0.5	<0.5		<0.5		
[^] Sum of BTEX		0.2	mg/kg		<0.2	<0.2		<0.2		
Naphthalene	91-20-3	1	mg/kg		<1	<1		<1		
EP068S: Organochlorine Pesticide Surrogate										
Dibromo-DDE	21655-73-2	0.1	%		106	94.3		92.0		
EP068T: Organophosphorus Pest	icide Surrogate									
DEF	78-48-8	0.1	%		110	100		99.8		
EP075(SIM)S: Phenolic Compound	d Surrogates									
Phenol-d6	13127-88-3	0.1	%		91.7	88.0		95.1		
2-Chlorophenol-D4	93951-73-6	0.1	%		92.4	97.6		103		
2.4.6-Tribromophenol	118-79-6	0.1	%		98.1	109		100		
EP075(SIM)T: PAH Surrogates										
2-Fluorobiphenyl	321-60-8	0.1	%		110	106		112		
Anthracene-d10	1719-06-8	0.1	%		99.7	105		102		
4-Terphenyl-d14	1718-51-0	0.1	%		86.7	98.0		96.5		
EP080S: TPH(V)/BTEX Surrogates										
1.2-Dichloroethane-D4	17060-07-0	0.1	%		90.9	91.3		91.0		
Toluene-D8	2037-26-5	0.1	%		84.3	82.8		83.5		
4-Bromofluorobenzene	460-00-4	0.1	%		80.2	70.6		76.2		



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP4_0.5-0.6_27/06/13	QC402_27/06/13	OL1_0.0-0.2_27/06/13	OL1_0.3-0.5_27/06/13	OL2_0.0-0.2_27/06/13
	CI	ient sampli	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 15:00	27-JUN-2013 15:00	27-JUN-2013 15:00
Compound	CAS Number	I OR	Unit	EW1301886-096	EW1301886-098	EW1301886-100	EW1301886-101	EW1301886-102
EA055: Moisture Content	CAS Number	2011	- Crime					
Moisture Content (dried @ 103°C)		1.0	%	17.9	2.8	23.3	25.0	21.9
Arsenic	7440-38-2	5	mg/kg	9	<5	<5	<5	32
Cadmium	7440-43-9	1	mg/kg	<1	<1	<1	<1	8
Chromium	7440-47-3	2	mg/kg	16	<2	17	21	10
Copper	7440-50-8	5	mg/kg	78	<5	48	66	1150
Lead	7439-92-1	5	mg/kg	22	<5	10	9	383
Manganese	7439-96-5	5	mg/kg	21	8	24	12	148
Nickel	7440-02-0	2	mg/kg	3	<2	3	5	12
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Zinc	7440-66-6	5	mg/kg	16	<5	13	20	498
EG035T: Total Recoverable Mercury by	FIMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg		<20			
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			
^ Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05			



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	TP4_0.5-0.6_27/06/13	QC402_27/06/13	OL1_0.0-0.2_27/06/13	OL1_0.3-0.5_27/06/13	OL2_0.0-0.2_27/06/13
	Cli	ient sampli	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 15:00	27-JUN-2013 15:00	27-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-096	EW1301886-098	EW1301886-100	EW1301886-101	EW1301886-102
EP068A: Organochlorine Pesticides	(OC) - Continued							
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 Pesticio	des (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)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg		<0.5			
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5			
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5			
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1			


Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID		TP4_0.5-0.6_27/06/13	QC402_27/06/13	OL1_0.0-0.2_27/06/13	OL1_0.3-0.5_27/06/13	OL2_0.0-0.2_27/06/13	
	CI	Client sampling date / time		27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 15:00	27-JUN-2013 15:00	27-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-096	EW1301886-098	EW1301886-100	EW1301886-101	EW1301886-102
EP075(SIM)A: Phenolic Compounds - Co	ontinued							
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5			
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5			
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5			
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5			
4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg		<0.5			
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5			
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5			
Pentachlorophenol	87-86-5	2	mg/kg		<2			
EP075(SIM)B: Polynuclear Aromatic Hyd	drocarbons							
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			
Fluorene	86-73-7	0.5	mg/kg		<0.5			
Phenanthrene	85-01-8	0.5	mg/kg		<0.5			
Anthracene	120-12-7	0.5	mg/kg		<0.5			
Fluoranthene	206-44-0	0.5	mg/kg		<0.5			
Pyrene	129-00-0	0.5	mg/kg		<0.5			
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5			
Chrysene	218-01-9	0.5	mg/kg		<0.5			
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5			
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5			
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5			
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5			
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		<0.5			
[^] Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg		<0.5			
Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg		<0.5			
EP080/071: Total Petroleum Hydrocarbo	ons							
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			



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID		TP4_0.5-0.6_27/06/13	QC402_27/06/13	OL1_0.0-0.2_27/06/13	OL1_0.3-0.5_27/06/13	OL2_0.0-0.2_27/06/13	
	Cli	ent sampli	ng date / time	27-JUN-2013 10:00	27-JUN-2013 10:00	27-JUN-2013 15:00	27-JUN-2013 15:00	27-JUN-2013 15:00
Compound	CAS Number	LOR	Unit	EW1301886-096	EW1301886-098	EW1301886-100	EW1301886-101	EW1301886-102
EP080/071: Total Recoverable Hydro	carbons - NEPM 201	0 Draft						
C6 - C10 Fraction		10	mg/kg		<10			
C6 - C10 Fraction minus BTEX (F1)		10	mg/kg		<10			
>C10 - C16 Fraction		50	mg/kg		<50			
>C16 - C34 Fraction		100	mg/kg		<100			
>C34 - C40 Fraction		100	mg/kg		<100			
^ >C10 - C40 Fraction (sum)		50	mg/kg		<50			
EP080: BTEX								
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			
EP080: BTEXN								
1 Total Xylenes	1330-20-7	0.5	mg/kg		<0.5			
[^] Sum of BTEX		0.2	mg/kg		<0.2			
Naphthalene	91-20-3	1	mg/kg		<1			
EP068S: Organochlorine Pesticide S	urrogate							
Dibromo-DDE	21655-73-2	0.1	%		104			
EP068T: Organophosphorus Pesticio	de Surrogate							
DEF	78-48-8	0.1	%		102			
EP075(SIM)S: Phenolic Compound S	urrogates							
Phenol-d6	13127-88-3	0.1	%		87.6			
2-Chlorophenol-D4	93951-73-6	0.1	%		98.8			
2.4.6-Tribromophenol	118-79-6	0.1	%		93.7			
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%		102			
Anthracene-d10	1719-06-8	0.1	%		99.6			
4-Terphenyl-d14	1718-51-0	0.1	%		94.5			
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%		116			
Toluene-D8	2037-26-5	0.1	%		102			
4-Bromofluorobenzene	460-00-4	0.1	%		95.8			



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID		OL2_0.3-0.5_27/06/13	 	 	
	Cli	ent sampli	ing date / time	27-JUN-2013 15:00	 	
Compound	CAS Number	LOR	Unit	EW1301886-103	 	
EA055: Moisture Content						
Moisture Content (dried @ 103°C)		1.0	%	30.8	 	
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	20	 	
Copper	7440-50-8	5	mg/kg	111	 	
Lead	7439-92-1	5	mg/kg	18	 	
Manganese	7439-96-5	5	mg/kg	26	 	
Nickel	7440-02-0	2	mg/kg	6	 	
Selenium	7782-49-2	5	mg/kg	<5	 	
Zinc	7440-66-6	5	mg/kg	78	 	
EG035T: Total Recoverable Mercury by	FIMS					
Mercury	7439-97-6	0.1	mg/kg	<0.1	 	



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	QC300_25/06/13	QC301_26/06/13	QC302_27/06/13	
	Cl	lient samplir	ng date / time	25-JUN-2013 15:00	26-JUN-2013 15:00	27-JUN-2013 10:00	
Compound	CAS Number	LOR	Unit	EW1301886-022	EW1301886-072	EW1301886-099	
EG020T: Total Metals by ICP-MS							
Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	<0.0001	
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	<0.001	
Copper	7440-50-8	0.001	mg/L	<0.001	<0.001	<0.001	
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	<0.001	
Manganese	7439-96-5	0.001	mg/L	<0.001	<0.001	<0.001	
Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	
Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	<0.005	
EG035T: Total Recoverable Mercury by F	IMS						
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	
EP068A: Organochlorine Pesticides (OC)							
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5	<0.5	
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5	<0.5	
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5	<0.5	
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5	<0.5	
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5	<0.5	
Heptachlor	76-44-8	0.5	µg/L	<0.5	<0.5	<0.5	
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5	<0.5	
Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	<0.5	<0.5	
trans-Chlordane	5103-74-2	0.5	µg/L	<0.5	<0.5	<0.5	
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5	<0.5	
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5	<0.5	
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5	<0.5	
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5	<0.5	
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5	<0.5	
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5	<0.5	
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5	<0.5	
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5	<0.5	
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5	<0.5	
4.4`-DDT	50-29-3	2.0	µg/L	<2.0	<2.0	<2.0	
Endrin ketone	53494-70-5	0.5	µg/L	<0.5	<0.5	<0.5	
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0	<2.0	



Sub-Matrix: WATER (Matrix: WATER)		Client sample ID	QC300_25/06/13	QC301_26/06/13	QC302_27/06/13	
	Client sa	mpling date / time	25-JUN-2013 15:00	26-JUN-2013 15:00	27-JUN-2013 10:00	
Compound	mber LO	R Unit	EW1301886-022	EW1301886-072	EW1301886-099	
EP068A: Organochlorine Pesticides (OC) - Continue						
Total Chlordane (sum)	0.5	μg/L	<0.5	<0.5	<0.5	
Sum of DDD + DDE + DDT	0.5	μg/L	<0.5	<0.5	<0.5	
Sum of Aldrin + Dieldrin 309-00-2/60	-57-1 0.8	µg/L	<0.5	<0.5	<0.5	
EP068B: Organophosphorus Pesticides (OP)						
Dichlorvos 62	-73-7 0.8	μg/L	<0.5	<0.5	<0.5	
Demeton-S-methyl 919	-86-8 0.5	μg/L	<0.5	<0.5	<0.5	
Monocrotophos 6923	-22-4 2.0	µg/L	<2.0	<2.0	<2.0	
Dimethoate 60	-51-5 0.5	μg/L	<0.5	<0.5	<0.5	
Diazinon 333	-41-5 0.5	μg/L	<0.5	<0.5	<0.5	
Chlorpyrifos-methyl 5598	-13-0 0.5	μg/L	<0.5	<0.5	<0.5	
Parathion-methyl 298	-00-0 2.0	µg/L	<2.0	<2.0	<2.0	
Malathion 121	-75-5 0.5	µg/L	<0.5	<0.5	<0.5	
Fenthion 55	-38-9 0.5	μg/L	<0.5	<0.5	<0.5	
Chlorpyrifos 2921	-88-2 0.5	µg/L	<0.5	<0.5	<0.5	
Parathion 56	-38-2 2.0	µg/L	<2.0	<2.0	<2.0	
Pirimphos-ethyl 23505	-41-1 0.5	µg/L	<0.5	<0.5	<0.5	
Chlorfenvinphos 470	-90-6 0.8	µg/L	<0.5	<0.5	<0.5	
Bromophos-ethyl 4824	-78-6 0.5	µg/L	<0.5	<0.5	<0.5	
Fenamiphos 22224	-92-6 0.5	μg/L	<0.5	<0.5	<0.5	
Prothiofos 34643	-46-4 0.5	µg/L	<0.5	<0.5	<0.5	
Ethion 563	-12-2 0.5	μg/L	<0.5	<0.5	<0.5	
Carbophenothion 786	-19-6 0.5	µg/L	<0.5	<0.5	<0.5	
Azinphos Methyl 86	-50-0 0.8	μg/L	<0.5	<0.5	<0.5	
EP075(SIM)A: Phenolic Compounds						
Phenol 108	-95-2 1.0	µg/L	<1.0	<1.0	<1.0	
2-Chlorophenol 95	-57-8 1.0	µg/L	<1.0	<1.0	<1.0	
2-Methylphenol 95	-48-7 1.0	µg/L	<1.0	<1.0	<1.0	
3- & 4-Methylphenol 1319	-77-3 2.0	µg/L	<2.0	<2.0	<2.0	
2-Nitrophenol 88	-75-5 1.0	µg/L	<1.0	<1.0	<1.0	
2.4-Dimethylphenol 105	-67-9 1.0	µg/L	<1.0	<1.0	<1.0	
2.4-Dichlorophenol 120	-83-2 1.0	µg/L	<1.0	<1.0	<1.0	
2.6-Dichlorophenol 87	-65-0 1.0	µg/L	<1.0	<1.0	<1.0	
4-Chloro-3-Methylphenol 59	-50-7 1.0	µg/L	<1.0	<1.0	<1.0	



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	QC300_25/06/13	QC301_26/06/13	QC302_27/06/13	
	Cl	ient sampli	ng date / time	25-JUN-2013 15:00	26-JUN-2013 15:00	27-JUN-2013 10:00	
Compound	CAS Number	LOR	Unit	EW1301886-022	EW1301886-072	EW1301886-099	
EP075(SIM)A: Phenolic Compounds - Cor	ntinued						
2.4.6-Trichlorophenol	88-06-2	1.0	μg/L	<1.0	<1.0	<1.0	
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	
EP075(SIM)B: Polynuclear Aromatic Hyd							
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	
[^] Sum of polycyclic aromatic hydrocarbons		0.5	µg/L	<0.5	<0.5	<0.5	
^ Benzo(a)pyrene TEQ (WHO)		0.5	µg/L	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarbor	ıs						
C6 - C9 Fraction		20	µg/L	<20	<20	<20	
C10 - C14 Fraction		50	µg/L	<50	<50	<50	
C15 - C28 Fraction		100	µg/L	<100	<100	<100	
C29 - C36 Fraction		50	µg/L	<50	<50	<50	
C10 - C36 Fraction (sum)		50	µg/L	<50	<50	<50	
EP080/071: Total Recoverable Hydrocarb	ons - NEPM 201	0 Draft					
C6 - C10 Fraction		20	µg/L	<20	<20	<20	
C6 - C10 Fraction minus BTEX (F1)		20	µg/L	<20	<20	<20	
>C10 - C16 Fraction		100	µg/L	<100	<100	<100	
>C16 - C34 Fraction		100	µg/L	<100	<100	<100	



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	QC300_25/06/13	QC301_26/06/13	QC302_27/06/13	
	CI	ient sampli	ng date / time	25-JUN-2013 15:00	26-JUN-2013 15:00	27-JUN-2013 10:00	
Compound	CAS Number	LOR	Unit	EW1301886-022	EW1301886-072	EW1301886-099	
EP080/071: Total Recoverable Hydro	ocarbons - NEPM 201	0 Draft - 0	Continued				
>C34 - C40 Fraction		100	µg/L	<100	<100	<100	
^ >C10 - C40 Fraction (sum)		100	µg/L	<100	<100	<100	
EP080: BTEXN							
Benzene	71-43-2	1	µg/L	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	
↑ Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	
[^] Sum of BTEX		1	µg/L	<1	<1	<1	
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	
EP068S: Organochlorine Pesticide S	Surrogate						
Dibromo-DDE	21655-73-2	0.1	%	106	58.9	90.0	
EP068T: Organophosphorus Pestici	de Surrogate						
DEF	78-48-8	0.1	%	78.8	57.5	85.5	
EP075(SIM)S: Phenolic Compound S	Surrogates						
Phenol-d6	13127-88-3	0.1	%	40.3	41.7	40.2	
2-Chlorophenol-D4	93951-73-6	0.1	%	63.7	81.2	78.2	
2.4.6-Tribromophenol	118-79-6	0.1	%	80.0	89.2	79.4	
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.1	%	75.6	85.7	76.5	
Anthracene-d10	1719-06-8	0.1	%	75.1	84.8	77.1	
4-Terphenyl-d14	1718-51-0	0.1	%	67.6	74.1	67.9	
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.1	%	80.6	82.4	82.1	
Toluene-D8	2037-26-5	0.1	%	85.9	89.8	87.1	
4-Bromofluorobenzene	460-00-4	0.1	%	93.9	103	94.3	



Descriptive Results

Sub-Matrix: SOIL

Method: Compound	Client sample ID - Client sampling date / time	Analytical Results
EA200: AS 4964 - 2004 Identification of Asbesto	os in bulk samples	
EA200: Description	TP20_0.5-0.6_26/06/13 - 26-JUN-2013 10:00	Mid grey-brown clay soil with some grey rocks plus some glass debris and several small friable fragments of asbestos fibre board approx 5 x 5 x 2mm
EA200: Description	TP16A_0.9-1.0_26/06/13 - 26-JUN-2013 10:00	Three pieces of bonded asbestos cement sheeting approx 118 x 40 x 5mm
EA200: Description	TP16B_0.1-0.2_26/06/13 - 26-JUN-2013 10:00	Several pieces of bonded asbestos cement sheeting approx 45 x 30 x 5mm
EA200: Description	TP15_0.0-0.1_26/06/13 - 26-JUN-2013 10:00	Mid brown clay soil with some slag grains plus plenty of vegetation and one small piece of degraded and friable asbestos fibre board approx 6 x 5 x 3mm
EA200: Description	TP10_0.0-0.1_26/06/13 - 26-JUN-2013 15:00	Mid brown clay soil with some grey rocks plus some concrete debris and plenty of pieces of bonded asbestos vinyl tile like material approx 40 x 25 x 3mm and several small friable asbestos fibre bundles approx 4 x 1 x 1mm
EA200: Description	TP11_0.1-0.2_26/06/13 - 26-JUN-2013 15:00	Mid brown clay soil with some concrete debris plus some slag grains and two small fragments of bonded asbestos cement sheeting approx 6 x 4 x 3mm
EA200: Description	TP12A_0.1-0.2_26/06/13 - 26-JUN-2013 15:00	One piece of bonded asbestos cement sheeting approx 90 x 39 x 5mm
EA200: Description	TP12_0.00.1_26/06/13 - 26-JUN-2013 15:00	Mid grey-brown clay soil with some quartz and slag grains and plenty of vegetation
EA200: Description	TP7_0.3-0.4_27/06/13 - 27-JUN-2013 10:00	Dark grey-brown clay soil with some small red rocks plus some vegetation
EA200: Description	TP3_0.0-0.1_27/06/13 - 27-JUN-2013 10:00	Dark grey-brown clay soil with some small grey rocks plus some vegetation

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Work Order :	EW1301886
Client :	PORT KEMBLA COPPER
Project :	137623028

Surrogate Control Limits

Sub-Matrix: SOIL		Recovery	Limits (%)
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
Dibromo-DDE	21655-73-2	49	145
EP068T: Organophosphorus Pesticide Surrogate			
DEF	78-48-8	32	142
EP075(SIM)S: Phenolic Compound Surrogates			
Phenol-d6	13127-88-3	63	127
2-Chlorophenol-D4	93951-73-6	64	126
2.4.6-Tribromophenol	118-79-6	36	136
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	64	130
Anthracene-d10	1719-06-8	69	135
4-Terphenyl-d14	1718-51-0	64	136
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
Sub-Matrix: WATER	[Recovery	Limits (%)
Compound	CAS Number	Low	High
EP068S: Organochlorine Pesticide Surrogate			
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE	21655-73-2	30	120
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate	21655-73-2	30	120
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF	21655-73-2 78-48-8	30 26.8	120
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates	21655-73-2 78-48-8	30 26.8	120 129
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6	21655-73-2 78-48-8 13127-88-3	30 26.8 10.0	120 129 44
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4	21655-73-2 78-48-8 13127-88-3 93951-73-6	30 26.8 10.0 15.9	120 129 44 102
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6	30 26.8 10.0 15.9 17	120 129 44 102 125
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6	30 26.8 10.0 15.9 17	120 129 44 102 125
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8	30 26.8 10.0 15.9 17 20.4	120 129 44 102 125 112
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl Anthracene-d10	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8 1719-06-8	30 26.8 10.0 15.9 17 20.4 29.6	120 129 44 102 125 112 112 118
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl Anthracene-d10 4-Terphenyl-d14	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8 1719-06-8 1718-51-0	30 26.8 10.0 15.9 17 20.4 29.6 21.5	120 129 44 102 125 112 112 118 126
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl Anthracene-d10 4-Terphenyl-d14 EP080S: TPH(V)/BTEX Surrogates	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8 1719-06-8 1718-51-0	30 26.8 10.0 15.9 17 20.4 29.6 21.5	120 129 44 102 125 112 112 118 126
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl Anthracene-d10 4-Terphenyl-d14 EP080S: TPH(V)/BTEX Surrogates 1.2-Dichloroethane-D4	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8 1719-06-8 1719-06-8 1718-51-0	30 26.8 10.0 15.9 17 20.4 29.6 21.5 71	120 129 44 102 125 112 112 118 126 137
EP068S: Organochlorine Pesticide Surrogate Dibromo-DDE EP068T: Organophosphorus Pesticide Surrogate DEF EP075(SIM)S: Phenolic Compound Surrogates Phenol-d6 2-Chlorophenol-D4 2.4.6-Tribromophenol EP075(SIM)T: PAH Surrogates 2-Fluorobiphenyl Anthracene-d10 4-Terphenyl-d14 EP080S: TPH(V)/BTEX Surrogates 1.2-Dichloroethane-D4 Toluene-D8	21655-73-2 78-48-8 13127-88-3 93951-73-6 118-79-6 321-60-8 1719-06-8 1719-06-8 1718-51-0 17060-07-0 2037-26-5	30 26.8 10.0 15.9 17 20.4 29.6 21.5 71 79	120 129 44 102 125 112 112 118 126 137 131







Environmental Division

QUALITY CONTROL REPORT

Work Order	: EW1301886	Page	: 1 of 36
Client		Laboratory	: Environmental Division NSW South Coast
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	SYDNEY	Address	: 99 Kenny Street, Wollongong 2500
			Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541
			AUSTRALIA
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project	: 137623028	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: PKC-PRIMARY SCHOOL		
C-O-C number	:	Date Samples Received	: 27-JUN-2013
Sampler	: KE YE	Issue Date	: 10-JUL-2013
Order number	:		
		No. of samples received	: 103
Quote number	:	No. of samples analysed	: 64

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

Address 99 Kenny Street, Wollongong 2500

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	: 137623028



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.

Signatories

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.

ACCREDITATION

Laboratory 825 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.

	procedures specified in 21 of ICT	art II.				
Accredited for	Signatories	Position	Accreditation Category			
ISO/IEC 17025.	Ankit Joshi	Inorganic Chemist	Sydney Inorganics			
			Sydney Inorganics			
	Celine Conceicao	Senior Spectroscopist	Sydney Inorganics			
	Christopher Owler	Team Leader - Asbestos	Newcastle - Asbestos			
	Di-An Dao		Sydney Inorganics			
	Edwandy Fadjar Organic Coordinator		Sydney Inorganics			
	Hamish Murray	Supervisor - Soils	Newcastle - Inorganics			
	Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics			
	Pabi Subba	Senior Organic Chemist	Sydney Inorganics			
			Sydney Organics			
			Sydney Organics			
	Phalak Inthaksone	Laboratory Manager - Organics	Sydney Organics			
			Sydney Organics			



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: 2945308)								
ES1314693-001	Anonymous	EA002: pH Value		0.1	pH Unit	4.3	4.3	0.0	0% - 20%
EW1301886-024	TP25_0.0-0.1_26/06/13	EA002: pH Value		0.1	pH Unit	5.6	5.7	1.8	0% - 20%
EA002 : pH (Soils) (QC Lot: 2945314)								
EW1301886-084	TP5_0.9-1.0_27/06/13	EA002: pH Value		0.1	pH Unit	5.3	5.2	0.0	0% - 20%
EA055: Moisture Co	ntent (QC Lot: 2946255)								
ES1314992-003	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	12.5	10.8	14.6	0% - 50%
EW1301886-014	TP28_0.9-1.0_25/06/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	30.2	30.4	0.9	0% - 20%
EA055: Moisture Co	ntent (QC Lot: 2946256)								
EW1301886-034	TP20 0.5-0.6 26/06/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	29.8	27.8	6.8	0% - 20%
EA055: Moisture Co	ntent (QC Lot: 2946353)								
EW1301886-056	TP10 0.0-0.1 26/06/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	31.2	31.4	0.8	0% - 20%
EW1301886-075	TP7 0.5-0.6 27/06/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	33.8	32.9	2.9	0% - 20%
EA055: Moisture Co	ntent (QC Lot: 2946354)						1		
EW1301886-090	TP2_0.2-0.4_27/06/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	31.6	32.8	4.0	0% - 20%
ED008: Exchangeab	le Cations (QC Lot: 294949	0)							
EW1301886-005	TP29_0.3-0.4_25/06/13	ED008: Exchangeable Calcium		0.1	meq/100g	1.2	1.2	0.0	0% - 20%
		ED008: Exchangeable Magnesium		0.1	meq/100g	1.1	1.3	18.2	0% - 20%
		ED008: Exchangeable Potassium		0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
		ED008: Exchangeable Sodium		0.1	meq/100g	0.2	0.3	0.0	0% - 20%
		ED008: Cation Exchange Capacity		0.1	meq/100g	2.5	2.8	11.0	0% - 20%
EW1301886-061	TP11_0.9-1.0_26/06/13	ED008: Exchangeable Calcium		0.1	meq/100g	0.7	0.7	0.0	0% - 20%
		ED008: Exchangeable Magnesium		0.1	meq/100g	12.6	12.7	0.0	0% - 20%
		ED008: Exchangeable Potassium		0.1	meq/100g	<0.1	<0.1	0.0	0% - 20%
		ED008: Exchangeable Sodium		0.1	meq/100g	6.3	6.3	0.0	0% - 20%
		ED008: Cation Exchange Capacity		0.1	meq/100g	19.7	19.8	0.0	0% - 20%
EG005T: Total Metal	s by ICP-AES (QC Lot: 2940	5073)							
EW1301886-001	TP30_0.0-0.1_25/06/13	EG005T: Cadmium	7440-43-9	1	mg/kg	10	10	0.0	0% - 50%
		EG005T: Chromium	7440-47-3	2	mg/kg	13	15	15.7	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	11	11	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	201	272	# 30.0	0% - 20%
		EG005T: Copper	7440-50-8	5	mg/kg	2820	3370	17.5	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	657	766	15.3	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	296	359	19.1	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	7	9	15.4	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	415	565	# 30.7	0% - 20%

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	137623028



Sub-Matrix: SOIL						Laboratory	Duplicate (DUP) Repor	t	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG005T: Total Metal	s by ICP-AES (QC Lot: 29	46073) - continued							
EW1301886-001	TP30_0.0-0.1_25/06/13	EG005T: Iron	7439-89-6	50	mg/kg	42500	49900	16.1	0% - 20%
EW1301886-023	QC400_25/06/13	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	<2	<2	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	10	10	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	1410	1370	2.9	0% - 20%
EG005T: Total Metal	s by ICP-AES (QC Lot: 29	46075)							
EW1301886-042	TP15 0.0-0.1 26/06/13	EG005T: Cadmium	7440-43-9	1	mg/kg	4	4	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	8	8	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	10	10	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	8	13	44.8	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	1620	1350	18.1	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	239	266	10.7	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	549	577	4.9	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	231	231	0.0	0% - 20%
		EG005T: Iron	7439-89-6	50	mg/kg	13200	13600	2.7	0% - 20%
EW1301886-059	TP11_0.1-0.2_26/06/13	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	19	13	40.4	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	6	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	7	32.9	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	201	179	11.7	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	21	45	70.9	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	39	57	37.7	0% - 50%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	92	94	2.2	0% - 50%
		EG005T: Iron	7439-89-6	50	mg/kg	21000	23200	10.1	0% - 20%
EG005T: Total Metal	s by ICP-AES (QC Lot: 29	46883)							
ES1314698-019	Anonymous	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	7	7	0.0	No Limit
		EG005T: Nickel	7440-02-0	2	mg/kg	4	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	14	13	0.0	No Limit
		EG005T: Lead	7439-92-1	5	mg/kg	26	24	4.0	No Limit
		EG005T ⁻ Manganese	7439-96-5	5	mg/kg	204	191	6.6	0% - 20%

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	137623028



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	s by ICP-AES (QC Lot: 29	46883) - continued							
ES1314698-019	Anonymous	EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	62	57	8.2	0% - 50%
		EG005T: Iron	7439-89-6	50	mg/kg	12500	12100	2.9	0% - 20%
EW1301886-090	TP2_0.2-0.4_27/06/13	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	20	21	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	3	3	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	82	91	10.0	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	7	6	0.0	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	12	12	0.0	No Limit
		EG005T: Iron	7439-89-6	50	mg/kg	47200	53000	11.6	0% - 20%
EG035T: Total Reco	verable Mercury by FIMS	(QC Lot: 2946074)							
EW1301886-001	TP30_0.0-0.1_25/06/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	1.2	1.1	8.5	0% - 50%
EW1301886-023	QC400_25/06/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Reco	verable Mercury by FIMS	(QC Lot: 2946076)							
EW1301886-042	TP15_0.0-0.1_26/06/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	0.2	0.3	49.9	No Limit
EW1301886-059	TP11_0.1-0.2_26/06/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EG035T: Total Reco	verable Mercury by FIMS	(QC Lot: 2946884)							
ES1314698-019	Anonymous	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EW1301886-090	TP2_0.2-0.4_27/06/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EK055: Ammonia as	N (QC Lot: 2954700)							I.	
EW1301886-001	TP30_0.0-0.1_25/06/13	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.0	No Limit
EW1301886-034	TP20_0.5-0.6_26/06/13	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.0	No Limit
EK055: Ammonia as	N (QC Lot: 2954701)							I.	
EW1301886-067	TP8_0.0-0.1_26/06/13	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.0	No Limit
EW1301886-095	TP4_0.0-0.1_27/06/13	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.0	No Limit
EK057G: Nitrite as N	N by Discrete Analyser (Q	C Lot: 2945313)						I.	
EW1301886-017	TP26_0.5-0.6_25/06/13	EK057G: Nitrite as N (Sol.)		0.1	mg/kg	<1.0	<1.0	0.0	No Limit
EK059G: Nitrite plus	s Nitrate as N (NOx) by Dis	screte Analyser (QC Lot: 2945310)							
ES1314693-001	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	0.3	0.3	0.0	No Limit
EK061G: Total Kjelda	ahl Nitrogen By Discrete A	nalyser (QC Lot: 2946169)							
ES1314487-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	60	60	0.0	No Limit
EW1301886-017	TP26_0.5-0.6_25/06/13	EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	1040	1040	0.0	0% - 20%
EK067G: Total Phos	phorus as P by Discrete A	nalyser (QC Lot: 2946170)							
EW1301886-017	TP26_0.5-0.6_25/06/13	EK067G: Total Phosphorus as P		2	mg/kg	261	345	# 27.7	0% - 20%
EP004: Organic Matt	er (QC Lot: 2945812)								

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	137623028



Sub-Matrix: SOIL						Laboratory L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP004: Organic Matte	er (QC Lot: 2945812) - con	tinued							
EW1301886-005	TP29_0.3-0.4_25/06/13	EP004: Organic Matter		0.5	%	2.5	2.4	5.4	No Limit
		EP004: Total Organic Carbon		0.5	%	1.4	1.4	0.0	No Limit
EW1301886-067	TP8_0.0-0.1_26/06/13	EP004: Organic Matter		0.5	%	5.1	5.3	3.4	0% - 50%
		EP004: Total Organic Carbon		0.5	%	3.0	3.1	3.4	No Limit
EP068A: Organochlo	rine Pesticides (OC) (QC L	ot: 2945212)							
EW1301886-001	TP30 0.0-0.1 25/06/13	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
EW1301886-038	TP16A_0.2-0.3_26/06/13	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

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	: 137623028



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: Organoch	lorine Pesticides (OC) (QC L	ot: 2945212) - continued							
EW1301886-038	TP16A_0.2-0.3_26/06/13	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: Organoch	lorine Pesticides (OC) (QC L	ot: 2945213)							
EW1301886-070	QC101_26/06/13	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
EW1301886-095	TP4_0.0-0.1_27/06/13	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

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Sub-Matrix: SOII			Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochi	orine Pesticides (OC) (OC	Lot: 2945213) - continued				3			
EW1301886-095	TP4 0.0-0.1 27/06/13	EP068: Dieldrin	60-57-1	0.05	ma/ka	< 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	ma/ka	< 0.05	< 0.05	0.0	No Limit
		EP068: beta-Endosulfan	33213-65-9	0.05	ma/ka	< 0.05	< 0.05	0.0	No Limit
			72-54-8	0.05	ma/ka	< 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	ma/ka	< 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	ma/ka	<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: Organopho	osphorus Pesticides (OP) (OC L ot: 2945212)		-	5 5				
EW1301886-001	TP30_0_0_0_1_25/06/13		62-73-7	0.05	ma/ka	<0.05	<0.05	0.0	No Limit
2001000-001	11 30_0.0-0.1_23/00/13	EP068: Dichlorvos	02-73-7	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Demeton-S-metnyl	60 51 5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Dimethoate	333 /1 5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP000. Diazilioli	5508 13 0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Molothian	121-75-5	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Malathion	55 38 0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
			2021.88.2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorpyritos	2921-00-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
			23505-41-1	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Chlorfenvinphos	470-90-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Bromophos-ethyl	4024-70-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Fenamiphos	22224-92-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Prothiofos	34043-40-4	0.05	mg/kg	<0.05	< 0.05	0.0	No Limit
		EP068: Ethion	303-12-2	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Carbophenothion	/80-19-0	0.05	mg/kg	<0.05	<0.05	0.0	No Limit
		EP068: Azinphos Methyl	0-00-08	0.05	mg/kg	<0.05	< 0.05	0.0	No Limit
		EP068: Monocrotophos	0923-22-4	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP068: Parathion-methyl	296-00-0	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EW4204000 020	TD4CA 0.0.0.0.0000000	EP068: Parathion	50-38-2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
EVV1301886-038	TP16A_0.2-0.3_26/06/13	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	00-01-0	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: Chlorpyritos-methyl	5598-13-0	0.05	mg/Kg	<0.05	<0.05	0.0	
		EP068: Malathion	121-75-5	0.05	rng/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
		EPU68: Chlortenvinghos	4/0-90-6	0.05	ma/ka	< 0.05	<0.05	0.0	INO LIMIT

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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: Organopho	sphorus Pesticides (OP)(QC Lot: 2945212) - continued							
EW1301886-038	TP16A_0.2-0.3_26/06/13	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: Organopho	sphorus Pesticides (OP)(QC Lot: 2945213)							
EW1301886-070	QC101 26/06/13	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	ma/ka	< 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: Chlorovrifos	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: Eenamiphos	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
EW1301886-095	TP4 0.0-0.1 27/06/13	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-ethvl	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

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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: Organopho	sphorus Pesticides (OP)(QC Lot: 2945213) - continued							
EW1301886-095	TP4_0.0-0.1_27/06/13	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)A: Pheno	lic Compounds (QC Lot: 2	945210)							
EW1301886-001	TP30_0.0-0.1_25/06/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EW1301886-038	TP16A_0.2-0.3_26/06/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)A: Pheno	lic Compounds (QC Lot: 2	945215)							
EW1301886-070	QC101_26/06/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	137623028



			Г			L abaratam (Dunligata (DUD) Banard		
Sub-Matrix: SOIL							Duplicate (DOP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)A: Pheno	olic Compounds (QC Lot: 2	2945215) - continued							
EW1301886-070	QC101_26/06/13	EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EW1301886-090	TP2_0.2-0.4_27/06/13	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polyn	uclear Aromatic Hvdrocart	oons (QC Lot: 2945210)							
EW1301886-001	TP30 0.0-0.1 25/06/13	EP075(SIM): Naphthalene	91-20-3	0.5	ma/ka	< 0.5	<0.5	0.0	No Limit
EP075(SIM)B: Polynuclea EW1301886-001 TP3		EP075(SIM): Acenanbthylene	208-96-8	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Acenaphthene	83-32-9	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Fluorene	86-73-7	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Phenanthrene	85-01-8	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Anthracene	120-12-7	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Eluoranthene	206-44-0	0.5	ma/ka	0.9	0.6	35.9	No Limit
		ED075(SIM): Pyrope	129-00-0	0.5	ma/ka	0.9	0.6	38.6	No Limit
		EP075(SIM): Penz(a)anthracene	56-55-3	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Chrisene	218-01-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Collysene	205-99-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(k)fluoranthene	200 00 2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(a)pyrana	50-32-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Belizo(a)pyrene	103_30_5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Indeno(1.2.3.cd)pyrene	53-70-3	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Dibertz(a.ii)antinacene	101 24 2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): Benzo(g.n.i)perylene	131-24-2	0.5	mg/kg	1.9	1.0	40.0	No Limit
		EPU/5(SIM): Sum of polycyclic aromatic		0.5	iiig/kg	1.0	1.2	40.0	
				0.5	ma/ka	<0.5	<0.5	0.0	No Limit
EW/1301886 038	TD16A 0 2 0 3 26/06/12	EP075(SIM): Benzo(a)pyrene TEQ (WHO)	01 20 2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
L # # 130 1000-030	11 10/10/20/00/13		31-20-3	0.5	mg/kg	<0.5	~0.5	0.0	No Limit
		EPU/5(SIM): Acenaphthylene	200-90-8	0.0	під/ку	~ 0.5	~∪.o	0.0	

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Client	: PORT KEMBLA COPPER
Project	137623028



Sub-Matrix: SOIL						Laboratory L	Laboratory Duplicate (DUP) Report Original Result Duplicate Result RPD (%) Recovery I			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)	
EP075(SIM)B: Polynu	clear Aromatic Hydrocarbo	ons (QC Lot: 2945210) - continued								
EW1301886-038	TP16A_0.2-0.3_26/06/13	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		0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		hydrocarbons								
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EP075(SIM)B: Polynu	clear Aromatic Hydrocarbo	ons (QC Lot: 2945215)								
EW1301886-070 Q	QC101_26/06/13	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		0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		hydrocarbons								
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
EW1301886-090	TP2_0.2-0.4_27/06/13	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	

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	: 137623028



Sub-Matrix: SOIL		Γ			Laboratory L	ouplicate (DUP) Report	rt		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP075(SIM)B: Polynu	clear Aromatic Hydrocarbo	ns (QC Lot: 2945215) - continued							
EW1301886-090	TP2_0.2-0.4_27/06/13	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		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (WHO)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC	Lot: 2945209)							
EW1301886-001	TP30_0.0-0.1_25/06/13	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
EW1301886-038	TP16A_0.2-0.3_26/06/13	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 Petr	oleum Hydrocarbons (QC	Lot: 2945214)							
EW1301886-070	QC101_26/06/13	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
EW1301886-090	TP2_0.2-0.4_27/06/13	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 Petr	oleum Hydrocarbons (QC	Lot: 2945216)							
EW1301886-001	TP30_0.0-0.1_25/06/13	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EW1301886-038	TP16A_0.2-0.3_26/06/13	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC	Lot: 2945940)							
EW1301886-070	QC101_26/06/13	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EW1301886-095	TP4_0.0-0.1_27/06/13	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Rec	overable Hyd <u>rocarbons - N</u>	EPM 2010 Draft (QC Lot: 2945209)							
EW1301886-001	TP30 0.0-0.1 25/06/13	EP071: >C16 - C34 Fraction		100	mg/ka	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction		100	mg/kg	<100	<100	0.0	No Limit
		EP071: >C10 - C16 Fraction		50	mg/kg	<50	<50	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 Re	coverable Hydrocarbons -	NEPM 2010 Draft (QC Lot: 2945209) - continued							
EW1301886-038	TP16A_0.2-0.3_26/06/13	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		50	mg/kg	<50	<50	RPD (%) 0.0 <	No Limit
EP080/071: Total Re	coverable Hydrocarbons -	NEPM 2010 Draft (QC Lot: 2945214)							
EW1301886-070	QC101_26/06/13	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		50	mg/kg	<50	<50	0.0	No Limit
EW1301886-090	TP2_0.2-0.4_27/06/13	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		50	mg/kg	<50	<50	0.0	No Limit
EP080/071: Total Re	coverable Hydrocarbons -	NEPM 2010 Draft (QC Lot: 2945216)							
EW1301886-001	TP30_0.0-0.1_25/06/13	EP080: C6 - C10 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EW1301886-038	TP16A_0.2-0.3_26/06/13	EP080: C6 - C10 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Re	coverable Hvdrocarbons -	NEPM 2010 Draft (QC Lot: 2945940)							
EW1301886-070	QC101 26/06/13	EP080: C6 - C10 Fraction		10	ma/ka	<10	<10	0.0	No Limit
EW1301886-095	TP4 0.0-0.1 27/06/13	EP080: C6 - C10 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080' BTEXN (OC	L ot: 2945216)				5 5				
EW1301886-001	TP30_0_0_0_1_25/06/13	ED090: Depage	71-43-2	0.2	ma/ka	<0.2	<0.2	0.0	No Limit
2001000-001	11 30_0.0-0.1_20/00/13	EP000. Belizelle	108-88-3	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
		EP080: Ethylhonzono	100-41-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP080: meta & para Yulana	100 20 2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
			106-42-3	0.0	mg/kg	-0.0	-0.0	0.0	No Einit
		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
EW1301886-038	TP16A_0.2-0.3_26/06/13	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
		ED090: ortho Xulono	95-47-6	0.5	ma/ka	<0.5	<0.5	0.0	No Limit
			91-20-3	1	mg/kg	<0.0	<0.0	0.0	No Limit
EDANA BTEXN (OC	L at: 2045040)		31-20-3	1	mg/kg			0.0	
EP000. BTEAN (QC	LOI. 2945940)		71 42 2	0.2		<0.2	<0.2	0.0	No Limit
EW1301000-070	QC101_20/00/13	EP080: Benzene	109 99 2	0.2	mg/kg	<0.2	<0.2	0.0	No Limit
			100 44 4	0.5	mg/kg	<0.5	<0.5	0.0	NO LIMIT
			100-41-4	0.5	mg/kg	<0.5	<u.5< td=""><td>0.0</td><td>No Limit</td></u.5<>	0.0	No Limit
		EPusu: meta- & para-xyiene	108-38-3	0.5	тіў/ку	~0.5	~U.O	0.0	
		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
EW1301886-095	TP4_0.0-0.1_27/06/13	EP080: Benzene	71-43-2	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 (%)
EP080: BTEXN (QC	Lot: 2945940) - continued								
EW1301886-095	TP4_0.0-0.1_27/06/13	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
Sub-Matrix: WATER						Laboratory L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020T: Total Meta	Is by ICP-MS (QC Lot: 2946	970)							
ES1314802-003	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
	5	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: Manganese	7439-96-5	0.001	mg/L	0.030	0.030	0.0	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.001	0.002	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	< 0.005	<0.005	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES1314899-004	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	0.002	0.002	0.0	No Limit
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	0.012	0.011	12.1	0% - 50%
		EG020A-T: Copper	7440-50-8	0.001	mg/L	0.022	0.019	12.9	0% - 20%
		EG020A-T: Lead	7439-92-1	0.001	mg/L	0.004	0.003	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.110	0.101	8.5	0% - 20%
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	0.007	0.006	0.0	No Limit
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	0.008	0.020	84.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG035T: Total Rec	overable Mercury by FIMS (QC Lot: 2956347)							
EW1301886-022	QC300_25/06/13	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
EP080/071: Total Pe	etroleum Hydrocarbons (QC	Lot: 2945542)							
ES1314718-021	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	590	570	3.0	0% - 20%
ES1314711-001	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Re	ecoverable Hydrocarbons - N	NEPM 2010 Draft (QC Lot: 2945542)							
ES1314718-021	Anonymous	EP080: C6 - C10 Fraction		20	ua/L	610	590	2.8	0% - 20%
ES1314711-001	Anonymous	EP080: C6 - C10 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (OC	Lot: 2945542)			-	F 5				
ES1314718-021	Anonymous	EP080: Benzene	71_43_2	1	ug/l	480	472	1.6	0% - 20%
201017710-021	, alonymous		108_88_3	2	µg/∟ µa/l	</td <td><?</td><td>0.0</td><td>No Limit</td></td>	</td <td>0.0</td> <td>No Limit</td>	0.0	No Limit
			100-41-4	2	µg/⊏	<2	<2	0.0	No Limit
			100-41-4	4	P9'-			0.0	

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Sub-Matrix: WATER						Laboratory D	ouplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080: BTEXN (QC L	ot: 2945542) - continued								
ES1314718-021	Anonymous	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
ES1314711-001	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)	Laboratory Control Spike (LCS) Report				
			Report		Spike	Spike Recovery (%) Rec		Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
ED008: Exchangeable Cations (QCLot: 2949490)								
ED008: Exchangeable Calcium		0.1	meq/100g	<0.1	0.5 meq/100g	108	90	128
ED008: Exchangeable Magnesium		0.1	meq/100g	<0.1	0.86 meq/100g	101	86	120
ED008: Exchangeable Potassium		0.1	meq/100g	<0.1	0.26 meq/100g	102	85	135
ED008: Exchangeable Sodium		0.1	meq/100g	<0.1	0.87 meq/100g	96.0	86	128
ED008: Cation Exchange Capacity		0.1	meq/100g	<0.1				
EG005T: Total Metals by ICP-AES (QCLot: 2946073)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	109	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	104	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	101	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	106	86	128
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	88.4	70	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	110	85	127
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	111	84	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	123	75	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	114	81	133
EG005T: Total Metals by ICP-AES (QCLot: 2946075)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	110	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	102	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	100	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	105	86	128
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	90.5	70	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	106	81	123
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	105	85	127
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	108	84	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	122	75	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	110	81	133
EG005T: Total Metals by ICP-AES (QCLot: 2946883)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	111	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	107	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	95.8	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	109	86	128
EG005T: Iron	7439-89-6	50	mg/kg	<50	8400 mg/kg	87.2	70	130
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	103	81	123

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Sub-Matrix: SOIL				Method Blank (MB)		S) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EG005T: Total Metals by ICP-AES (QCLot: 2946	883) - continued								
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	105	85	127	
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	106	84	130	
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	111	75	131	
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	112	81	133	
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2946074)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	92.5	66	112	
EG035T: Total Recoverable Mercury by EIMS (QCL of: 2946076)									
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	91.2	66	112	
EG035T: Total Recoverable Mercury by FIMS (C	OCLot: 2946884)								
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	81.1	66	112	
EK055: Ammonia as N (OCI of: 2954700)									
EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	125 mg/kg	86.4	63	113	
EK055: Ammonia as N (OCI of: 2954701)									
EK055: Ammonia as N	7664-41-7	20	ma/ka	<20	125 ma/ka	87.9	63	113	
EK057G: Nitrite as N by Discrete Analyzer (OCI	ot: 2045212)		5 5						
EK057G: Nitrite as N (Sol.)	_0[. 2945515]	0.1	ma/ka	<0.1	2.5 ma/ka	104	82	120	
		45949)	mg/kg	-0.1	2.0 mg/kg		02	120	
EK059G: Nitrite plus Nitrate as N (NOX) by Disc	rete Analyser (QCLot: 294	45310)	ma/ka	<0.1	2.5 mg/kg	110	80	115	
EK059G: Nitrite + Nitrate as N (Sol.)		0.1	ilig/kg	-0.1	2.5 mg/kg	110	09	115	
EK061G: Total Kjeldahl Nitrogen By Discrete An	alyser (QCLot: 2946169)	22		-00	500	00.4	70	407	
EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	<20	500 mg/kg	93.1	70	127	
EK067G: Total Phosphorus as P by Discrete Ana	alyser (QCLot: 2946170)	-						10.1	
EK067G: Total Phosphorus as P		2	mg/kg	<2	442 mg/kg	93.9	69	124	
EP004: Organic Matter (QCLot: 2945812)									
EP004: Organic Matter		0.5	%	<0.5	4.58 %	97.6	85	105	
EP004: Total Organic Carbon		0.5	%	<0.5	2.66 %	97.4	84	106	
EP068A: Organochlorine Pesticides (OC) (QCLo	ot: 2945212)								
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	83.8	60.8	116	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	85.6	59.4	115	
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	98.0	59.8	117	
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.6	59.8	118	
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	83.5	65.8	114	
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.7	65.6	115	
EP068: Aldrin	309-00-2	0.05	mg/kg	< 0.05	0.5 mg/kg	108	67	113	
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	80.2	65.6	113	
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	< 0.05	0.5 mg/kg	84.0	60.7	113	
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	< 0.05	0.5 mg/kg	98.3	65.8	116	
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	85.8	57.3	120	

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Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC)(Q	CLot: 2945212) - continued							
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	87.4	67.4	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	89.1	67.5	114
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	66.1	117
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	87.8	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	106	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	63.6	119
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	108	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	80.6	63.6	117
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	111	50.4	132
EP068A: Organochlorine Pesticides (OC)(Q	CLot: 2945213)							
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	60.8	116
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	103	59.4	115
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	79.4	59.8	117
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	110	59.8	118
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	65.8	114
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	65.6	115
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	96.0	67	113
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	95.4	65.6	113
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	95.6	60.7	113
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	84.8	65.8	116
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	95.6	57.3	120
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	95.8	67.4	116
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	98.3	67.5	114
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	90.4	63	121
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	91.4	66.1	117
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	94.2	65.3	116
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	97.5	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	63.6	119
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	98.1	58.4	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	63.6	117
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	102	50.4	132
EP068B: Organophosphorus Pesticides (OP)) (QCLot: 2945212)							
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	77.7	25.5	124
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.8	10.1	159
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	86.9	2.88	149
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	100	48.6	126
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.6	64.9	111
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	88.7	65.1	111

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Client	: PORT KEMBLA COPPER
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Sub-Matrix: SOIL			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068B: Organophosphorus Pesticides (OP)	(QCLot: 2945212) - continu	ed						
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	98.7	61.4	113
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	103	60.4	127
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	82.3	64.7	110
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	86.0	64.2	111
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	99.4	60	116
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.9	64.8	111
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	89.8	61.4	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	81.0	64.3	114
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	87.9	45.5	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	92.3	65.4	111
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	88.6	62	116
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.9	59.5	119
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	100	29.8	137
EP068B: Organophosphorus Pesticides (OP)	(QCLot: 2945213)							
EP068: Dichlorvos	62-73-7	0.05	mg/kg	<0.05	0.5 mg/kg	80.3	25.5	124
EP068: Demeton-S-methyl	919-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	92.9	10.1	159
EP068: Monocrotophos	6923-22-4	0.2	mg/kg	<0.2	0.5 mg/kg	84.6	2.88	149
EP068: Dimethoate	60-51-5	0.05	mg/kg	<0.05	0.5 mg/kg	92.1	48.6	126
EP068: Diazinon	333-41-5	0.05	mg/kg	<0.05	0.5 mg/kg	93.7	64.9	111
EP068: Chlorpyrifos-methyl	5598-13-0	0.05	mg/kg	<0.05	0.5 mg/kg	93.5	65.1	111
EP068: Parathion-methyl	298-00-0	0.2	mg/kg	<0.2	0.5 mg/kg	102	61.4	113
EP068: Malathion	121-75-5	0.05	mg/kg	<0.05	0.5 mg/kg	91.5	60.4	127
EP068: Fenthion	55-38-9	0.05	mg/kg	<0.05	0.5 mg/kg	96.6	64.7	110
EP068: Chlorpyrifos	2921-88-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.9	64.2	111
EP068: Parathion	56-38-2	0.2	mg/kg	<0.2	0.5 mg/kg	99.8	60	116
EP068: Pirimphos-ethyl	23505-41-1	0.05	mg/kg	<0.05	0.5 mg/kg	94.9	64.8	111
EP068: Chlorfenvinphos	470-90-6	0.05	mg/kg	<0.05	0.5 mg/kg	95.0	61.4	123
EP068: Bromophos-ethyl	4824-78-6	0.05	mg/kg	<0.05	0.5 mg/kg	97.4	64.3	114
EP068: Fenamiphos	22224-92-6	0.05	mg/kg	<0.05	0.5 mg/kg	91.1	45.5	128
EP068: Prothiofos	34643-46-4	0.05	mg/kg	<0.05	0.5 mg/kg	94.8	65.4	111
EP068: Ethion	563-12-2	0.05	mg/kg	<0.05	0.5 mg/kg	93.4	62	116
EP068: Carbophenothion	786-19-6	0.05	mg/kg	<0.05	0.5 mg/kg	98.6	59.5	119
EP068: Azinphos Methyl	86-50-0	0.05	mg/kg	<0.05	0.5 mg/kg	61.9	29.8	137
EP075(SIM)A: Phenolic Compounds (QCLot: 2	2945210)							
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	90.2	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	87.0	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	93.5	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	90.8	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	74.2	60.3	117

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Sub-Matrix: SOIL			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	/ Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 29452	I0) - continued							
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	89.8	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	88.1	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	91.1	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	85.9	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	78.9	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	81.3	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	47.0	1.23	91.6
EP075(SIM)A: Phenolic Compounds (QCLot: 29452	15)							
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	95.6	73.9	115
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	94.4	80.2	115
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	99.8	76.8	114
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	102	72	119
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	78.4	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	88.6	74.5	119
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	90.2	71.6	113
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	98.3	74.8	115
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	90.7	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	85.7	62.2	115
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	80.9	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	41.6	1.23	91.6
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	(QCLot: 2945210)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	97.3	81.9	113
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	95.8	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	94.5	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	94.5	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	100	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	100	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	99.3	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	102	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	90.4	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	94.6	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	89.8	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	97.3	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	91.5	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	97.0	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	97.1	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	100	72.4	114
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	(QCLot: 2945215)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	104	81.9	113

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Sub-Matrix: SOIL					Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	s (QCLot: 2945215) - cc	ontinued						
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	103	79.6	113
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	101	81.5	112
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	106	79.9	112
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	107	79.4	114
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	107	81.1	112
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	108	78.8	113
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	111	78.9	113
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	98.1	77.2	112
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	102	79.8	114
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	95.9	71.8	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	104	74.2	117
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	99.8	76.4	113
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	106	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	107	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
EP080/071: Total Petroleum Hydrocarbons (QCLo	t: 2945209)							
EP071: C10 - C14 Fraction		50	mg/kg	<50	200 mg/kg	104	59	131
EP071: C15 - C28 Fraction		100	mg/kg	<100	300 mg/kg	109	74	138
EP071: C29 - C36 Fraction		100	mg/kg	<100	200 mg/kg	91.8	63	131
EP080/071: Total Petroleum Hydrocarbons (QCLo	t: 2945214)							
EP071: C10 - C14 Fraction		50	mg/kg	<50	200 mg/kg	97.8	59	131
EP071: C15 - C28 Fraction		100	mg/kg	<100	300 mg/kg	99.0	74	138
EP071: C29 - C36 Fraction		100	mg/kg	<100	200 mg/kg	99.7	63	131
EP080/071: Total Petroleum Hydrocarbons (QCLo	t: 2945216)							
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	116	68.4	128
EP080/071: Total Petroleum Hydrocarbons (QCLo	t: 2945940)							
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	84.7	68.4	128
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2010 Draft (QCLot: 2	2945209)						
EP071: >C10 - C16 Fraction		50	mg/kg	<50	250 mg/kg	99.6	59	131
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	77.1	63	131
EP080/071: Total Recoverable Hydrocarbons - NEI	PM 2010 Dra <u>ft (QCLot: 2</u>	2945214)						
EP071: >C10 - C16 Fraction		50	mg/kg	<50	250 mg/kg	105	59	131
EP071: >C16 - C34 Fraction		100	mg/kg	<100	350 mg/kg	96.3	74	138
EP071: >C34 - C40 Fraction		100	mg/kg	<100				
		50	mg/kg		150 mg/kg	97.8	63	131
EP080/071: Total Recoverable Hydrocarbons - NE	PM 2010 Draft (QCLot: 2	2945216)						

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Sub-Matrix: SOII				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report				
					Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP080/071: Total Recoverable Hydrocarbons	- NEPM 2010 Draft (QCLot: 2	2945216) - contin	ued						
EP080: C6 - C10 Fraction		10	mg/kg	<10	31 mg/kg	116	68.4	128	
EP080/071: Total Recoverable Hydrocarbons	- NEPM 2010 Draft (QCLot: 2	2945940)							
EP080: C6 - C10 Fraction		10	mg/kg	<10	31 mg/kg	82.4	68.4	128	
EP080: BTEXN (QCI of: 2945216)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	102	62	120	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	107	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	105	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	102	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	103	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	115	62	138	
EP080: BTEXN (QCLot: 2945940)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	83.6	62	120	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	89.1	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	84.4	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	80.8	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	90.2	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	86.8	62	138	
Sub-Matrix: WATER				Method Blank (MB)		Laboratory Control Spike (LC	S) Report		
				Report	Spike	Spike Recovery (%)	Recovery (%) Recovery Limits (%)		
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EG020T: Total Metals by ICP-MS (QCLot: 294	6970)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	113	79	121	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	112	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	109	83	115	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	107	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	105	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	109	83	115	
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	106	83	117	
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	98.3	68	128	
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	111	76	118	
EG035T: Total Recoverable Mercury by FIMS	(QCLot: 2956347)								
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	106	77	115	
EP068A: Organochlorine Pesticides (OC) (QC	CLot: 2945332)								
EP068: alpha-BHC	319-84-6	0.5	µg/L	<0.5	5 μg/L	80.9	61	117	
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	93.4	56	116	
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	76.3	60	118	

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCLot: 29453	332) - continued							
EP068: gamma-BHC	58-89-9	0.5	μg/L	<0.5	5 µg/L	91.8	62	118
EP068: delta-BHC	319-86-8	0.5	μg/L	<0.5	5 µg/L	81.8	64	116
EP068: Heptachlor	76-44-8	0.5	μg/L	<0.5	5 µg/L	83.1	63	117
EP068: Aldrin	309-00-2	0.5	μg/L	<0.5	5 µg/L	81.2	65	121
EP068: Heptachlor epoxide	1024-57-3	0.5	μg/L	<0.5	5 µg/L	79.7	63	117
EP068: trans-Chlordane	5103-74-2	0.5	μg/L	<0.5	5 µg/L	80.6	64	120
EP068: alpha-Endosulfan	959-98-8	0.5	μg/L	<0.5	5 µg/L	75.5	67	119
EP068: cis-Chlordane	5103-71-9	0.5	μg/L	<0.5	5 µg/L	80.0	63	123
EP068: Dieldrin	60-57-1	0.5	μg/L	<0.5	5 µg/L	81.0	64	122
EP068: 4.4`-DDE	72-55-9	0.5	μg/L	<0.5	5 µg/L	74.9	64	118
EP068: Endrin	72-20-8	0.5	µg/L	<0.5	5 µg/L	76.1	64	126
EP068: beta-Endosulfan	33213-65-9	0.5	μg/L	<0.5	5 µg/L	77.0	68	122
EP068: 4.4`-DDD	72-54-8	0.5	μg/L	<0.5	5 µg/L	80.3	66	122
EP068: Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	5 µg/L	79.6	62	112
EP068: Endosulfan sulfate	1031-07-8	0.5	μg/L	<0.5	5 µg/L	77.0	60	124
EP068: 4.4`-DDT	50-29-3	2.0	μg/L	<2.0	5 µg/L	79.8	54	126
EP068: Endrin ketone	53494-70-5	0.5	μg/L	<0.5	5 µg/L	76.7	55	119
EP068: Methoxychlor	72-43-5	2.0	μg/L	<2.0	5 µg/L	82.6	53	127
EP068B: Organophosphorus Pesticides (OP) (QCLot: 29	945332)							
EP068: Dichlorvos	62-73-7	0.5	μg/L	<0.5	5 µg/L	83.6	52	128
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 μg/L	81.3	28.4	150
EP068: Monocrotophos	6923-22-4	0.5	µg/L		5 μg/L	26.7	10	89.1
		2.0	μg/L	<2.0				
EP068: Dimethoate	60-51-5	0.5	μg/L	<0.5	5 µg/L	84.4	61	117
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	78.9	64	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 μg/L	80.2	67	121
EP068: Parathion-methyl	298-00-0	2.0	μg/L	<2.0	5 µg/L	86.3	59	123
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	79.5	57	123
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	81.3	67	119
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	80.0	67	121
EP068: Parathion	56-38-2	2.0	μg/L	<2.0	5 µg/L	83.7	64	118
EP068: Pirimphos-ethyl	23505-41-1	0.5	μg/L	<0.5	5 µg/L	75.4	64	118
EP068: Chlorfenvinphos	470-90-6	0.5	μg/L	<0.5	5 µg/L	86.0	59	123
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 μg/L	81.8	62	122
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 μg/L	76.6	59	131
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	79.6	64	116
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	79.6	68	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	78.8	62	120
EP068: Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	5 μg/L	63.1	39	131

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
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Sub-Matrix: WATER				Method Blank (MB) Report	Laboratory Control Spike (LCS) Report			
					Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 294	45331)							
EP075(SIM): Phenol	108-95-2	0.2	μg/L		20 µg/L	43.3	24.5	61.9
		1	µg/L	<1.0				
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L		20 µg/L	89.1	63.8	110
		1	µg/L	<1.0				
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L		20 µg/L	69.7	55.9	112
		1	µg/L	<1.0				
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L		40 µg/L	82.8	42.5	114
		2	µg/L	<2.0				
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L		20 µg/L	93.3	62.7	117
		1	µg/L	<1.0				
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L		20 µg/L	93.3	59.9	112
		1	µg/L	<1.0				
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	µg/L		20 µg/L	94.7	59.3	122
		1	µg/L	<1.0				
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	µg/L		20 µg/L	92.6	64.3	118
		1	µg/L	<1.0				
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L		20 µg/L	90.8	63	119
		1	µg/L	<1.0				
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	µg/L		20 µg/L	89.1	58.7	118
		1	µg/L	<1.0				
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	µg/L		20 µg/L	87.8	51.2	118
		1	µg/L	<1.0				
EP075(SIM): Pentachlorophenol	87-86-5	0.4	µg/L		40 µg/L	49.7	6.85	95.6
		2	µg/L	<2.0				
EP075(SIM)B: Polynuclear Aromatic Hydrocarbo	ns (QCLot: 2945331)							
EP075(SIM): Naphthalene	91-20-3	0.2	µg/L		20 µg/L	98.1	58.6	119
		1	μg/L	<1.0				
EP075(SIM): Acenaphthylene	208-96-8	0.2	μg/L		20 µg/L	103	63.6	114
		1	μg/L	<1.0				
EP075(SIM): Acenaphthene	83-32-9	0.2	μg/L		20 µg/L	102	62.2	113
		1	μg/L	<1.0				
EP075(SIM): Fluorene	86-73-7	0.2	µg/L		20 µg/L	105	63.9	115
		1	μg/L	<1.0				
EP075(SIM): Phenanthrene	85-01-8	0.2	µg/L		20 µg/L	96.3	62.6	116
		1	μg/L	<1.0				
EP075(SIM): Anthracene	120-12-7	0.2	μg/L		20 µg/L	94.7	64.3	116
		1	μg/L	<1.0				
EP075(SIM): Fluoranthene	206-44-0	0.2	μg/L		20 µg/L	99.3	63.6	118
		1	µg/L	<1.0				

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Client	: PORT KEMBLA COPPER
Project	: 137623028



Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	(QCLot: 2945331) - co	ntinued						
EP075(SIM): Pyrene	129-00-0	0.2	μg/L		20 µg/L	99.6	63.1	118
		1	μg/L	<1.0				
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	μg/L		20 µg/L	103	64.1	117
		1	μg/L	<1.0				
EP075(SIM): Chrysene	218-01-9	0.2	µg/L		20 µg/L	104	62.5	116
		1	µg/L	<1.0				
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L		20 µg/L	91.2	61.7	119
		1	µg/L	<1.0				
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L		20 µg/L	102	61.7	117
		1	µg/L	<1.0				
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L		20 µg/L	105	63.3	117
		0.5	µg/L	<0.5				
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.2	µg/L		20 µg/L	101	59.9	118
		1	µg/L	<1.0				
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L		20 µg/L	102	61.2	117
	101.01.0	1	µg/L	<1.0				
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L		20 µg/L	97.6	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:	2945330)							
EP071: C10 - C14 Fraction		50	µg/L	<50	2000 µg/L	76.8	58.9	131
EP071: C15 - C28 Fraction		100	µg/L	<100	3000 µg/L	122	73.9	138
EP071: C29 - C36 Fraction		50	µg/L	<50	2000 µg/L	91.0	62.7	131
EP080/071: Total Petroleum Hydrocarbons (QCLot:	2945542)							
EP080: C6 - C9 Fraction		20	μg/L	<20	260 µg/L	112	75	127
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2010 Draft (QCLot: 2	945330)						
EP071: >C10 - C16 Fraction		100	μg/L	<100	2500 μg/L	92.8	58.9	131
EP071: >C16 - C34 Fraction		100	μg/L	<100	3500 µg/L	112	73.9	138
EP071: >C34 - C40 Fraction		100	μg/L	<100				
		50	μg/L		1500 µg/L	86.8	62.7	131
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2010 Draft (QCLot: 2	945542)						
EP080: C6 - C10 Fraction		20	µg/L	<20	310 µg/L	116	75	127
EP080: BTEXN (OCI of: 2945542)								
EP080: Benzene	71-43-2	1	µa/L	<1	10 µa/L	110	70	124
EP080: Toluene	108-88-3	2	µa/L	<2	10 µg/L	94.7	66	132
EP080: Ethylbenzene	100-41-4	2	µa/L	<2	10 µa/L	94.7	70	120
EP080: meta_ & para-Xylene	108-38-3	2	μα/l	<2	10 µg/l	94.0	69	121
	106-42-3	-	r-3 [,] -	_			20	
EP080: ortho-Xylene	95-47-6	2	µq/L	<2	10 µg/L	91.1	72	122
			10		1.0	1	1	1



Sub-Matrix: WATER			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
			Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP080: BTEXN (QCLot: 2945542) - continued								
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	89.0	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	_imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Met	als by ICP-AES (QCLot: 2946073)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EG005T: Arsenic	7440-38-2	50 mg/kg	# 29.3	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	102	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	112	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	# Not Determined	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	# 210	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70	130
	EG005T: Selenium	7782-49-2	50 mg/kg	98.3	70	130	
	EG005T: Zinc	7440-66-6	250 mg/kg	# 429	70	130	
EG005T: Total Met	als by ICP-AES (QCLot: 2946075)						
EW1301886-042	TP15_0.0-0.1_26/06/13	EG005T: Arsenic	7440-38-2	50 mg/kg	107	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	110	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	100	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	# Not Determined	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	102	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	105	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	101	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	94.7	70	130
EG005T: Total Met	als by ICP-AES (QCLot: 2946883)						
ES1314698-019	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	105	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	108	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	108	70	130
		EG005T: Lead	7439-92-1	250 mg/kg	104	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	107	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	106	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	104	70	130
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Work Order	: EW1301886						
Client	: PORT KEMBLA COPPER						
Project	137623028						



Sub-Matrix: SOIL			Γ	Ма	atrix Spike (MS) Report	t	
				Spike	SpikeRecovery(%)	Recovery Li	mits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Red	coverable Mercury by FIMS (QCLot: 2946074)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EG035T: Mercury	7439-97-6	5 mg/kg	108	70	130
EG035T: Total Red	coverable Mercury by FIMS (QCLot: 2946076)						
EW1301886-042	TP15_0.0-0.1_26/06/13	EG035T: Mercury	7439-97-6	5 mg/kg	112	70	130
EG035T: Total Red	coverable Mercury by FIMS (QCLot: 2946884)						
ES1314698-019	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	104	70	130
EK055: Ammonia a	as N (QCLot: 2954700)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EK055: Ammonia as N	7664-41-7	50 mg/kg	73.2	70	130
EK055: Ammonia a	as N (QCLot: 2954701)						
EW1301886-067	TP8 0.0-0.1 26/06/13	EK055: Ammonia as N	7664-41-7	50 mg/kg	75.7	70	130
EK057G: Nitrite as	N by Discrete Analyser (QCLot: 2945313)						
EW1301886-017	TP26 0.5-0.6 25/06/13	EK057G: Nitrite as N (Sol.)		2.5 ma/ka	120	70	130
EK059G: Nitrite pl	us Nitrate as N (NOx) by Discrete Analyser (QCLot: 29	45310)					
ES1314693-001	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)		2.5 ma/ka	81.0	70	130
EK061G: Total Kie	dahl Nitrogan By Discrete Analyser (OCI of: 2946169)						
EW1301886-017	TP26_0.5-0.6_25/06/13	EK061C: Total Kieldahl Nitragan as N		500 ma/ka	84.3	70	130
		EKOOTG. Total Kjeldani Nitrogen as N		Soo mg/kg	04.0	70	130
EK067G: Total Pho	Sphorus as P by Discrete Analyser (QCLOI: 2946170)			100	00.4	70	100
EW1301886-017	1P26_0.5-0.6_25/06/13	EK067G: Total Phosphorus as P		100 mg/kg	96.1	70	130
EP004: Organic Ma	atter (QCLot: 2945812)						
EW1301886-005	TP29_0.3-0.4_25/06/13	EP004: Organic Matter		4.58 %	3.6		
		EP004: Total Organic Carbon		2.66 %	3.6		
EP068A: Organoch	nlorine Pesticides (OC) (QCLot: 2945212)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	108	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	108	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	104	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	108	70	130
		EP068: Endrin	72-20-8	2 mg/kg	85.3	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	104	70	130
EP068A: Organoch	nlorine Pesticides (OC) (QCLot: 2945213)						
EW1301886-070	QC101_26/06/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	80.1	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	83.7	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	85.7	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	81.8	70	130
		EP068: Endrin	72-20-8	2 mg/kg	91.7	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	90.7	70	130
EP068B. Organon	acenhorus Posticidos (OP) (OCI at: 2945212)						



Sub-Matrix: SOIL				Ma	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP068B: Organopl	hosphorus Pesticides (OP) (QCLot: 2945212) - continu	led					
EW1301886-001	TP30_0.0-0.1_25/06/13	EP068: Diazinon	333-41-5	0.5 mg/kg	104	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	98.2	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	92.6	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	98.7	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	79.3	70	130
EP068B: Organopl	hosphorus Pesticides (OP) (QCLot: 2945213)						
EW1301886-070	QC101_26/06/13	EP068: Diazinon	333-41-5	0.5 mg/kg	84.2	70	130
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	78.5	70	130
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	71.8	70	130
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	78.8	70	130
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	88.3	70	130
EP075(SIM)A: Phe	nolic Compounds (QCLot: 2945210)						
EW1301886-001	TP30 0.0-0.1 25/06/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.4	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	90.2	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	88.2	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	98.2	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	82.1	20	130
EP075(SIM)A: Phe	nolic Compounds (QCLot: 2945215)						
EW1301886-070	QC101 26/06/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.4	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.7	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	92.8	60	130
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	96.3	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	91.7	20	130
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot: 2945210)						
EW1301886-001	TP30 0.0-0.1 25/06/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116	70	130
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbons (QCLot: 2945215)						
EW1301886-070	QC101 26/06/13	EP075(SIM): Acenanothene	83-32-9	10 ma/ka	99.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112	70	130
EP080/071: Total P	Petroleum Hydrocarbons (QCI ot [.] 2945209)			- 3 3			
EW/1301886-001	TP30_0_0_0_1_25/06/13	ED071: C10 C14 Fraction		640 mg/kg	104	73	137
LW1301000-001	1730_0.0-0.1_23/00/13	EP071: C10 - C14 Fraction		3140 mg/kg	104	53	137
		EP071: C15 - C28 Fraction		2860 mg/kg	90.5	52	132
EB080/071: Total B	Detroloum Hydrocarbons (OCI of: 2945214)	EP071. 029 - 036 Flaction		2000 Hig/kg	30.3	52	152
EP080/07 1. Total P				C40 mm/les	100	70	407
EVV1301886-070		EPU/1: C10 - C14 Fraction		040 mg/kg	100	13	13/
		EP0/1: C15 - C28 Fraction		3140 mg/Kg	115	53	131
		EPU/1: C29 - C36 Fraction		∠ööü mg/kg	84.6	οZ	132

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Client	: PORT KEMBLA COPPER
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Sub-Matrix: SOIL				М	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 2945216)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EP080: C6 - C9 Fraction		32.5 mg/kg	118	70	130
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 2945940)						
EW1301886-070	QC101_26/06/13	EP080: C6 - C9 Fraction		32.5 mg/kg	89.0	70	130
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2010 Draft (QCLot:	2945209)					
EW1301886-001	TP30_0.0-0.1_25/06/13	EP071: >C10 - C16 Fraction		850 mg/kg	131	73	137
		EP071: >C16 - C34 Fraction		4800 mg/kg	110	53	131
		EP071: >C34 - C40 Fraction		2400 mg/kg	60.6	52	132
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2010 Draft (QCLot:	2945214)					
EW1301886-070	QC101_26/06/13	EP071: >C10 - C16 Fraction		850 mg/kg	128	73	137
		EP071: >C16 - C34 Fraction		4800 mg/kg	104	53	131
		EP071: >C34 - C40 Fraction		2400 mg/kg	58.6	52	132
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2010 Draft (QCLot:	2945216)					
EW1301886-001	TP30_0.0-0.1_25/06/13	EP080: C6 - C10 Fraction		37.5 mg/kg	113	70	130
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2010 Draft (QCLot:	2945940)					
EW1301886-070	QC101_26/06/13	EP080: C6 - C10 Fraction		37.5 mg/kg	85.1	70	130
EP080: BTEXN (Q	CLot: 2945216)						
EW1301886-001	TP30_0.0-0.1_25/06/13	EP080: Benzene	71-43-2	2.5 mg/kg	76.8	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	81.3	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.3	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	81.5	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.9	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	106	70	130
EP080: BTEXN (Q	CLot: 2945940)						
EW1301886-070	QC101_26/06/13	EP080: Benzene	71-43-2	2.5 mg/kg	78.3	70	130
		EP080: Toluene	108-88-3	2.5 mg/kg	83.8	70	130
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.3	70	130
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	72.9	70	130
			106-42-3				
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.3	70	130
		EP080: Naphthalene	91-20-3	2.5 mg/kg	70.5	70	130
Sub-Matrix: WATER				М	atrix Spike (MS) Report		
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Meta	als by ICP-MS (QCLot: 2946970)						
EW1301886-022	QC300_25/06/13	EG020A-T: Arsenic	7440-38-2	1 mg/L	76.6	70	130

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Client	: PORT KEMBLA COPPER
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Sub-Matrix: WATER				Ma	atrix Spike (MS) Repor	t	
				Spike	SpikeRecovery(%)	Recovery L	.imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Met	als by ICP-MS(QCLot: 2946970)- continued						
EW1301886-022	QC300_25/06/13	EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	70	130
		EG020A-T: Chromium	7440-47-3	1 mg/L	107	70	130
		EG020A-T: Copper	7440-50-8	1 mg/L	107	70	130
		EG020A-T: Lead	7439-92-1	1 mg/L	104	70	130
		EG020A-T: Manganese	7439-96-5	1 mg/L	108	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	104	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.6	70	130
EG035T: Total Re	coverable Mercury by FIMS (QCLot: 2956347)						
EW1301886-022	QC300_25/06/13	EG035T: Mercury	7439-97-6	0.010 mg/L	92.2	70	130
EP080/071: Total P	Petroleum Hydrocarbons (QCLot: 2945542)						
ES1314718-019	Anonymous	EP080: C6 - C9 Fraction		325 µg/L	# Not	70	130
					Determined		
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2010 Draft (QC	:Lot: 2945542)					
ES1314718-019	Anonymous	EP080: C6 - C10 Fraction		375 μg/L	# Not	70	130
					Determined		
EP080: BTEXN (Q	CLot: 2945542)						
ES1314718-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.9	70	130
		EP080: Toluene	108-88-3	25 µg/L	93.7	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	109	70	130
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	# Not	70	130
			106-42-3		Determined		
		EP080: ortho-Xylene	95-47-6	25 µg/L	# Not	70	130
					Determined		
		EP080: Naphthalene	91-20-3	25 µg/L	73.9	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	ub-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 Po	etroleum Hydrocarbons (QCLot: 294520	9)										
EW1301886-001	TP30_0.0-0.1_25/06/13	EP071: C10 - C14 Fraction		640 mg/kg	104		73	137				
		EP071: C15 - C28 Fraction		3140 mg/kg	121		53	131				
		EP071: C29 - C36 Fraction		2860 mg/kg	90.5		52	132				
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2010 D	raft (QCLot: 2945209)										
EW1301886-001	TP30_0.0-0.1_25/06/13	EP071: >C10 - C16 Fraction		850 mg/kg	131		73	137				



Sub-Matrix: SOIL					Matrix Spike (N	IS) and Matrix S	pike Duplicate	e (MSD) Repor	t	
				Spike	Spike Red	covery (%)	Recovery Limits (%)		RP	Ds (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total R	ecoverable Hydrocarbons - NE	PM 2010 Draft (QCLot: 2945209) - continued								
EW1301886-001	TP30_0.0-0.1_25/06/13	EP071: >C16 - C34 Fraction		4800 mg/kg	110		53	131		
		EP071: >C34 - C40 Fraction		2400 mg/kg	60.6		52	132		
EP075(SIM)A: Pher	nolic Compounds (QCLot: 294	5210)								
EW1301886-001	TP30_0.0-0.1_25/06/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.4		70	130		
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	90.2		70	130		
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	88.2		60	130		
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	98.2		70	130		
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	82.1		20	130		
EP075(SIM)B: Poly	nuclear Aromatic Hydrocarbon	is (QCLot: 2945210)								
EW1301886-001	TP30_0.0-0.1_25/06/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	106		70	130		
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	116		70	130		
EP068A: Organoch	lorine Pesticides (OC) (QCLot	: 2945212)								
EW1301886-001	TP30 0.0-0.1 25/06/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	108		70	130		
		EP068: Heptachlor	76-44-8	0.5 mg/kg	108		70	130		
		EP068: Aldrin	309-00-2	0.5 mg/kg	104		70	130		
		EP068: Dieldrin	60-57-1	0.5 mg/kg	108		70	130		
		EP068: Endrin	72-20-8	2 mg/kg	85.3		70	130		
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	104		70	130		
EP068B: Organoph	osphorus Pesticides (OP) (QC	CLot: 2945212)								
EW1301886-001	TP30 0.0-0.1 25/06/13	EP068: Diazinon	333-41-5	0.5 mg/kg	104		70	130		
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	98.2		70	130		
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	92.6		70	130		
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	98.7		70	130		
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	79.3		70	130		
EP068A: Organoch	lorine Pesticides (OC) (QCLot	: 2945213)								
EW1301886-070	QC101_26/06/13	EP068: gamma-BHC	58-89-9	0.5 mg/kg	80.1		70	130		
	_	EP068: Heptachlor	76-44-8	0.5 mg/kg	83.7		70	130		
		EP068: Aldrin	309-00-2	0.5 mg/kg	85.7		70	130		
		EP068: Dieldrin	60-57-1	0.5 mg/kg	81.8		70	130		
		EP068: Endrin	72-20-8	2 mg/kg	91.7		70	130		
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	90.7		70	130		
EP068B: Organoph	osphorus Pesticides (OP) (QC	CLot: 2945213)								
EW1301886-070	QC101_26/06/13	EP068: Diazinon	333-41-5	0.5 mg/kg	84.2		70	130		
		EP068: Chlorpyrifos-methyl	5598-13-0	0.5 mg/kg	78.5		70	130		
		EP068: Pirimphos-ethyl	23505-41-1	0.5 mg/kg	71.8		70	130		
		EP068: Bromophos-ethyl	4824-78-6	0.5 mg/kg	78.8		70	130		
		EP068: Prothiofos	34643-46-4	0.5 mg/kg	88.3		70	130		
EP080/071: Total P	etroleum Hydrocarbons (QCL	ot: 2945214)								



Sub-Matrix: SOIL					Matrix Spike (N	IS) and Matrix Sp	ike Duplicate	(MSD) Report	t	
				Spike	Spike Red	covery (%)) Recovery Limits (%)		RP	Ds (%)
Laboratory sample ID (Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total Petr	roleum Hydrocarbons (QCLot: 29	45214) - continued								
EW1301886-070 C	QC101_26/06/13	EP071: C10 - C14 Fraction		640 mg/kg	100		73	137		
		EP071: C15 - C28 Fraction		3140 mg/kg	115		53	131		
		EP071: C29 - C36 Fraction		2860 mg/kg	84.6		52	132		
EP080/071: Total Rec	coverable Hydrocarbons - NEPM 2	010 Draft (QCLot: 2945214)								
EW1301886-070 C	QC101_26/06/13	EP071: >C10 - C16 Fraction		850 mg/kg	128		73	137		
		EP071: >C16 - C34 Fraction		4800 mg/kg	104		53	131		
		EP071: >C34 - C40 Fraction		2400 mg/kg	58.6		52	132		
EP075(SIM)A: Phenol	lic Compounds (QCLot: 2945215)									
EW1301886-070 C	QC101_26/06/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	93.4		70	130		
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	96.7		70	130		
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	92.8		60	130		
		EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	10 mg/kg	96.3		70	130		
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	91.7		20	130		
EP075(SIM)B: Polynu	uclear Aromatic Hydrocarbons (Q	CLot: 2945215)								
EW1301886-070 C	QC101_26/06/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	99.6		70	130		
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	112		70	130		
EP080/071: Total Petr	roleum Hydrocarbons (QCLot: 29	45216)								
EW1301886-001 T	TP30_0.0-0.1_25/06/13	EP080: C6 - C9 Fraction		32.5 mg/kg	118		70	130		
EP080/071: Total Rec	coverable Hydrocarbons - NEPM 2	010 Draft (QCLot: 2945216)								
EW1301886-001 T	TP30_0.0-0.1_25/06/13	EP080: C6 - C10 Fraction		37.5 mg/kg	113		70	130		
EP080: BTEXN (QCL	_ot: 2945216)									
EW1301886-001 T	TP30_0.0-0.1_25/06/13	EP080: Benzene	71-43-2	2.5 mg/kg	76.8		70	130		
		EP080: Toluene	108-88-3	2.5 mg/kg	81.3		70	130		
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	80.3		70	130		
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	81.5		70	130		
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	81.9		70	130		
		EP080: Naphthalene	91-20-3	2.5 mg/kg	106		70	130		
EK059G: Nitrite plus	Nitrate as N (NOx) by Discrete A	nalyser (QCLot: 2945310)								
ES1314693-001 A	Anonymous	EK059G: Nitrite + Nitrate as N (Sol.)		2.5 mg/kg	81.0		70	130		
EK057G: Nitrite as N	I by Discrete Analyser (QCLot: 29	45313)								
EW1301886-017 T	TP26_0.5-0.6_25/06/13	EK057G: Nitrite as N (Sol.)		2.5 mg/kg	120		70	130		
EP004: Organic Matte	er (QCLot: 2945812)									
EW1301886-005 T	TP29_0.3-0.4_25/06/13	EP004: Organic Matter		4.58 %	3.6					
		EP004: Total Organic Carbon		2.66 %	3.6					
EP080/071: Total Petr	roleum Hydrocarbons(Q <u>CLot: 29</u>	45940)								



Sub-Matrix: SOIL					Matrix Spike (M	S) and Matrix S	oike Duplicate	(MSD) Repor	t	
				Spike	Spike Rec	overy (%)	Recovery	Limits (%)	RP	Ds (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total R	ecoverable Hydrocarbons - NEPN	I 2010 Draft (QCLot: 2945940)								
EW1301886-070	QC101_26/06/13	EP080: C6 - C10 Fraction		37.5 mg/kg	85.1		70	130		
EP080: BTEXN (Q	CLot: 2945940)									
EW1301886-070	QC101_26/06/13	EP080: Benzene	71-43-2	2.5 mg/kg	78.3		70	130		
		EP080: Toluene	108-88-3	2.5 mg/kg	83.8		70	130		
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	78.3		70	130		
		EP080: meta- & para-Xylene	108-38-3 106-42-3	2.5 mg/kg	72.9		70	130		
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	77.3		70	130		
		EP080: Naphthalene	91-20-3	2.5 mg/kg	70.5		70	130		
EG005T: Total Met	als by ICP-AES (OCI of: 2946073)									
EW1301886-001	TP30 0.0-0.1 25/06/13	EG005T: Arsenic	7440-38-2	50 mg/kg	# 29.3		70	130		
		EG005T: Cadmium	7440-43-9	50 mg/kg	102		70	130		
		EG005T: Chromium	7440-47-3	50 mg/kg	112		70	130		
		EG005T: Copper	7440-50-8	250 mg/kg	# Not		70	130		
		EG005T: Lead	7439-92-1	250 mg/kg	# 210		70	130		
		EG005T: Nickel	7440-02-0	50 mg/kg	107		70	130		
		EG005T: Selenium	7782-49-2	50 mg/kg	98.3		70	130		
		EG005T: Zinc	7440-66-6	250 mg/kg	# 429		70	130		
EG035T: Total Rec	overable Mercury by FIMS (QCL	ot: 2946074)								
EW1301886-001	TP30_0.0-0.1_25/06/13	EG035T: Mercury	7439-97-6	5 mg/kg	108		70	130		
EG005T: Total Meta	als by ICP-AES (QCLot: 2946075)									
EW1301886-042	TP15_0.0-0.1_26/06/13	EG005T: Arsenic	7440-38-2	50 mg/kg	107		70	130		
		EG005T: Cadmium	7440-43-9	50 mg/kg	110		70	130		
		EG005T: Chromium	7440-47-3	50 mg/kg	100		70	130		
		EG005T: Copper	7440-50-8	250 mg/kg	# Not Determined		70	130		
		EG005T: Lead	7439-92-1	250 mg/kg	102		70	130		
		EG005T: Nickel	7440-02-0	50 mg/kg	105		70	130		
		EG005T: Selenium	7782-49-2	50 mg/kg	101		70	130		
		EG005T: Zinc	7440-66-6	250 mg/kg	94.7		70	130		
EG035T: Total Rec	coverable Mercury by FIMS (QCL	ot: 2946076)								
EW1301886-042	TP15_0.0-0.1_26/06/13	EG035T: Mercury	7439-97-6	5 mg/kg	112		70	130		
EK061G: Total Kjel	dahl Nitrogen B <u>y Discrete Analys</u>	er (QCLot: 2946169)								
EW1301886-017	TP26_0.5-0.6_25/06/13	EK061G: Total Kjeldahl Nitrogen as N		500 mg/kg	84.3		70	130		
EK067G: Total Pho	sphorus as P by Discrete Analyse	er (QCLot: 2946170)								
EW1301886-017	TP26_0.5-0.6_25/06/13	EK067G: Total Phosphorus as P		100 mg/kg	96.1		70	130		
EG005T: Total Met	als by ICP-AFS (OCL of: 2946883)									
Ecologi. Total Meta	als by for ALC (QCLUL 2340003)									



Sub-Matrix: SOIL	ub-Matrix: SOIL		Matrix Spike (MS) and Matrix Spike Duplicate (MSD					e (MSD) Repor) Report				
				Spike	Spike Red	covery (%)	6) Recovery Limits (%)		RP	Ds (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit			
EG005T: Total Metal	Is by ICP-AES (QCLot: 294688	3) - continued											
ES1314698-019	Anonymous	EG005T: Arsenic	7440-38-2	50 mg/kg	108		70	130					
		EG005T: Cadmium	7440-43-9	50 mg/kg	105		70	130					
		EG005T: Chromium	7440-47-3	50 mg/kg	108		70	130					
		EG005T: Copper	7440-50-8	250 mg/kg	108		70	130					
		EG005T: Lead	7439-92-1	250 mg/kg	104		70	130					
		EG005T: Nickel	7440-02-0	50 mg/kg	107		70	130					
		EG005T: Selenium	7782-49-2	50 mg/kg	106		70	130					
		EG005T: Zinc	7440-66-6	250 mg/kg	104		70	130					
EG035T: Total Reco	overable Mercury by FIMS (QC	CLot: 2946884)											
ES1314698-019	Anonymous	EG035T: Mercury	7439-97-6	5 mg/kg	104		70	130					
EK055: Ammonia as	N (QCLot: 2954700)												
EW1301886-001	TP30 0.0-0.1 25/06/13	EK055: Ammonia as N	7664-41-7	50 mg/kg	73.2		70	130					
EK055: Ammonia as	N (OCI of: 2954701)			00				1					
EW1301886-067	TP8 0 0-0 1 26/06/13	EK055: Ammonia as N	7664-41-7	50 ma/ka	75.7		70	130					
			1001111	ee mg/ng	10.1		10	100					
Sub-Matrix: WATER					Matrix Spike (N	MS) and Matrix S	pike Duplicate	e (MSD) Repor	t				
				Spike	Spike Red	covery (%)	Recovery	Limits (%)	RP	Ds (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit			
EP080/071: Total Pe	troleum Hydrocarbons (QCLo	ıt: 2945542)											
ES1314718-019	Anonymous	EP080: C6 - C9 Fraction		325 µg/L	# Not		70	130					
					Determined								
EP080/071: Total Re	coverable Hydrocarbons - NEF	PM 2010 Draft (QCLot: 2945542)											
ES1314718-019	Anonymous	EP080: C6 - C10 Fraction		375 µg/L	# Not		70	130					
					Determined								
EP080: BTEXN (QC	Lot: 2945542)												
ES1314718-019	Anonymous	EP080: Benzene	71-43-2	25 µg/L	94.9		70	130					
		EP080: Toluene	108-88-3	25 µg/L	93.7		70	130					
		EP080: Ethylbenzene	100-41-4	25 µg/L	109		70	130					
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	# Not		70	130					
			106-42-3		Determined								
		EP080: ortho-Xylene	95-47-6	25 µg/L	# Not		70	130					
					Determined								
		EP080: Naphthalene	91-20-3	25 µg/L	73.9		70	130					
EG020T: Total <u>Metal</u>	Is by ICP-MS (QCLot: 2946970)											
EG020T: Total Metal EW1301886-022	Is by ICP-MS (QCLot: 2946970 QC300_25/06/13) EG020A-T: Arsenic	7440-38-2	1 mg/L	76.6		70	130					
EG020T: Total Metal EW1301886-022	Is by ICP-MS (QCLot: 2946970 QC300_25/06/13	EG020A-T: Arsenic EG020A-T: Cadmium	7440-38-2 7440-43-9	1 mg/L 0.25 mg/L	76.6 104		70	130 130		 			
EG020T: Total Metal EW1301886-022	Is by ICP-MS (QCLot: 2946970 QC300_25/06/13	EG020A-T: Arsenic EG020A-T: Cadmium EG020A-T: Chromium	7440-38-2 7440-43-9 7440-47-3	1 mg/L 0.25 mg/L 1 mg/L	76.6 104 107	 	70 70 70	130 130 130		 			

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Work Order	: EW1301886
Client	: PORT KEMBLA COPPER
Project	137623028



Sub-Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	covery (%)	Recovery	Limits (%)	RPD	s (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EG020T: Total Metals by ICP-MS (QCLot: 2946970) - continued										
EW1301886-022 QC300_25/06/13	QC300_25/06/13	EG020A-T: Lead	7439-92-1	1 mg/L	104		70	130		
		EG020A-T: Manganese	7439-96-5	1 mg/L	108		70	130		
		EG020A-T: Nickel	7440-02-0	1 mg/L	104		70	130		
	EG020A-T: Zinc	7440-66-6	1 mg/L	95.6		70	130			
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2956347)										
EW1301886-022	QC300_25/06/13	EG035T: Mercury	7439-97-6	0.010 mg/L	92.2		70	130		





Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: EW1301886	Page	: 1 of 25
Client	: PORT KEMBLA COPPER	Laboratory	: Environmental Division NSW South Coast
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	: SYDNEY	Address	: 99 Kenny Street, Wollongong 2500
			Unit 4 / 13 Geary Place, PO Box 3105, North Nowra 2541
			AUSTRALIA
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project	: 137623028	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Site	: PKC-PRIMARY SCHOOL		
C-O-C number	:	Date Samples Received	: 27-JUN-2013
Sampler	: KE YE	Issue Date	: 10-JUL-2013
Order number	:		
		No. of samples received	: 103
Quote number	:	No. of samples analysed	: 64

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

Address 99 Kenny Street, Wollongong 2500

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Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: SOIL					Evaluation	× = Holding time	breach ; 🗸 = Withir	n holding time.
Method		Sample Date	Ex	traction / 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)								
TP29_0.3-0.4_25/06/13,	TP28_0.9-1.0_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	~	02-JUL-2013	02-JUL-2013	✓
Soil Glass Jar - Unpreserved (EA002)								
TP25_0.0-0.1_26/06/13,	TP24_0.5-0.6_26/06/13,	26-JUN-2013	02-JUL-2013	03-JUL-2013	~	02-JUL-2013	02-JUL-2013	\checkmark
TP20_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,							
TP14_0.0-0.1_26/06/13,	TP9_0.5-0.6_26/06/13,							
TP10_0.0-0.1_26/06/13,	TP11_0.9-1.0_26/06/13,							
TP8_0.0-0.1_26/06/13								
Soil Glass Jar - Unpreserved (EA002)								
TP7_0.5-0.6_27/06/13,	TP5_0.9-1.0_27/06/13,	27-JUN-2013	02-JUL-2013	04-JUL-2013	1	02-JUL-2013	02-JUL-2013	✓
TP1_0.0-0.1_27/06/13,	TP3_0.5-0.6_27/06/13							

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Matrix: SOIL						Evaluation	: × = Holding time	breach ; ✓ = Withi	n holding time
Method		Sample Date	Ex	traction / Preparation		Analysis			
Container / Client Sample ID(s)				Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EA055: Moisture Content									
Snap Lock Bag (EA055-103) TP15_0.0-0.1_26/06/13			26-JUN-2013				02-JUL-2013	10-JUL-2013	✓
Soil Glass Jar - Unpreserved (EA055-103)									
TP30_0.0-0.1_25/06/13,	TP30_0.5-0.6_25/06/13,		25-JUN-2013				02-JUL-2013	09-JUL-2013	✓
TP29_0.3-0.4_25/06/13,	TP29_0.9-1.0_25/06/13,								
TP27_0.0-0.1_25/06/13,	TP27_0.5-0.6_25/06/13,								
TP28_0.0-0.1_25/06/13,	TP28_0.9-1.0_25/06/13,								
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13,								
QC400_25/06/13									
Soil Glass Jar - Unpreserved (EA055-103)									
TP25_0.0-0.1_26/06/13,	TP25_0.9-1.0_26/06/13,		26-JUN-2013				02-JUL-2013	10-JUL-2013	✓
QC100_26/06/13,	TP24_0.0-0.1_26/06/13,								
TP24_0.5-0.6_26/06/13,	TP20_0.5-0.6_26/06/13,								
TP20_0.9-1.0_26/06/13,	TP16A_0.2-0.3_26/06/13,								
TP16A_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,								
TP14_0.0-0.1_26/06/13,	TP14_0.5-0.6_26/06/13,								
TP13_0.5-0.6_26/06/13,	TP13_1.5-1.6_26/06/13,								
TP9_0.3-0.4_26/06/13,	TP9_0.5-0.6_26/06/13,								
TP10_0.0-0.1_26/06/13,	TP10_0.5-0.6_26/06/13,								
TP11_0.1-0.2_26/06/13,	TP11_0.9-1.0_26/06/13,								
TP12_0.00.1_26/06/13,	TP12_0.9-1.0_26/06/13,								
TP8_0.0-0.1_26/06/13,	TP8_0.9-1.0_26/06/13,								
QC101_26/06/13,	QC401_26/06/13								
Soil Glass Jar - Unpreserved (EA055-103)									
TP7_0.3-0.4_27/06/13,	TP7_0.5-0.6_27/06/13,		27-JUN-2013				02-JUL-2013	11-JUL-2013	✓
TP6_0.2-0.3_27/06/13,	TP6_0.5-0.6_27/06/13,								
TP5_0.5-0.6_27/06/13,	QC102_27/06/13,								
TP5_0.9-1.0_27/06/13,	TP1_0.0-0.1_27/06/13,								
TP1_0.9-1.0_27/06/13,	TP2_0.0-0.1_27/06/13,								
TP2_0.2-0.4_27/06/13,	QC402_27/06/13,								
TP3_0.0-0.1_27/06/13,									
TP3_0.5-0.6_27/06/13,	TP4_0.0-0.1_27/06/13,								
TP4_0.5-0.6_27/06/13,	OL1_0.0-0.2_27/06/13,	OL1_0.3-0.5_27/06/13,							
OL2_0.0-0.2_27/06/13,	OL2_0.3-0.5_27/06/13								

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Matrix: SOIL			Evaluation: * = Holding time breach ; < = Within holding time.								
Method		Sample Date	Ex	traction / Preparation		Analysis					
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation			
EA150: Soil Classification based on Particle Siz	re										
Snap Lock Bag (EA150H)											
TP25_0.0-0.1_26/06/13,	TP24_0.5-0.6_26/06/13,	26-JUN-2013		23-DEC-2013		05-JUL-2013	23-DEC-2013	 ✓ 			
TP20_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,										
TP14_0.0-0.1_26/06/13,	TP9_0.5-0.6_26/06/13,										
TP10_0.0-0.1_26/06/13,	TP11_0.9-1.0_26/06/13,										
TP8_0.0-0.1_26/06/13											
Snap Lock Bag (EA150H)											
TP7_0.5-0.6_27/06/13,	TP5_0.9-1.0_27/06/13,	27-JUN-2013		24-DEC-2013		05-JUL-2013	24-DEC-2013	✓			
TP1_0.0-0.1_27/06/13,	TP3_0.5-0.6_27/06/13										
Soil Glass Jar - Unpreserved (EA150H)											
TP29_0.3-0.4_25/06/13,	TP28_0.9-1.0_25/06/13	25-JUN-2013		22-DEC-2013		05-JUL-2013	22-DEC-2013	✓			
EA200: AS 4964 - 2004 Identification of Asbesto	os in bulk samples										
Miscellaneous Plastic Bucket (EA200)											
TP20_0.5-0.6_26/06/13,	TP15_0.0-0.1_26/06/13,	26-JUN-2013		23-DEC-2013		05-JUL-2013	01-JAN-2014	 ✓ 			
TP10_0.0-0.1_26/06/13,	TP11_0.1-0.2_26/06/13,										
TP12_0.00.1_26/06/13											
Miscellaneous Plastic Bucket (EA200)											
TP7_0.3-0.4_27/06/13,	TP3_0.0-0.1_27/06/13	27-JUN-2013		24-DEC-2013		05-JUL-2013	01-JAN-2014	✓			
Snap Lock Bag (EA200)		00 1111 0040		00 050 0040							
TP16A_0.9-1.0_26/06/13,	TP16B_0.1-0.2_26/06/13,	26-JUN-2013		23-DEC-2013		05-JUL-2013	01-JAN-2014	✓			
TP12A_0.1-0.2_26/06/13											
ED008: Exchangeable Cations											
Soil Glass Jar - Unpreserved (ED008)											
TP29_0.3-0.4_25/06/13,	TP28_0.9-1.0_25/06/13	25-JUN-2013	04-JUL-2013	23-JUL-2013	✓	08-JUL-2013	23-JUL-2013	✓			
Soil Glass Jar - Unpreserved (ED008)											
TP25_0.0-0.1_26/06/13,	TP24_0.5-0.6_26/06/13,	26-JUN-2013	04-JUL-2013	24-JUL-2013		08-JUL-2013	24-JUL-2013	✓			
TP20_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,										
TP14_0.0-0.1_26/06/13,	TP9_0.5-0.6_26/06/13,										
TP10_0.0-0.1_26/06/13,	TP11_0.9-1.0_26/06/13,										
TP8_0.0-0.1_26/06/13											
Soil Glass Jar - Unpreserved (ED008)											
TP7_0.5-0.6_27/06/13,	TP5_0.9-1.0_27/06/13,	27-JUN-2013	04-JUL-2013	25-JUL-2013	-	08-JUL-2013	25-JUL-2013	 ✓ 			
TP1_0.0-0.1_27/06/13,	TP3_0.5-0.6_27/06/13										

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Matrix: SOIL				Evaluation: \times = Holding time breach ; \checkmark = Within holding time.								
Method			Sample Date	Ex	traction / 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												
Snap Lock Bag (EG005T)												
TP15_0.0-0.1_26/06/13			26-JUN-2013	02-JUL-2013	23-DEC-2013		05-JUL-2013	23-DEC-2013	✓			
Soil Glass Jar - Unpreserved (EG005T)			05 1111 0040		22 050 2012			22 050 2012				
TP30_0.0-0.1_25/06/13,	TP30_0.5-0.6_25/06/13,		25-JUN-2013	02-JUL-2013	22-DEC-2013	~	05-JUL-2013	22-DEC-2013	✓			
TP29_0.3-0.4_25/06/13,	TP29_0.9-1.0_25/06/13,											
TP27_0.0-0.1_25/06/13,	TP27_0.5-0.6_25/06/13,											
TP28_0.0-0.1_25/06/13,	TP28_0.9-1.0_25/06/13,											
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13,											
QC400_25/06/13												
Soil Glass Jar - Unpreserved (EG005T)												
TP25_0.0-0.1_26/06/13,	TP25_0.9-1.0_26/06/13,		26-JUN-2013	02-JUL-2013	23-DEC-2013	-	05-JUL-2013	23-DEC-2013	✓			
QC100_26/06/13,	TP24_0.0-0.1_26/06/13,											
TP24_0.5-0.6_26/06/13,	TP20_0.5-0.6_26/06/13,											
TP20_0.9-1.0_26/06/13,	TP16A_0.2-0.3_26/06/13,											
TP16A_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,											
TP14_0.0-0.1_26/06/13,	TP14_0.5-0.6_26/06/13,											
TP13_0.5-0.6_26/06/13,	TP13_1.5-1.6_26/06/13,											
TP9_0.3-0.4_26/06/13,	TP9_0.5-0.6_26/06/13,											
TP10_0.0-0.1_26/06/13,	TP10_0.5-0.6_26/06/13,											
TP11 0.1-0.2 26/06/13,	TP11 0.9-1.0 26/06/13,											
TP12 0.00.1 26/06/13,	TP12 0.9-1.0 26/06/13,											
TP8 0.0-0.1 26/06/13,	TP8 0.9-1.0 26/06/13,											
QC101 26/06/13,	QC401 26/06/13											
Soil Glass Jar - Unpreserved (EG005T)												
TP7_0.3-0.4_27/06/13,	TP7_0.5-0.6_27/06/13		27-JUN-2013	02-JUL-2013	24-DEC-2013	1	05-JUL-2013	24-DEC-2013	\checkmark			
Soil Glass Jar - Unpreserved (EG005T)												
TP6_0.2-0.3_27/06/13,	TP6_0.5-0.6_27/06/13,		27-JUN-2013	03-JUL-2013	24-DEC-2013	1	04-JUL-2013	24-DEC-2013	 ✓ 			
TP5_0.5-0.6_27/06/13,	QC102_27/06/13,											
TP5_0.9-1.0_27/06/13,	TP1_0.0-0.1_27/06/13,											
TP1_0.9-1.0_27/06/13,	TP2_0.0-0.1_27/06/13,											
TP2 0.2-0.4 27/06/13,	TP3 0.0-0.1 27/06/13,											
TP3 0.5-0.6 27/06/13,	QC402 27/06/13,											
TP4 0.0-0.1 27/06/13,												
TP4 0.5-0.6 27/06/13,	OL1 0.0-0.2 27/06/13.	OL1 0.3-0.5 27/06/13.										
OL2_0.0-0.2_27/06/13,	OL2_0.3-0.5_27/06/13	/										

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Matrix: SOIL			Evaluation: × = Holding time breach ; ✓ = Within holding time.								
Method		Sample Date	Ex	traction / 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											
Snap Lock Bag (EG035T)											
TP15_0.0-0.1_26/06/13			26-JUN-2013	02-JUL-2013	24-JUL-2013	<i>✓</i>	05-JUL-2013	24-JUL-2013	\checkmark		
Soil Glass Jar - Unpreserved (EG035T)											
TP30_0.0-0.1_25/06/13, T	P30_0.5-0.6_25/06/13,		25-JUN-2013	02-JUL-2013	23-JUL-2013	~	05-JUL-2013	23-JUL-2013	✓		
TP29_0.3-0.4_25/06/13, T	P29_0.9-1.0_25/06/13,										
TP27_0.0-0.1_25/06/13, T	P27_0.5-0.6_25/06/13,										
TP28_0.0-0.1_25/06/13, T	P28_0.9-1.0_25/06/13,										
TP26_0.5-0.6_25/06/13, T	P26_1.5-1.6_25/06/13,										
QC400_25/06/13											
Soil Glass Jar - Unpreserved (EG035T)											
TP25_0.0-0.1_26/06/13, T	P25_0.9-1.0_26/06/13,		26-JUN-2013	02-JUL-2013	24-JUL-2013	1	05-JUL-2013	24-JUL-2013	✓		
QC100_26/06/13, T	P24_0.0-0.1_26/06/13,										
TP24_0.5-0.6_26/06/13, T	P20_0.5-0.6_26/06/13,										
TP20_0.9-1.0_26/06/13, T	P16A_0.2-0.3_26/06/13,										
TP16A_0.5-0.6_26/06/13, T	P15_0.9-1.0_26/06/13,										
TP14_0.0-0.1_26/06/13, T	P14_0.5-0.6_26/06/13,										
TP13 0.5-0.6 26/06/13, T	P13 1.5-1.6 26/06/13,										
TP9 0.3-0.4 26/06/13, T	P9 0.5-0.6 26/06/13,										
TP10 0.0-0.1 26/06/13, T	P10 0.5-0.6 26/06/13,										
TP11 0.1-0.2 26/06/13, T	P11 0.9-1.0 26/06/13,										
TP12 0.00.1 26/06/13.	P12 0.9-1.0 26/06/13.										
TP8 0.0-0.1 26/06/13.	P8 0.9-1.0 26/06/13.										
QC101_26/06/13	C401 26/06/13										
Soil Glass Jar - Unpreserved (EG035T)											
TP7 0.3-0.4 27/06/13, T	P7 0.5-0.6 27/06/13		27-JUN-2013	02-JUL-2013	25-JUL-2013	~	05-JUL-2013	25-JUL-2013	1		
Soil Glass Jar - Unpreserved (EG035T)											
TP6_0.2-0.3_27/06/13, T	P6_0.5-0.6_27/06/13,		27-JUN-2013	03-JUL-2013	25-JUL-2013	1	04-JUL-2013	25-JUL-2013	1		
TP5 0.5-0.6 27/06/13,	QC102 27/06/13,										
TP5 0.9-1.0 27/06/13, T	P1 0.0-0.1 27/06/13,										
TP1 0.9-1.0 27/06/13.	P2 0.0-0.1 27/06/13.										
TP2 0.2-0.4 27/06/13, T	P3 0.0-0.1 27/06/13.										
TP3 0.5-0.6 27/06/13.	QC402 27/06/13.										
TP4 0.0-0.1 27/06/13.	,										
TP4 0 5-0 6 27/06/13	0 1 0 0-0 2 27/06/13	OI 1 0 3-0 5 27/06/13									
OL2 0.0-0.2 27/06/13.	DL2 0.3-0.5 27/06/13	,									

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Matrix: SOIL					Evaluation	: × = Holding time	breach ; ✓ = Within	n 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
EK055: Ammonia as N								
Snap Lock Bag (EK055) TP15_0.0-0.1_26/06/13		26-JUN-2013				08-JUL-2013	23-DEC-2013	~
Soil Glass Jar - Unpreserved (EK055)								
TP30_0.0-0.1_25/06/13,	TP29_0.3-0.4_25/06/13,	25-JUN-2013				08-JUL-2013	22-DEC-2013	✓
TP27_0.5-0.6_25/06/13,	TP28_0.0-0.1_25/06/13,							
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13,							
QC400_25/06/13								
Soil Glass Jar - Unpreserved (EK055)								
TP25_0.0-0.1_26/06/13,	QC100_26/06/13,	26-JUN-2013				08-JUL-2013	23-DEC-2013	✓
TP24_0.5-0.6_26/06/13,	TP20_0.5-0.6_26/06/13,							
TP16A_0.2-0.3_26/06/13,	TP16A_0.5-0.6_26/06/13,							
TP14_0.0-0.1_26/06/13,	TP13_0.5-0.6_26/06/13,							
TP9_0.3-0.4_26/06/13,	TP10_0.0-0.1_26/06/13,							
TP11_0.1-0.2_26/06/13,	TP12_0.00.1_26/06/13,							
TP8_0.0-0.1_26/06/13,	QC101_26/06/13,							
QC401_26/06/13								
Soil Glass Jar - Unpreserved (EK055)	TD6 0 2 0 2 07/06/12	27 111N 2013				08 1111 2012	24-DEC-2013	
TP7_0.3-0.4_27/06/13,	$170_{0.2}$, $27/06/13$, 0.000	27-5011-2015				00-502-2015	24-020-2013	√
TP5_0.5-0.0_27/06/13,	QC102_27/06/13,							
TP1_0.0-0.1_27/06/13,	TP2_0.2-0.4_27/06/13,							
1P3_0.0-0.1_27/06/13,	1P4_0.0-0.1_27/06/13,							
QC402_27/06/13								
EK057G: Nitrite as N by Discrete Analyser								
Soil Glass Jar - Unpreserved (EK057G)	TP26 1 5 1 6 25/06/13	25-JUN-2013	02-1111-2013	22-DEC-2013		02-1111-2013	22-DEC-2013	
Soil Glass Jar - Uppreserved (EK057G)	1720_1.0-1.0_23/00/13	20 0011 2010	02 002 2010	22 820 2010	•			•
TP20_0.5-0.6_26/06/13		26-JUN-2013	02-JUL-2013	23-DEC-2013	~	02-JUL-2013	23-DEC-2013	✓
EK059G: Nitrite plus Nitrate as N (NOx) by Disc	rete Analyser							
Soil Glass Jar - Unpreserved (EK059G)								
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13	25-JUN-2013	02-JUL-2013	22-DEC-2013		02-JUL-2013	22-DEC-2013	✓
Soil Glass Jar - Unpreserved (EK059G) TP20_0.5-0.6_26/06/13		26-JUN-2013	02-JUL-2013	23-DEC-2013	~	02-JUL-2013	23-DEC-2013	✓
EK061G: Total Kjeldahl Nitrogen By Discrete An	alyser							
Soil Glass Jar - Unpreserved (EK061G)								
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13	25-JUN-2013	03-JUL-2013	22-DEC-2013	✓	03-JUL-2013	22-DEC-2013	✓
Soil Glass Jar - Unpreserved (EK061G) TP20 0.5-0.6 26/06/13		26-JUN-2013	03-JUL-2013	23-DEC-2013	1	03-JUL-2013	23-DEC-2013	
EK067G: Total Phosphorus as P by Discrete An	alvser							-
Soil Glass Jar - Unpreserved (EK067G)								
TP26_0.5-0.6_25/06/13,	TP26_1.5-1.6_25/06/13	25-JUN-2013	03-JUL-2013	22-DEC-2013	~	03-JUL-2013	22-DEC-2013	\checkmark
Soil Glass Jar - Unpreserved (EK067G)								
TP20_0.5-0.6_26/06/13		26-JUN-2013	03-JUL-2013	23-DEC-2013		03-JUL-2013	23-DEC-2013	✓

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Matrix: SOIL		Evaluation: \star = Holding time breach ; \checkmark = Within holding time.						
Method Container / Client Sample ID(s)		Sample Date	Ex	traction / Preparation		Analysis		
			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP004: Organic Matter								
Soil Glass Jar - Unpreserved (EP004)								
TP29_0.3-0.4_25/06/13,	TP28_0.9-1.0_25/06/13	25-JUN-2013	09-JUL-2013	23-JUL-2013		09-JUL-2013	23-JUL-2013	 ✓
Soil Glass Jar - Unpreserved (EP004)				04 11 0040			04 11 11 0040	
TP25_0.0-0.1_26/06/13,	TP24_0.5-0.6_26/06/13,	26-JUN-2013	09-JUL-2013	24-JUL-2013	~	09-JUL-2013	24-JUL-2013	✓
TP20_0.5-0.6_26/06/13,	TP15_0.9-1.0_26/06/13,							
TP14_0.0-0.1_26/06/13,	TP9_0.5-0.6_26/06/13,							
TP10_0.0-0.1_26/06/13,	TP11_0.9-1.0_26/06/13,							
TP8_0.0-0.1_26/06/13								
Soil Glass Jar - Unpreserved (EP004)								
TP7_0.5-0.6_27/06/13,	TP5_0.9-1.0_27/06/13,	27-JUN-2013	09-JUL-2013	25-JUL-2013	~	09-JUL-2013	25-JUL-2013	✓
TP1_0.0-0.1_27/06/13,	TP3_0.5-0.6_27/06/13							
EP068A: Organochlorine Pesticides (OC)								
Snap Lock Bag (EP068)								
TP15_0.0-0.1_26/06/13		26-JUN-2013	02-JUL-2013	10-JUL-2013	~	04-JUL-2013	11-AUG-2013	✓
Soil Glass Jar - Unpreserved (EP068)					_			
TP30_0.0-0.1_25/06/13,	TP29_0.3-0.4_25/06/13,	25-JUN-2013	02-JUL-2013	09-JUL-2013	-	04-JUL-2013	11-AUG-2013	 ✓
TP27_0.5-0.6_25/06/13,	TP28_0.0-0.1_25/06/13,							
TP26_1.5-1.6_25/06/13,	QC400_25/06/13							
Soil Glass Jar - Unpreserved (EP068)								
QC101_26/06/13,	QC401_26/06/13	26-JUN-2013		10-JUL-2013		04-JUL-2013	10-JUL-2013	✓
Soil Glass Jar - Unpreserved (EP068)				40 11 0040			44, 4110, 0040	
TP25_0.0-0.1_26/06/13,	QC100_26/06/13,	26-JUN-2013	02-JUL-2013	10-JUL-2013	~	04-JUL-2013	11-AUG-2013	✓
TP24_0.5-0.6_26/06/13,	TP20_0.5-0.6_26/06/13,							
TP16A_0.2-0.3_26/06/13,	TP16A_0.5-0.6_26/06/13,							
TP14_0.0-0.1_26/06/13,	TP13_0.5-0.6_26/06/13,							
TP9_0.3-0.4_26/06/13,	TP10_0.0-0.1_26/06/13,							
TP11_0.1-0.2_26/06/13,	TP12_0.00.1_26/06/13,							
TP8_0.0-0.1_26/06/13								
Soil Glass Jar - Unpreserved (EP068)								
TP7_0.3-0.4_27/06/13,	TP6_0.2-0.3_27/06/13,	27-JUN-2013		11-JUL-2013		04-JUL-2013	11-JUL-2013	 ✓
TP5_0.5-0.6_27/06/13,	QC102_27/06/13,							
TP1_0.0-0.1_27/06/13,	TP2_0.2-0.4_27/06/13,							
TP3_0.0-0.1_27/06/13,	TP4_0.0-0.1_27/06/13,							
QC402_27/06/13								

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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) Snap Lock Bag (EP068) 26-JUN-2013 02-JUL-2013 10-JUL-2013 04-JUL-2013 11-AUG-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP068) 11-AUG-2013 TP30_0.0-0.1_25/06/13, TP29 0.3-0.4 25/06/13, 25-JUN-2013 02-JUL-2013 09-JUL-2013 1 04-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP068) 26-JUN-2013 10-JUL-2013 04-JUL-2013 10-JUL-2013 QC101_26/06/13, QC401_26/06/13 -------- \checkmark Soil Glass Jar - Unpreserved (EP068) 10-JUL-2013 11-AUG-2013 TP25_0.0-0.1_26/06/13, QC100 26/06/13, 26-JUN-2013 02-JUL-2013 \checkmark 04-JUL-2013 \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP068) 11-JUL-2013 11-JUL-2013 TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 ---------04-JUL-2013 \checkmark QC102_27/06/13, TP5_0.5-0.6_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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 Petroleum Hydrocarbons Snap Lock Bag (EP071) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 11-AUG-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP071) 11-AUG-2013 TP30_0.0-0.1_25/06/13, TP29_0.3-0.4_25/06/13, 25-JUN-2013 02-JUL-2013 09-JUL-2013 1 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP071) 26-JUN-2013 02-JUL-2013 10-JUL-2013 1 03-JUL-2013 11-AUG-2013 TP25_0.0-0.1_26/06/13, QC100_26/06/13, \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP071) 10-JUL-2013 12-AUG-2013 26-JUN-2013 03-JUL-2013 03-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP071) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 03-JUL-2013 11-JUL-2013 1 03-JUL-2013 12-AUG-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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)A: Phenolic Compounds Snap Lock Bag (EP075(SIM)) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 11-AUG-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP075(SIM)) 11-AUG-2013 TP30_0.0-0.1_25/06/13, TP29_0.3-0.4_25/06/13, 25-JUN-2013 02-JUL-2013 09-JUL-2013 1 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP075(SIM)) 26-JUN-2013 02-JUL-2013 10-JUL-2013 1 03-JUL-2013 11-AUG-2013 QC100_26/06/13, TP25_0.0-0.1_26/06/13, \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP075(SIM)) 10-JUL-2013 12-AUG-2013 26-JUN-2013 03-JUL-2013 03-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP075(SIM)) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 03-JUL-2013 11-JUL-2013 1 03-JUL-2013 12-AUG-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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 Snap Lock Bag (EP075(SIM)) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 11-AUG-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP075(SIM)) 11-AUG-2013 TP30_0.0-0.1_25/06/13, TP29_0.3-0.4_25/06/13, 25-JUN-2013 02-JUL-2013 09-JUL-2013 \checkmark 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP075(SIM)) 26-JUN-2013 02-JUL-2013 10-JUL-2013 1 03-JUL-2013 11-AUG-2013 QC100_26/06/13, TP25_0.0-0.1_26/06/13, \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP075(SIM)) 10-JUL-2013 12-AUG-2013 26-JUN-2013 03-JUL-2013 03-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP075(SIM)) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 03-JUL-2013 11-JUL-2013 1 03-JUL-2013 12-AUG-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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: BTEX Snap Lock Bag (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP080) 09-JUL-2013 09-JUL-2013 TP30_0.0-0.1_25/06/13, TP29_0.3-0.4_25/06/13, 25-JUN-2013 02-JUL-2013 1 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 1 TP25_0.0-0.1_26/06/13, QC100_26/06/13, \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP080) 10-JUL-2013 10-JUL-2013 26-JUN-2013 02-JUL-2013 04-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP080) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 02-JUL-2013 11-JUL-2013 1 04-JUL-2013 11-JUL-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{v} = 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 Snap Lock Bag (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP080) 09-JUL-2013 09-JUL-2013 TP30_0.0-0.1_25/06/13, TP29_0.3-0.4_25/06/13, 25-JUN-2013 02-JUL-2013 1 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 1 TP25_0.0-0.1_26/06/13, QC100_26/06/13, \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A_0.2-0.3_26/06/13, TP16A_0.5-0.6_26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP080) 10-JUL-2013 10-JUL-2013 26-JUN-2013 02-JUL-2013 04-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP080) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 02-JUL-2013 11-JUL-2013 1 04-JUL-2013 11-JUL-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

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Matrix: SOIL Evaluation: \mathbf{x} = Holding time breach ; \mathbf{y} = 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 Petroleum Hydrocarbons Snap Lock Bag (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 1 TP15_0.0-0.1_26/06/13 \checkmark Soil Glass Jar - Unpreserved (EP080) 09-JUL-2013 TP30_0.0-0.1_25/06/13, TP29 0.3-0.4 25/06/13, 25-JUN-2013 02-JUL-2013 09-JUL-2013 1 03-JUL-2013 \checkmark TP27_0.5-0.6_25/06/13, TP28_0.0-0.1_25/06/13, TP26_1.5-1.6_25/06/13, QC400_25/06/13 Soil Glass Jar - Unpreserved (EP080) 26-JUN-2013 02-JUL-2013 10-JUL-2013 03-JUL-2013 10-JUL-2013 TP25_0.0-0.1_26/06/13, QC100_26/06/13, 1 \checkmark TP24_0.5-0.6_26/06/13, TP20_0.5-0.6_26/06/13, TP16A 0.2-0.3 26/06/13, TP16A 0.5-0.6 26/06/13, TP14_0.0-0.1_26/06/13, TP13_0.5-0.6_26/06/13, TP9_0.3-0.4_26/06/13, TP10_0.0-0.1_26/06/13, TP11_0.1-0.2_26/06/13, TP12_0.0.-0.1_26/06/13, TP8_0.0-0.1_26/06/13 Soil Glass Jar - Unpreserved (EP080) 10-JUL-2013 10-JUL-2013 26-JUN-2013 02-JUL-2013 04-JUL-2013 QC101_26/06/13, QC401_26/06/13 1 \checkmark Soil Glass Jar - Unpreserved (EP080) TP7_0.3-0.4_27/06/13, TP6_0.2-0.3_27/06/13, 27-JUN-2013 02-JUL-2013 11-JUL-2013 1 04-JUL-2013 11-JUL-2013 \checkmark TP5_0.5-0.6_27/06/13, QC102_27/06/13, TP1_0.0-0.1_27/06/13, TP2_0.2-0.4_27/06/13, TP3_0.0-0.1_27/06/13, TP4_0.0-0.1_27/06/13, QC402_27/06/13

Matrix: WATER

Evaluation: * = Holding time breach ; \checkmark = Within holding time.

Method	Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EG020T: Total Metals by ICP-MS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
QC300_25/06/13	25-JUN-2013	03-JUL-2013	22-DEC-2013	1	03-JUL-2013	22-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
QC301_26/06/13	26-JUN-2013	03-JUL-2013	23-DEC-2013	1	03-JUL-2013	23-DEC-2013	✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T)							
QC302_27/06/13	27-JUN-2013	03-JUL-2013	24-DEC-2013	1	03-JUL-2013	24-DEC-2013	✓
EG035T: Total Recoverable Mercury by FIMS							
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
QC300_25/06/13	25-JUN-2013				09-JUL-2013	23-JUL-2013	 ✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
QC301_26/06/13	26-JUN-2013				09-JUL-2013	24-JUL-2013	 ✓
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T)							
QC302_27/06/13	27-JUN-2013				09-JUL-2013	25-JUL-2013	 ✓

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Matrix: WATER				Evaluation:	× = Holding time	breach ; ✓ = Withir	n holding time.
Method	Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP068A: Organochlorine Pesticides (OC)							
Amber Glass Bottle - Unpreserved (EP068) QC300_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP068) QC301_26/06/13	26-JUN-2013	02-JUL-2013	03-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP068) QC302_27/06/13	27-JUN-2013	02-JUL-2013	04-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
EP068B: Organophosphorus Pesticides (OP)							
Amber Glass Bottle - Unpreserved (EP068) QC300_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP068) QC301_26/06/13	26-JUN-2013	02-JUL-2013	03-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP068) QC302_27/06/13	27-JUN-2013	02-JUL-2013	04-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
EP080/071: Total Petroleum Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP071) QC300_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP071) QC301_26/06/13	26-JUN-2013	02-JUL-2013	03-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP071) QC302_27/06/13	27-JUN-2013	02-JUL-2013	04-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
EP075(SIM)A: Phenolic Compounds							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC300_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC301_26/06/13	26-JUN-2013	02-JUL-2013	03-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC302_27/06/13	27-JUN-2013	02-JUL-2013	04-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons							
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC300_25/06/13	25-JUN-2013	02-JUL-2013	02-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC301_26/06/13	26-JUN-2013	02-JUL-2013	03-JUL-2013	~	03-JUL-2013	11-AUG-2013	~
Amber Glass Bottle - Unpreserved (EP075(SIM)) QC302 27/06/13	27-JUN-2013	02-JUL-2013	04-JUL-2013	1	03-JUL-2013	11-AUG-2013	~
EP080: BTEXN							
Amber VOC Vial - Sulfuric Acid (EP080) QC300_25/06/13	25-JUN-2013	03-JUL-2013	09-JUL-2013	1	03-JUL-2013	09-JUL-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080) QC301_26/06/13	26-JUN-2013	03-JUL-2013	10-JUL-2013	1	03-JUL-2013	10-JUL-2013	~
Amber VOC Vial - Sulfuric Acid (EP080) QC302_27/06/13	27-JUN-2013	03-JUL-2013	11-JUL-2013	4	03-JUL-2013	11-JUL-2013	1

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Matrix: WATER				Evaluation:	× = Holding time	breach ; ✓ = Withir	holding time.
Method	Sample Date	Ex	traction / Preparation			Analysis	
Container / Client Sample ID(s)		Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation
EP080/071: Total Petroleum Hydrocarbons							
Amber VOC Vial - Sulfuric Acid (EP080)							
QC300_25/06/13	25-JUN-2013	03-JUL-2013	09-JUL-2013	✓	03-JUL-2013	09-JUL-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC301_26/06/13	26-JUN-2013	03-JUL-2013	10-JUL-2013	1	03-JUL-2013	10-JUL-2013	✓
Amber VOC Vial - Sulfuric Acid (EP080)							
QC302_27/06/13	27-JUN-2013	03-JUL-2013	11-JUL-2013	1	03-JUL-2013	11-JUL-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.

Vlatrix: 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	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Buchi Ammonia	EK055	4	32	12.5	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations with pre-treatment	ED008	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Moisture Content	EA055-103	6	64	9.4	10.0	x	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	4	25.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Analyser							
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	3	33.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	2	15	13.3	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	4	35	11.4	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	4	31	12.9	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
pH (1:5)	EA002	3	23	13.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TKN as N By Discrete Analyser	EK061G	2	10	20.0	9.5	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	6	60	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	6	60	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosporus By Discrete Analyser	EK067G	1	3	33.3	10.0	~	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	4	34	11.8	10.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	4	40	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Buchi Ammonia	EK055	2	32	6.3	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations with pre-treatment	ED008	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	4	25.0	5.0	~	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Analyser							
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	35	5.7	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	31	6.5	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TKN as N By Discrete Analyser	EK061G	3	10	30.0	14.3	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	60	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosporus By Discrete Analyser	EK067G	3	3	100.0	15.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	34	5.9	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Buchi Ammonia	EK055	2	32	6.3	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Exchangeable Cations with pre-treatment	ED008	1	15	6.7	5.0		NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	4	25.0	5.0	<u> </u>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Analyser						-	
•							

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Matrix: SOIL	atrix: SOIL Evaluation: 🞽 = Quality Control frequency not within specification ; 🗸 = Quality Control frequency within specification						
Quality Control Sample Type		C	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	3	33.3	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Organic Matter	EP004	1	15	6.7	5.0	~	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	35	5.7	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	2	31	6.5	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TKN as N By Discrete Analyser	EK061G	1	10	10.0	4.8	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	60	5.0	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Phosporus By Discrete Analyser	EK067G	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	34	5.9	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Buchi Ammonia	EK055	2	32	6.3	5.0	1	ALS QCS3 requirement
Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	4	25.0	5.0	~	ALS QCS3 requirement
Analyser							
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	3	33.3	5.0	~	ALS QCS3 requirement
Organic Matter	EP004	1	15	6.7	5.0	1	ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	2	35	5.7	5.0	1	ALS QCS3 requirement
Pesticides by GCMS	EP068	2	31	6.5	5.0	~	ALS QCS3 requirement
TKN as N By Discrete Analyser	EK061G	1	10	10.0	4.8	~	ALS QCS3 requirement
Total Mercury by FIMS	EG035T	3	60	5.0	5.0	1	ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	3	60	5.0	5.0	✓	ALS QCS3 requirement
Total Phosporus By Discrete Analyser	EK067G	1	3	33.3	5.0	✓	ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	2	34	5.9	5.0	✓	ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	40	5.0	5.0	✓	ALS QCS3 requirement
Matrix: WATER				Evaluation	n: × = Quality Cor	ntrol frequency r	not within specification; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		C	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Total Mercury by FIMS	EG035T	1	3	33.3	10.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	15	13.3	10.0	~	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	2	20	10.0	10.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.0	5.0	1	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	3	33.3	5.0	 ✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	3	33.3	5.0		NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.7	5.0	- -	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	4	25.0	5.0	<u> </u>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	<u>√</u>	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Method Blanks (MB)

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Matrix: WATER	Evaluation: 🗶 = Quality Control frequency not within specification ; 🗸 = Quality Control frequency within specifica							
Quality Control Sample Type		Co	unt		Rate (%)		Quality Control Specification	
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation		
Method Blanks (MB) - Continued								
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	4	25.0	5.0	\checkmark	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Pesticides by GCMS	EP068	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.7	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH - Semivolatile Fraction	EP071	1	4	25.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	NEPM 1999 Schedule B(3) and ALS QCS3 requirement	
Matrix Spikes (MS)								
Total Mercury by FIMS	EG035T	1	3	33.3	5.0	✓	ALS QCS3 requirement	
Total Metals by ICP-MS - Suite A	EG020A-T	1	15	6.7	5.0	✓	ALS QCS3 requirement	
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	✓	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 (1999) 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 (2010 Draft) Schedule B(3) Section 7.1 and Table 1 (14 day holding time).
Particle Size Analysis by Hydrometer	EA150H	SOIL	Particle Size Analysis by Hydrometer according to AS1289.3.6.3 - 2003
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	Estimation of Asbestos content with Confirmation of Identification by AS 4964 - 2004 Asbestos
Exchangeable Cations with	ED008	SOIL	Rayment & Higginson (1992) Method 15A2. Soluble salts are removed from the sample prior to analysis.
pre-treatment			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 (1999)
			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 (1999) Schedule B(3)
Total Mercury by FIMS	EG035T	SOIL	AS 3550, APHA 21st ed., 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a
			heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is
			compliant with NEPM (1999) Schedule B(3)
Buchi Ammonia	EK055	SOIL	APHA 21st ed., 4500 NH3+-B&G, H Samples are steam distilled (Buchi) prior to analysis and quantified using
			titration, FIA or Discrete Analyser.
Nitrite as N - Soluble by Discrete	EK057G	SOIL	APHA 21st ed., 4500 NO3- B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Analyser			
Nitrate as N - Soluble by Discrete	EK058G	SOIL	APHA 21st ed., 4500 NO3F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical
Analyser			reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry
			and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx)- Soluble by	EK059G	SOIL	APHA 21st ed., 4500 NO3- F. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by
Discrete Analyser			Chemical Reduction, and direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	APHA 21st ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by
			Discrete Analyser.
Total Nitrogen as N (TKN + NOx) By	EK062G	SOIL	APHA 21st ed., 4500 Norg/NO3- Total Nitrogen is determined as the sum of TKN and Oxidised Nitrrogen, each
Discrete Analyser			determined seperately as N.
I otal Phosporus By Discrete Analyser	EK067G	SOIL	APHA 21st ed., 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete
			Analyser.
Organic Matter	EP004	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with
			NEPM (1999) Schedule B(3) (Method 105)

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Analytical Methods	Method	Matrix	Method Descriptions
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 (1999) 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 (1999) 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 (1999) 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 (1999) Schedule B(3) (Method 501)
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.
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
Exchangeable Cations Preparation Method	ED007PR	SOIL	Rayment & Higginson (1992) method 15A1. A 1M NH4Cl 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.

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Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (1999) Schedule B(3) (Method 202)
Organic Matter	EP004-PR	SOIL	AS1289.4.1.1 - 1997., Dichromate oxidation method after Walkley and Black. This method is compliant with NEPM (1999) 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.
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2). 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: 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	EW1301886-001	TP30_0.0-0.1_25/06/13	Arsenic	7440-38-2	30.0 %	0-20%	RPD exceeds LOR based limits
EG005T: Total Metals by ICP-AES	EW1301886-001	TP30_0.0-0.1_25/06/13	Zinc	7440-66-6	30.7 %	0-20%	RPD exceeds LOR based limits
EK067G: Total Phosphorus as P by Discrete Analyser	EW1301886-017	TP26_0.5-0.6_25/06/13	Total Phosphorus as P		27.7 %	0-20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	EW1301886-001	TP30_0.0-0.1_25/06/13	Arsenic	7440-38-2	29.3 %	70-130%	Recovery less than lower data quality
							objective
EG005T: Total Metals by ICP-AES	EW1301886-001	TP30_0.0-0.1_25/06/13	Copper	7440-50-8	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EG005T: Total Metals by ICP-AES	EW1301886-042	TP15_0.0-0.1_26/06/13	Copper	7440-50-8	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EG005T: Total Metals by ICP-AES	EW1301886-001	TP30_0.0-0.1_25/06/13	Lead	7439-92-1	210 %	70-130%	Recovery greater than upper data
							quality objective
EG005T: Total Metals by ICP-AES	EW1301886-001	TP30_0.0-0.1_25/06/13	Zinc	7440-66-6	429 %	70-130%	Recovery greater than upper data
							quality objective

Matrix: WATER

Compound Group Name	Laboratory Sample ID	Client Sample ID	Analyte	CAS Number	Data	Limits	Comment
Matrix Spike (MS) Recoveries							
EP080/071: Total Petroleum Hydrocarbons	ES1314718-019	Anonymous	C6 - C9 Fraction		Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EP080/071: Total Recoverable Hydrocarbons - NEPM	2 ES1314718-019	Anonymous	C6 - C10 Fraction		Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EP080: BTEXN	ES1314718-019	Anonymous	meta- & para-Xylene 108-3	38-3 106-42-3	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EP080: BTEXN	ES1314718-019	Anonymous	ortho-Xylene	95-47-6	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.

• For all matrices, no Method Blank value outliers occur.

• For all matrices, no Laboratory Control 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	EW1301886-092	TP3_0.0-0.1_27/06/13	4-Bromofluorobenzene	460-00-4	70.6 %	71.6-130.0	Recovery less than lower 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.

Matrix: SOIL

Quality Control Sample Type	Count		Rate	e (%)	Quality Control Specification
Method	QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)					
Moisture Content	6	64	9.4	10.0	NEPM 1999 Schedule B(3) and ALS QCS3 requirement

Golds: Form No. CA_SNA+ Revision 0 + Date: 25/11/04	RECEIVED BY ANO. LOT	Shin Shin Shin Shin <t< th=""><th></th></t<>	
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Partitue Paren Mar (74 SNA+ Revening 0 - Date: 25/11/04





SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: EW1	301886							
Client	: PORT	KEMBLA COPPER	Laboratory	: Envi Coas	ironmental Division NSW South st				
Contact Address	: MS CA : SYDN	AROLINA OLMOS EY	Contact Address	EClier 99 K Unit Nort AUS	nt Services Kenny Street, Wollongong 2500 4 / 13 Geary Place, PO Box 3105, th Nowra 2541 STRALIA				
E-mail Telephone Facsimile	: colmo: :	s@golder.com.au	E-mail Telephone Facsimile	: sydn : +61- : +61-	ney@alsglobal.com -2-8784 8555 -2-8784 8500				
Project Order number	: 13762	3028	Page	: 1 of 9	9				
C-O-C number Site	: : PKC-F	PRIMARY SCHOOL	Quote number	:					
Sampler	: KE YE		QC Level	: NEP QCS	EPM 1999 Schedule B(3) and ALS CS3 requirement				
Dates									
Date Samples Rec Client Requested E	Received: 27-JUN-2013ted Due Date: 09-JUL-2013		Issue Date: 02-JUL-2013 11:47Scheduled Reporting Date: 09-JUL-2013						
Delivery Det	ails								
Mode of Delivery No. of coolers/boxe Security Seal	es	Client Drop off 6 HARD Intact.	Temperature No. of samples rece No. of samples ana	eived Ilysed	 0.6' C'C - Ice present 103 64 				

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.
- Particle size and ASBESTOS analysis will be subcontracted to ALS Newcastle.
- Sample containers do not comply to pretreatment / preservation standards (AS, APHA, USEPA). Please refer to the Sample Container(s)/Preservation Non-Compliance Log at the end of this report for details.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (14 days), Solid (90 days) from date of completion of work order.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Samples QC200, QC201 and QC202 will be forwarded to Envirolab as per COC.

Address 99 Kenny Street, Wollongong 2500 Environmental Division NSW ଓଡିଣାଣୀ ପିରେଷ/ ମିଣ୍ଡରଣ ପରି ଅଣ୍ଟର ମିଣ୍ଡା ନିର୍ଯ୍ୟ ନିମ୍ପ ନାହା ନିର୍ଯ୍ୟ ନିର୍ଯ୍ୟ ନିର୍ଯ୍ୟ ନ

www.alsglobal.com



Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

Method Client sample ID	Sample Container Received	Preferred Sample Container for Analysis
EP068 : Pesticides by GCMS		
TP15_0.0-0.1_26/06/13	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP071 : TPH - Semivolatile Fraction		
TP15_0.0-0.1_26/06/13	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP075(SIM) : PAH/Phenols (SIM)		
TP15_0.0-0.1_26/06/13	- Snap Lock Bag	- Soil Glass Jar - Unpreserved
EP080 : TPH Volatiles/BTEX		
TP15_0.0-0.1_26/06/13	- Snap Lock Bag	- Soil Glass Jar - Unpreserved

Any sample identifications that cannot be displayed entirely in the analysis summary table will be listed below.

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EW1301886-001	· 25-JUN 2012 10:00	: TP30_0.0-0.1_25/06/13
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EW1301886-004	: 25-JUN-2013 10:00	: TP29_0.0-0.1_25/06/13
EW1301886-005	: 25-JUN-2013 10:00	: TP29_0.3-0.4_25/06/13
EW1301886-006	: 25-JUN-2013 10:00	: TP29_0.5-0.6_25/06/13
EW1301886-007	: 25-JUN-2013 10:00	: TP29_0.9-1.0_25/06/13
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EW1301886-020	: 25-JUN-2013 15:00	: TP26_2.0-2.1_25/06/13
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EW1301886-033	: 26-JUN-2013 10:00	: TP20_0.0-0.1_26/06/13
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EW1301886-040	: 26-JUN-2013 10:00	TP16A_0.9-1.0_26/06/13
EW1301886-041	: 26-JUN-2013 10:00	: TP16B_0.1-0.2_26/06/13
EW1301886-042	: 26-JUN-2013 10:00	: TP15_0.0-0.1_26/06/13
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EW1301886-051	: 26-JUN-2013 10:00	: TP13_0.9-1.0_26/06/13

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EW1301886-053	: 26-JUN-2013 15:00	: TP9_0.0-0.1_26/06/13
EW1301886-054	: 26-JUN-2013 15:00	: TP9_0.3-0.4_26/06/13
EW1301886-055	: 26-JUN-2013 15:00	: TP9_0.5-0.6_26/06/13
EW1301886-056	: 26-JUN-2013 15:00	: TP10_0.0-0.1_26/06/13
EW1301886-057	: 26-JUN-2013 15:00	: TP10_0.5-0.6_26/06/13
EW1301886-058	: 26-JUN-2013 15:00	: TP10_0.9-1.0_26/06/13
EW1301886-059	: 26-JUN-2013 15:00	: TP11_0.1-0.2_26/06/13
EW1301886-060	: 26-JUN-2013 15:00	: TP11_0.5-0.6_26/06/13
EW1301886-061	: 26-JUN-2013 15:00	: TP11_0.9-1.0_26/06/13
EW1301886-062	: 26-JUN-2013 15:00	: TP11_1.4-1.5_26/06/13
EW1301886-063	: 26-JUN-2013 15:00	: TP12A_0.1-0.2_26/06/13
EW1301886-064	: 26-JUN-2013 15:00	: TP12_0.00.1_26/06/13
EW1301886-065	: 26-JUN-2013 15:00	: TP12_0.5-0.6_26/06/13
EW1301886-066	: 26-JUN-2013 15:00	: TP12_0.9-1.0_26/06/13
EW1301886-067	: 26-JUN-2013 15:00	: TP8_0.0-0.1_26/06/13
EW1301886-068	: 26-JUN-2013 15:00	: TP8_0.5-0.6_26/06/13
EW1301886-069	: 26-JUN-2013 15:00	: TP8_0.9-1.0_26/06/13
EW1301886-073	: 27-JUN-2013 10:00	: TP7_0.0-0.1_27/06/13
EW1301886-074	: 27-JUN-2013 10:00	: TP7_0.3-0.4_27/06/13
EW1301886-075	: 27-JUN-2013 10:00	: TP7_0.5-0.6_27/06/13
EW1301886-076	: 27-JUN-2013 10:00	: TP7_0.9-1.0_27/06/13
EW1301886-077	: 27-JUN-2013 10:00	: TP6_0.0-0.1_27/06/13
EW1301886-078	: 27-JUN-2013 10:00	: TP6_0.2-0.3_27/06/13
EW1301886-079	: 27-JUN-2013 10:00	: TP6_0.5-0.6_27/06/13
EW1301886-080	: 27-JUN-2013 10:00	: TP6_0.9-1.0_27/06/13
EW1301886-081	: 27-JUN-2013 10:00	: TP5_0.0-0.1_27/06/13
EW1301886-082	: 27-JUN-2013 10:00	: TP5_0.5-0.6_27/06/13
EW1301886-084	: 27-JUN-2013 10:00	: TP5_0.9-1.0_27/06/13
EW1301886-085	: 27-JUN-2013 10:00	: TP5_1.1-1.2_27/06/13
EW1301886-086	: 27-JUN-2013 10:00	: TP1_0.0-0.1_27/06/13
EW1301886-087	: 27-JUN-2013 10:00	: TP1_0.5-0.6_27/06/13
EW1301886-088	: 27-JUN-2013 10:00	: TP1_0.9-1.0_27/06/13
EW1301886-089	: 27-JUN-2013 10:00	: TP2_0.0-0.1_27/06/13
EW1301886-090	: 27-JUN-2013 10:00	: TP2_0.2-0.4_27/06/13
EW1301886-091	: 27-JUN-2013 10:00	: TP2_0.9-1.0_27/06/13
EW1301886-092	: 27-JUN-2013 10:00	: TP3_0.0-0.1_27/06/13
EW1301886-093	: 27-JUN-2013 10:00	: TP3_0.5-0.6_27/06/13
EW1301886-094	: 27-JUN-2013 10:00	: TP3_0.9-1.0_27/06/13
EW1301886-095	: 27-JUN-2013 10:00	: TP4_0.0-0.1_27/06/13
EW1301886-096	: 27-JUN-2013 10:00	: TP4_0.5-0.6_27/06/13
EW1301886-097	: 27-JUN-2013 10:00	: TP4_0.9-1.0_27/06/13
EW1301886-100	: 27-JUN-2013 15:00	: OL1_0.0-0.2_27/06/13
EW1301886-101	: 27-JUN-2013 15:00	: OL1_0.3-0.5_27/06/13
EW1301886-102	: 27-JUN-2013 15:00	: OL2_0.0-0.2_27/06/13
EW1301886-103	: 27-JUN-2013 15:00	: OL2_0.3-0.5_27/06/13

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.





Image: Client samble client samble client samble client sample client sample client sample client size client solution in Soll. Image: Client sample client sample client size client size client size client size client solution in Soll. Mature client client size client solution in Soll. Soll EA002 PH (1:5) Soll EA002 Restors Identification in Solis Soll EA002 Abbestos Identification in Solis Soll EA002 Asbestos Identification in Solis Solis Solis Soli EA003 Asbestos Identification in Solis Soli EA003 Asbestos Identification in Solis Soli EA003 Soli EA003 Asbestos Identification in Solis Soli EA003 Soli EA000 Asbestos Identification in Solis	Exchangeable Cations with pre-treatment SOIL - EG005T (solids) Total Metals by ICP-AES
EW1301886-001 25-JUN-2013 10:00 TP30_0.0-0.1_25/06/13	✓
EW1301886-002 25-JUN-2013 10:00 TP30_0.5-0.6_25/06/13	✓
EW1301886-003 25-JUN-2013 10:00 TP30_0.9-1.0_25/06/13 🖌	
EW1301886-004 25-JUN-2013 10:00 TP29_0.0-0.1_25/06/13 🖌	
EW1301886-005 25-JUN-2013 10:00 TP29_0.3-0.4_25/06/13 🖌 🖌	/ /
EW1301886-006 25-JUN-2013 10:00 TP29_0.5-0.6_25/06/13 🖌	
EW1301886-007 25-JUN-2013 10:00 TP29_0.9-1.0_25/06/13	✓
EW1301886-008 25-JUN-2013 15:00 TP27_0.0-0.1_25/06/13	1
EW1301886-009 25-JUN-2013 15:00 TP27_0.5-0.6_25/06/13	1
EW1301886-010 25-JUN-2013 15:00 TP27_0.9-1.0_25/06/13 🖌	
EW1301886-011 25-JUN-2013 15:00 TP27_1.5-1.6_25/06/13 🖌	
EW1301886-012 25-JUN-2013 15:00 TP28_0.0-0.1_25/06/13	✓
EW1301886-013 25-JUN-2013 15:00 TP28_0.5-0.6_25/06/13 🖌	
EW1301886-014 25-JUN-2013 15:00 TP28_0.9-1.0_25/06/13 🖌 🖌 🖌	/ /
EW1301886-015 25-JUN-2013 15:00 TP28_1.5-1.6_25/06/13 🖌	
EW1301886-016 25-JUN-2013 15:00 TP26_0.0-0.1_25/06/13 🖌	
EW1301886-017 25-JUN-2013 15:00 TP26_0.5-0.6_25/06/13	 ✓
EW1301886-018 25-JUN-2013 15:00 TP26_0.9-1.0_25/06/13 🖌	
EW1301886-019 25-JUN-2013 15:00 TP26_1.5-1.6_25/06/13	 ✓
EW1301886-020 25-JUN-2013 15:00 TP26_2.0-2.1_25/06/13 🖌	
EW1301886-021 25-JUN-2013 15:00 TP26_2.5-2.6_25/06/13 🖌	
EW1301886-023 25-JUN-2013 15:00 QC400_25/06/13	✓
EW1301886-024 26-JUN-2013 10:00 TP25 0.0-0.1 26/06/13	/ /
EW1301886-025 26-JUN-2013 10:00 TP25 0.5-0.6 26/06/13 🖌	
EW1301886-026 26-JUN-2013 10:00 TP25 0.9-1.0 26/06/13	✓
EW1301886-027 26-JUN-2013 10:00 TP25 1.5-1.6 26/06/13 🖌	
EW1301886-028 26-JUN-2013 10:00 TP25 1.9-2.0 26/06/13 🖌	
EW1301886-029 26-JUN-2013 10:00 QC100_26/06/13	1
EW1301886-030 26-JUN-2013 10:00 TP24 0.0-0.1 26/06/13 ✓	✓
EW1301886-031 26-JUN-2013 10:00 TP24 0.5-0.6 26/06/13	
EW1301886-032 26-JUN-2013 10:00 TP24 0.9-1.0 26/06/13 🖌	
EW1301886-033 26-JUN-2013 10:00 TP20 0.0-0.1 26/06/13 🖌	
EW1301886-034 26-JUN-2013 10:00 TP20 0.5-0.6 26/06/13	
EW1301886-035 26-JUN-2013 10:00 TP20 0.9-1.0 26/06/13	
EW1301886-036 26-JUN-2013 10:00 TP20 1.5-1.6 26/06/13	
EW1301886-037 26-JUN-2013 10:00 TP16A 0.0-0.1 26/06/	
EW1301886-038 26-JUN-2013 10:00 TP16A 0.2-0.3 26/06/	
EW1301886-039 26-JUN-2013 10:00 TP16A 0.5-0.6 26/06/	
EW1301886-040 26-JUN-2013 10:00 TP16A 0 9-1 0 26/06/	
EW1301886-041 26-JUN-2013 10:00 TP16B 0.1-0.2 26/06/	
EW1301886-042 26-JUN-2013 10:00 TP15 0.0-0.1 26/06/13	

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Issue Date Page Work Order Client	: 02-JUL-2013 11:47 : 5 of 9 : EW1301886 : PORT KEMBLA (COPPER		-	-	-	-	-			ALS
			(On Hold) SOIL No analysis requested	SOIL - EA002 pH (1:5)	SOIL - EA055-103 Moisture Content	SOIL - EA150H Particle Size Analysis by Hydrometer	SOIL - EA200 Asbestos Identification in Soils	SOIL - EA200N Asbestos - Estimated Percentage by	SOIL - ED008 Def Exchangeable Cations with pre-treatment	SOIL - EG005T (solids) Total Metals by ICP-AES	
EW1301886-043	26-JUN-2013 10:00	TP15_0.5-0.6_26/06/13	1								
EW1301886-044	26-JUN-2013 10:00	TP15_0.9-1.0_26/06/13		1	1	1			✓	✓	
EW1301886-045	26-JUN-2013 10:00	TP14_0.0-0.1_26/06/13		1		1			✓	✓	
EW1301886-046	26-JUN-2013 10:00	TP14_0.5-0.6_26/06/13			1					✓	
EW1301886-047	26-JUN-2013 10:00	TP14_0.9-1.0_26/06/13	1								
EW1301886-048	26-JUN-2013 10:00	TP14_1.4-1.5_26/06/13	1								
EW1301886-049	26-JUN-2013 10:00	TP13_0.0-0.1_26/06/13	1								
EW1301886-050	26-JUN-2013 10:00	TP13_0.5-0.6_26/06/13								✓	
EW1301886-051	26-JUN-2013 10:00	TP13_0.9-1.0_26/06/13	1								
EW1301886-052	26-JUN-2013 10:00	TP13_1.5-1.6_26/06/13			1					✓	
EW1301886-053	26-JUN-2013 15:00	TP9_0.0-0.1_26/06/13	✓								
EW1301886-054	26-JUN-2013 15:00	TP9_0.3-0.4_26/06/13								✓	
EW1301886-055	26-JUN-2013 15:00	TP9_0.5-0.6_26/06/13		1	✓	1			✓	✓	
EW1301886-056	26-JUN-2013 15:00	TP10_0.0-0.1_26/06/13		1		1		1	✓	✓	
EW1301886-057	26-JUN-2013 15:00	TP10_0.5-0.6_26/06/13			✓					✓	
EW1301886-058	26-JUN-2013 15:00	TP10_0.9-1.0_26/06/13	1								
EW1301886-059	26-JUN-2013 15:00	TP11_0.1-0.2_26/06/13						✓		✓	
EW1301886-060	26-JUN-2013 15:00	TP11_0.5-0.6_26/06/13	1								
EW1301886-061	26-JUN-2013 15:00	TP11_0.9-1.0_26/06/13		✓	1	✓			✓	✓	
EW1301886-062	26-JUN-2013 15:00	TP11_1.4-1.5_26/06/13	1								
EW1301886-063	26-JUN-2013 15:00	TP12A_0.1-0.2_26/06/					✓				
EW1301886-064	26-JUN-2013 15:00	TP12_0.00.1_26/06/						1		✓	
EW1301886-065	26-JUN-2013 15:00	TP12_0.5-0.6_26/06/13	1								
EW1301886-066	26-JUN-2013 15:00	TP12_0.9-1.0_26/06/13			1					✓	
EW1301886-067	26-JUN-2013 15:00	TP8_0.0-0.1_26/06/13		1		1			✓	✓	
EW1301886-068	26-JUN-2013 15:00	TP8_0.5-0.6_26/06/13	1								
EW1301886-069	26-JUN-2013 15:00	TP8_0.9-1.0_26/06/13			✓					✓	
EW1301886-070	26-JUN-2013 15:00	QC101_26/06/13								✓	
EW1301886-071	26-JUN-2013 15:00	QC401_26/06/13								✓	
EW1301886-073	27-JUN-2013 10:00	TP7_0.0-0.1_27/06/13	1								
EW1301886-074	27-JUN-2013 10:00	TP7_0.3-0.4_27/06/13						1		✓	
EW1301886-075	27-JUN-2013 10:00	TP7_0.5-0.6_27/06/13		1	1	1			✓	✓	
EW1301886-076	27-JUN-2013 10:00	TP7_0.9-1.0_27/06/13	✓								
EW1301886-077	27-JUN-2013 10:00	TP6_0.0-0.1_27/06/13	✓								
EW1301886-078	27-JUN-2013 10:00	TP6_0.2-0.3_27/06/13								✓	
EW1301886-079	27-JUN-2013 10:00	TP6_0.5-0.6_27/06/13			1					1	
EW1301886-080	27-JUN-2013 10:00	TP6_0.9-1.0_27/06/13	1								
EW1301886-081	27-JUN-2013 10:00	TP5_0.0-0.1_27/06/13	✓								
EW1301886-082	27-JUN-2013 10:00	TP5_0.5-0.6_27/06/13								✓	
EW1301886-083	27-JUN-2013 10:00	QC102_27/06/13								✓	
EW1301886-084	27-JUN-2013 10:00	TP5_0.9-1.0_27/06/13		1	1	1			✓	✓	

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Work Order	: EW1301886
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Work Order Client	: EW1301886 : PORT KEMBLA (COPPER								
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			No a	SOIL (SOIL	Parti	SOIL	SOIL	SOIL	SOIL
EW1301886-085	27-JUN-2013 10:00	TP5_1.1-1.2_27/06/13	1							
EW1301886-086	27-JUN-2013 10:00	TP1_0.0-0.1_27/06/13		1		1			1	1
EW1301886-087	27-JUN-2013 10:00	TP1_0.5-0.6_27/06/13	1							
EW1301886-088	27-JUN-2013 10:00	TP1_0.9-1.0_27/06/13			✓					1
EW1301886-089	27-JUN-2013 10:00	TP2_0.0-0.1_27/06/13			✓					✓
EW1301886-090	27-JUN-2013 10:00	TP2_0.2-0.4_27/06/13								✓
EW1301886-091	27-JUN-2013 10:00	TP2_0.9-1.0_27/06/13	 ✓ 							
EW1301886-092	27-JUN-2013 10:00	TP3_0.0-0.1_27/06/13						1		✓
EW1301886-093	27-JUN-2013 10:00	TP3_0.5-0.6_27/06/13		✓	✓	✓			✓	✓
EW1301886-094	27-JUN-2013 10:00	TP3_0.9-1.0_27/06/13	✓							
EW1301886-095	27-JUN-2013 10:00	TP4_0.0-0.1_27/06/13								✓
EW1301886-096	27-JUN-2013 10:00	TP4_0.5-0.6_27/06/13			✓					✓
EW1301886-097	27-JUN-2013 10:00	TP4_0.9-1.0_27/06/13	✓							
EW1301886-098	27-JUN-2013 10:00	QC402_27/06/13								✓
EW1301886-100	27-JUN-2013 15:00	OL1_0.0-0.2_27/06/13			✓					✓
EW1301886-101	27-JUN-2013 15:00	OL1_0.3-0.5_27/06/13	_		✓					✓
EW1301886-102	27-JUN-2013 15:00	OL2_0.0-0.2_27/06/13			✓					✓
EW1301886-103	27-JUN-2013 15:00	OL2_0.3-0.5_27/06/13	_		✓					✓
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Matrix: SOIL			EG0	EK0	EP0	NT-8	S-12 Pes	S-24 TEX/		
Laboratory sample	Client sampling	Client sample ID	olL - tal M	- IIC	JIL - tal O	0IL - 13, N	S/OP	HB'-		
ID	date / time	TD20 0 0 0 1 25/06/12	S P	An S	S ₽	S Z	<u>000</u>	S F		
EW1301886-001	25-JUN 2013 10:00	TP30_0.0-0.1_25/06/13	✓	V			V	•		
EW1301886-005	25-JUN-2013 10:00	TP20_0.3-0.4_25/06/13	•				./			
EW1301886-007	25- IUN-2013 10:00	TP29_0.9-1.0_25/06/13	•	v	v		v	•		
EW1301886-008	25-JUN-2013 15:00	TP27_0.0-0_1_25/06/13								
EW1301886-009	25-JUN-2013 15:00	TP27 0.5-0.6 25/06/13		1			1	1		
EW1301886-012	25-JUN-2013 15:00	TP28 0.0-0.1 25/06/13	· ·	, ,			, ,	, ,		
EW1301886-014	25-JUN-2013 15:00	TP28 0.9-1.0 25/06/13	· ·	-	1		-	·		
EW1301886-017	25-JUN-2013 15:00	TP26 0.5-0.6 25/06/13	· •		•	1				
EW1301886-019	25-JUN-2013 15:00	TP26_1.5-1.6_25/06/13	-	1		1	1	1		
EW1301886-023	25-JUN-2013 15:00	 QC400_25/06/13	✓	1			1	1		
EW1301886-024	26-JUN-2013 10:00	TP25 0.0-0.1 26/06/13	1	1	1		1	1		



EW1301886-026	26-11 IN-2013 10:00	TP25 0 9-1 0 26/06/13	SOIL - EG035T (solids) Total Mercury by FIMS	SOIL - EK055 (solids) Ammonia as N	SOIL - EP004 (Carbon) Total Organic Carbon (Calc.)	SOIL - NT-8S NH3, NO2, NO3, NOX, TKN, TN, TP	SOIL - S-12 OC/OP Pesticides	SOIL - S-24 TPH/BTEX/PAH + Phenols
EW1301000-020	26-3011-2013 10:00	00100 26/06/12	•					
EW1301886 020	20-JUN-2013 10:00	TP24 0.0.0.1 26/06/12	•	v			•	v
EW1301886-031	26-JUN-2013 10:00	TP24_0.0-0.1_20/00/13	 ✓ ✓ 					
EW1301000-031	26-JUN-2013 10:00	TP24_0.5-0.6_26/06/13	•	 ✓ ✓ 	 ✓ ✓ 		 ✓ ✓ 	*
EW1301886-034	20-JUN-2013 10:00	TP20_0.0.0.1.0.26/06/13	√	•	•	•	•	~
EW1301886.038	26-JUN 2013 10:00	TP16A_0.2_0.3_26/06/	•					
EW1301886-030	20-JUN-2013 10:00	TP16A_0.2-0.3_26/06/	•	¥ (v	*
EW1301886-042	26-JUN-2013 10:00	TP15_0_0_0_1_26/06/13	• -/	▼ .∠			¥ ./	▼ √
EW1301886-044	26-JUN-2013 10:00	TP15_0.9-1.0_26/06/13	•	v	./		v	•
EW1301886-045	26-1UN-2013 10:00	TP14_0_0-0_1_26/06/13	•		•			
EW1301886-046	26-111N-2013 10:00	TP14_0.5-0.6_26/06/13	•	•	•		•	•
EW1301886-050	26-JUN-2013 10:00	TP13_0.5-0.6_26/06/13	•					
EW1301886-052	26-00N-2013 10:00	TP13_1.5-1.6_26/06/13	•	•			•	•
EW1301886-054	26-JUN-2013 15:00	TP9_0.3-0.4_26/06/13	•	1			1	1
EW1301886-055	26-JUN-2013 15:00	TP9_0.5-0.6_26/06/13	•	•	1		•	•
EW1301886-056	26-JUN-2013 15:00	TP10_0.0-0_1_26/06/13	· ·	1	•		1	1
EW1301886-057	26-JUN-2013 15:00	TP10_0.5-0.6_26/06/13	· •	•	•		•	· ·
EW1301886-059	26-JUN-2013 15:00	TP11 0.1-0.2 26/06/13	· •	✓			1	1
EW1301886-061	26-JUN-2013 15:00	 TP11 0.9-1.0 26/06/13	· •		✓			
EW1301886-064	26-JUN-2013 15:00	 TP12 0.00.1 26/06/		✓			1	1
EW1301886-066	26-JUN-2013 15:00	TP12 0.9-1.0 26/06/13	1					
EW1301886-067	26-JUN-2013 15:00	TP8 0.0-0.1 26/06/13	1	✓	✓		1	1
EW1301886-069	26-JUN-2013 15:00	 TP8_0.9-1.0_26/06/13	1					
EW1301886-070	26-JUN-2013 15:00	QC101 26/06/13		✓			1	1
EW1301886-071	26-JUN-2013 15:00	 QC401_26/06/13	1	1			1	1
EW1301886-074	27-JUN-2013 10:00	TP7_0.3-0.4_27/06/13	1	✓			✓	✓
EW1301886-075	27-JUN-2013 10:00	TP7_0.5-0.6_27/06/13	1		✓			
EW1301886-078	27-JUN-2013 10:00	TP6_0.2-0.3_27/06/13	1	✓			1	1
EW1301886-079	27-JUN-2013 10:00	TP6_0.5-0.6_27/06/13	1					
EW1301886-082	27-JUN-2013 10:00	TP5_0.5-0.6_27/06/13	1	✓			1	1
EW1301886-083	27-JUN-2013 10:00	QC102_27/06/13	1	✓			✓	1
EW1301886-084	27-JUN-2013 10:00	TP5_0.9-1.0_27/06/13	1		✓			
EW1301886-086	27-JUN-2013 10:00	TP1_0.0-0.1_27/06/13	1	✓	✓		✓	✓
EW1301886-088	27-JUN-2013 10:00	TP1_0.9-1.0_27/06/13	1					
EW1301886-089	27-JUN-2013 10:00	TP2_0.0-0.1_27/06/13	1					
EW1301886-090	27-JUN-2013 10:00	TP2_0.2-0.4_27/06/13	1	✓			1	✓
EW1301886-092	27-JUN-2013 10:00	TP3_0.0-0.1_27/06/13	1	\checkmark			1	1
EW1301886-093	27-JUN-2013 10:00	TP3_0.5-0.6_27/06/13	1		✓			
EW1301886-095	27-JUN-2013 10:00	TP4_0.0-0.1_27/06/13	✓	✓			✓	✓
EW1301886-096	27-JUN-2013 10:00	TP4_0.5-0.6_27/06/13	1					

Issue Date	: 02-JUL-2013 11:47
Page	: 8 of 9
Work Order	: EW1301886
Client	: PORT KEMBLA COPPER



			SOIL - EG035T (solids)	l otal Mercury by FIMS SOII - EK055 (solids)	Ammonia as N	SOIL - EP004 (Carbon)	Total Organic Carbon (Calc.)	SOIL - NT-8S NH3, NO2, NO3, NOX, TKN, TN, TP	SOIL - S-12 OC/OP Pesticides	SOIL - S-24 TPH/BTEX/PAH + Phenols	
EW1301886-098	27-JUN-2013 10:00	QC402_27/06/13	1	•	√				1	1]
EW1301886-100	27-JUN-2013 15:00	OL1_0.0-0.2_27/06/13	1	•]
EW1301886-101	27-JUN-2013 15:00	OL1_0.3-0.5_27/06/13	√	•							1
EW1301886-102	27-JUN-2013 15:00	OL2_0.0-0.2_27/06/13	1	•							1
EW1301886-103	27-JUN-2013 15:00	OL2_0.3-0.5_27/06/13	1	•							1
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Matrix: WATER Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - EG020T Total Recoverable Metals by ICPMS	WATER - EG035T Total Mercury by FIMS	WATER - W-12 OC/OP Pesticides	WATER - W-24 TPH/BTEX/PAH/Phenols	
EW1301886-022	25-JUN-2013 15:00	QC300_25/06/13	1	1	1	✓	
EW1301886-072	26-JUN-2013 15:00	QC301_26/06/13	1	1	1	1	
EW1301886-099	27-JUN-2013 10:00	QC302_27/06/13	1	1	1	✓	

Proactive Holding Time Report

 $\label{eq:second} Sample(s) have been received within the recommended holding times for the requested analysis.$

Requested Deliverables

GRMILLER

 *AU Certificate of Analysis - NATA (COA) 	Email	grmiller@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grmiller@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	grmiller@golder.com.au
- A4 - AU Sample Receipt Notification - Environmental HT (SRN	Email	grmiller@golder.com.au
- Attachment - Report (SUBCO)	Email	grmiller@golder.com.au
- Chain of Custody (CoC) (COC)	Email	grmiller@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	grmiller@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	grmiller@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	grmiller@golder.com.au
KE YE		
 *AU Certificate of Analysis - NATA (COA) 	Email	kye@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	kye@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	kye@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN 	Email	kye@golder.com.au
 Attachment - Report (SUBCO) 	Email	kye@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	kye@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	kye@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	kye@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	kye@golder.com.au
MR JIM BAILEY		
- A4 - AU Tax Invoice (INV)	Email	Jim.bailey@pkc.com.au
MS CAROLINA OLMOS		
 *AU Certificate of Analysis - NATA (COA) 	Email	colmos@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	colmos@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	colmos@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN 	Email	colmos@golder.com.au
- Attachment - Report (SUBCO)	Email	colmos@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	colmos@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	colmos@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	colmos@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	colmos@golder.com.au

SAMPLE CHAIN OF CUSTODY DOCUMENTATION	
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Golder Form No. GA_SNA- Revision 0 - Date: 25/11/04

 THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

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THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

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Sheet. 5 of ...

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

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SAMPLE CHAIN OF CUSTODY DOCUMENTATION

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THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

Onten Communical SNA- Revision D - Date: 25/11/04

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Envirolab Services Pty Ltd ABN 37 112 535 645 12 Ashley St Chatswood NSW 2067 ph 02 9910 6200 fax 02 9910 6201 enquiries@envirolabservices.com.au www.envirolabservices.com.au

CERTIFICATE OF ANALYSIS

93198

Client: Golder Associates Pty Ltd 124 Pacific Highway St Leonards NSW 2065

Attention: Ke Ye

Sample log in details:

Your Reference:	137623028, PM	(C Pi	imary School
No. of samples:	3 Soils		
Date samples received / completed instructions received	02/07/2013	/	02/07/2013

Analysis Details:

Please refer to the following pages for results, methodology summary and quality control data. Samples were analysed as received from the client. Results relate specifically to the samples as received. Results are reported on a dry weight basis for solids and on an as received basis for other matrices. *Please refer to the last page of this report for any comments relating to the results.*

Report Details:

 Date results requested by: / Issue Date:
 9/07/13
 /
 6/07/13

 Date of Preliminary Report:
 not issued

 NATA accreditation number 2901. This document shall not be reproduced except in full.

 Accredited for compliance with ISO/IEC 17025.

 Tests not covered by NATA are denoted with *.

Results Approved By:

Jacinta Hurst

Laboratory Manager

ACCREDITED FOR TECHNICAL COMPETENCE

Client Reference: 137623028, PKC Primary School

vTRH(C6-C10)/BTEXN in Soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	04/07/2013	04/07/2013	04/07/2013
TRHC6 - C9	mg/kg	<25	<25	<25
TRHC6 - C10	mg/kg	<25	<25	<25
vTPHC6 - C 10 less BTEX (F1)	mg/kg	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	106	107	114

svTRH (C10-C40) in Soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	04/07/2013	04/07/2013	04/07/2013
TRHC 10 - C14	mg/kg	<50	<50	<50
TRHC 15 - C28	mg/kg	<100	<100	<100
TRHC29 - C36	mg/kg	<100	<100	<100
TRH>C10-C16	mg/kg	<50	<50	<50
TRH>C10 - C16 less Naphthalene (F2)	mg/kg	<50	<50	<50
TRH>C16-C34	mg/kg	100	<100	<100
TRH>C34-C40	mg/kg	<100	<100	<100
Surrogate o-Terphenyl	%	106	108	100

PAHs in Soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
I ype of sample		Soil	Soil	Soil
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	03/07/2013	03/07/2013	03/07/2013
Naphthalene	mg/kg	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.4	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.1	<0.1	<0.1
Pyrene	mg/kg	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	0.1	<0.1	<0.1
Chrysene	mg/kg	0.2	<0.1	<0.1
Benzo(b+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ NEPM B1	mg/kg	<0.5	<0.5	<0.5
Total +ve PAH's	mg/kg	1.0	NIL(+)VE	NIL(+)VE
Surrogate p-Terphenyl-d14	%	115	107	104

Client	Reference:
•	

Organochlorine Pesticides in soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
Dete Compled		/13	/13	/13
Date Sampled		26/06/2013 Soil	26/06/2013 Soil	27/06/2013 Soil
		301	301	301
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	04/07/2013	04/07/2013	04/07/2013
НСВ	mg/kg	<0.1	<0.1	<0.1
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	98	101

Organophosphorus Pesticides				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	04/07/2013	04/07/2013	04/07/2013
Diazinon	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	101	98	101

Total Phenolics in Soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date extracted	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	03/07/2013	03/07/2013	03/07/2013
Total Phenolics (as Phenol)	mg/kg	<5	<5	<5

Acid Extractable metals in soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date digested	-	03/07/2013	03/07/2013	03/07/2013
Date analysed	-	03/07/2013	03/07/2013	03/07/2013
Arsenic	mg/kg	6	21	7
Cadmium	mg/kg	2.4	7.3	1.9
Chromium	mg/kg	7	13	8
Copper	mg/kg	540	1,800	130
Nickel	mg/kg	9	12	3
Lead	mg/kg	130	340	17
Zinc	mg/kg	300	360	40
Manganese	mg/kg	360	410	28
Selenium	mg/kg	3	4	<2
Mercury	mg/kg	0.1	0.6	<0.1

Miscellaneous Inorg - soil				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date prepared	-	02/07/2013	02/07/2013	02/07/2013
Date analysed	-	03/07/2013	03/07/2013	03/07/2013
Ammonia as N in soil	mg/kg	2.4	2.0	2.0

Client Reference: 137623028, PKC Primary School

Moisture				
Our Reference:	UNITS	93198-1	93198-2	93198-3
Your Reference		QC200_26/06	QC201_26/06	QC202_27/06
		/13	/13	/13
Date Sampled		26/06/2013	26/06/2013	27/06/2013
Type of sample		Soil	Soil	Soil
Date prepared	-	03/07/13	03/07/13	03/07/13
Date analysed	-	04/07/13	04/07/13	04/07/13
Moisture	%	29	38	27

Client Reference: 137623028, PKC Primary School

MethodID	Methodology Summary
Org-016	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-014	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-003	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-012 subset	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-005	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Org-008	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC with dual ECD's.
Inorg-030	Total Phenolics - determined colorimetrically following disitillation, based upon APHA 22nd ED 5530 D.
Metals-020 ICP- AES	Determination of various metals by ICP-AES.
Metals-021 CV- AAS	Determination of Mercury by Cold Vapour AAS.
Inorg-057	Ammonia - determined colourimetrically based on EPA350.1 and APHA 22nd ED 4500-NH3 F, Soils are analysed following a KCI extraction.
Inorg-008	Moisture content determined by heating at 105+/-5 deg C for a minimum of 12 hours.

Client Reference: 137623028, PKC Primary School								
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
vTRH(C6-C10)/BTEXNin Soil						Base II Duplicate II %RPD		
Date extracted	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Date analysed	-			04/07/2 013	93198-1	04/07/2013 04/07/2013	LCS-3	04/07/2013
TRHC6 - C9	mg/kg	25	Org-016	<25	93198-1	<25 <25	LCS-3	97%
TRHC6 - C10	mg/kg	25	Org-016	<25	93198-1	<25 <25	LCS-3	97%
Benzene	mg/kg	0.2	Org-016	<0.2	93198-1	<0.2 <0.2	LCS-3	96%
Toluene	mg/kg	0.5	Org-016	<0.5	93198-1	<0.5 <0.5	LCS-3	92%
Ethylbenzene	mg/kg	1	Org-016	<1	93198-1	<1 <1	LCS-3	101%
m+p-xylene	mg/kg	2	Org-016	<2	93198-1	<2 <2	LCS-3	97%
o-Xylene	mg/kg	1	Org-016	<1	93198-1	<1 <1	LCS-3	103%
naphthalene	mg/kg	1	Org-014	<1	93198-1	<1 <1	[NR]	[NR]
<i>Surrogate</i> aaa- Trifluorotoluene	%		Org-016	134	93198-1	106 113 RPD:6	LCS-3	95%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate	Duplicate results	Spike Sm#	Spike %
					Sm#	Read II Duplicate II 9/ RDD		Recovery
						Base II Duplicate II %RPD		
Date extracted	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Date analysed	-			04/07/2 013	93198-1	04/07/2013 04/07/2013	LCS-3	04/07/2013
TRHC 10 - C 14	mg/kg	50	Org-003	<50	93198-1	<50 <50	LCS-3	110%
TRHC 15 - C28	mg/kg	100	Org-003	<100	93198-1	<100 <100	LCS-3	122%
TRHC29 - C36	mg/kg	100	Org-003	<100	93198-1	<100 <100	LCS-3	114%
TRH>C10-C16	mg/kg	50	Org-003	<50	93198-1	<50 <50	LCS-3	110%
TRH>C16-C34	mg/kg	100	Org-003	<100	93198-1	100 140 RPD:33	LCS-3	122%
TRH>C34-C40	mg/kg	100	Org-003	<100	93198-1	<100 <100	LCS-3	114%
Surrogate o-Terphenyl	%		Org-003	99	93198-1	106 105 RPD:1	LCS-3	106%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate	Duplicate results	Spike Sm#	Spike %
PAHs in Soil					Sm#	Base II Duplicate II % RPD		Recovery
Date extracted	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Date analysed	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Naphthalene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	LCS-3	110%
Acenaphthylene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Acenaphthene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Fluorene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	LCS-3	114%
Phenanthrene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	0.4 0.5 RPD:22	LCS-3	101%
Anthracene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Fluoranthene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	0.1 0.1 RPD:0	LCS-3	101%

Client Reference: 137623028, PKC Primary School								
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
PAHs in Soil						Base II Duplicate II % RPD		,
Pyrene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	0.1 0.2 RPD:67	LCS-3	110%
Benzo(a)anthracene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	0.1 0.1 RPD:0	[NR]	[NR]
Chrysene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	0.2 0.3 RPD:40	LCS-3	98%
Benzo(b+k)fluoranthene	mg/kg	0.2	Org-012 subset	<0.2	93198-1	<0.2 <0.2	[NR]	[NR]
Benzo(a)pyrene	mg/kg	0.05	Org-012 subset	<0.05	93198-1	0.05 0.06 RPD:18	LCS-3	115%
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-012 subset	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Surrogate p-Terphenyl- d14	%		Org-012 subset	114	93198-1	115 113 RPD:2	LCS-3	108%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate	Duplicate results	Spike Sm#	Spike %
Organochlorine Pesticides in soil					Sm#	Base II Duplicate II % RPD		Recovery
Date extracted	-			03/07/2	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Date analysed	-			013 04/07/2 013	93198-1	04/07/2013 04/07/2013	LCS-3	04/07/2013
HCB	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
alpha-BHC	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	103%
gamma-BHC	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
beta-BHC	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	88%
Heptachlor	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	103%
delta-BHC	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Aldrin	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	110%
Heptachlor Epoxide	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	105%
gamma-Chlordane	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
alpha-chlordane	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Endosulfan I	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
pp-DDE	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	90%
Dieldrin	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	108%
Endrin	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	101%
pp-DDD	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	96%
Endosulfan II	mg/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
pp-DDT	ma/kg	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Endrin Aldehvde	ma/ka	0.1	Orq-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Endosulfan Sulphate	ma/ka	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	LCS-3	105%
Methoxychlor	ma/ka	0.1	Org-005	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Surrogate TCMX	%		Org-005	98	93198-1	 101 102 RPD:1	LCS-3	100%

QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate	Duplicate results	Spike Sm#	Spike %
Organophosphorus					Sm#	Basell Duplicatell % RPD		Recovery
Pesticides								
Date extracted	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-3	03/07/2013
Date analysed	-			04/07/2 013	93198-1	04/07/2013 04/07/2013	LCS-3	04/07/2013
Diazinon	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Dimethoate	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Chlorpyriphos-methyl	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Ronnel	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Chlorpyriphos	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	LCS-3	98%
Fenitrothion	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	LCS-3	97%
Bromophos-ethyl	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	[NR]	[NR]
Ethion	mg/kg	0.1	Org-008	<0.1	93198-1	<0.1 <0.1	LCS-3	98%
Surrogate TCMX	%		Org-008	98	93198-1	101 102 RPD: 1	LCS-3	99%
QUALITY CONTROL	UNITS	PQL	METHOD	Blank	Duplicate	Duplicate results	Spike Sm#	Spike %
Total Phenolics in Soil					Sm#	Base II Duplicate II % RPD		Recovery
Date extracted	-			03/07/2 013	[NT]	[NT]	LCS-3	03/07/2013
Date analysed	-			03/07/2 013	[NT]	[NT]	LCS-3	03/07/2013
Total Phenolics (as Phenol)	mg/kg	5	Inorg-030	<5	[NT]	[NT]	LCS-3	101%
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Acid Extractable metals in soil						Base II Duplicate II % RPD		
Date digested	-			03/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-2	03/07/2013
Date analysed	-			04/07/2 013	93198-1	03/07/2013 03/07/2013	LCS-2	03/07/2013
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	93198-1	6 6 RPD:0	LCS-2	95%
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	93198-1	2.4 2.6 RPD:8	LCS-2	95%
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	7 8 RPD:13	LCS-2	97%
Copper	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	540 530 RPD:2	LCS-2	96%
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	9 9 RPD:0	LCS-2	97%
Lead	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	130 130 RPD:0	LCS-2	93%
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	300 270 RPD:11	LCS-2	97%
Manganese	mg/kg	1	Metals-020 ICP-AES	<1	93198-1	360 290 RPD:22	LCS-2	98%
Selenium	mg/kg	2	Metals-020 ICP-AES	<2	93198-1	3 2 RPD:40	LCS-2	101%
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	93198-1	0.1 0.1 RPD:0	LCS-2	94%

Client Reference: 137623028, PKC Primary School								
QUALITYCONTROL	UNITS	PQL	METHOD	Blank	Duplicate Sm#	Duplicate results	Spike Sm#	Spike % Recovery
Miscellaneous Inorg - soil						Base II Duplicate II %RPD		,
Date prepared	-			02/07/2 013	[NT]	[NT]	LCS-1	03/07/2013
Date analysed	-			03/07/2 013	[NT]	[NT]	LCS-1	03/07/2013
Ammonia as N in soil	mg/kg	0.5	Inorg-057	<0.5	[NT]	[NT]	LCS-1	100%
QUALITYCONTROL Moisture	UNITS	PQL	METHOD	Blank				·
Date prepared	-			[NT]	-			
Date analysed	-			[NT]				
Moisture	%	0.1	Inorg-008	[NT]				

Report Comments:

Asbestos ID was analysed by Approved Identifier: Asbestos ID was authorised by Approved Signatory: Not applicable for this job Not applicable for this job

INS: Insufficient sample for this testPQL: Practical Quantitation LimitNA: Test not requiredRPD: Relative Percent Difference<: Less than</td>>: Greater than

NT: Not tested NA: Test not required LCS: Laboratory Control Sample

Quality Control Definitions

Blank: This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples. **Duplicate**: This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.

Matrix Spike : A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist. **LCS (Laboratory Control Sample)** : This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.

Surrogate Spike: Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.

Laboratory Acceptance Criteria

Duplicate sample and matrix spike recoveries may not be reported on smaller jobs, however, were analysed at a frequency to meet or exceed NEPM requirements. All samples are tested in batches of 20. The duplicate sample RPD and matrix spike recoveries for the batch were within the laboratory acceptance criteria.

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is

generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

For VOCs in water samples, three vials are required for duplicate or spike analysis.

Duplicates: <5xPQL - any RPD is acceptable; >5xPQL - 0-50% RPD is acceptable. Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals; 60-140% for organics and 10-140% for SVOC and speciated phenols is acceptable.



Envirolab Services Pty Ltd ABN 37 112 535 645 12 Ashley St Chatswood NSW 2067 ph 02 9910 6200 fax 02 9910 6201 enquiries@envirolabservices.com.au www.envirolabservices.com.au

SAMPLE RECEIPT ADVICE

Client:

Golder Associates Pty Ltd 124 Pacific Highway St Leonards NSW 2065 ph: 9478 3900 Fax: 9478 3901

Attention: Ke Ye

Sample log in details:	
Your reference:	137623028, PKC Primary School
Envirolab Reference:	93198
Date received:	02/07/2013
Date results expected to be reported:	9/07/13

Samples received in appropriate condition for analysis:	YES
No. of samples provided	3 Soils
Turnaround time requested:	Standard
Temperature on receipt	11.2°c
Cooling Method:	Ice
Sampling Date Provided:	YES

Comments:

Samples will be held for 1 month for water samples and 2 months for soil samples from date of receipt of samples.

Contact details: Please direct any queries to Aileen Hie or Jacinta Hurst ph: 02 9910 6200 fax: 02 9910 6201 email: ahie@envirolabservices.com.au or jhurst@envirolabservices.com.au


	CERTIFICATE OF ANALYSIS											
Work Order	ES1322093	Page	: 1 of 15									
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney									
Contact	: MS CAROLINA OLMOS	Contact	: Loren Schiavon									
Address	: LEVEL 1, 124 PACIFIC HIGHWAY ST LEONARDS NSW, AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164									
E-mail	: colmos@golder.com.au	E-mail	: loren.schiavon@alsglobal.com									
Telephone	: +61 02 9478 3900	Telephone	: +61 2 8784 8503									
Facsimile	: +61 02 9478 3901	Facsimile	: +61 2 8784 8500									
Project	: 137623028	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement									
Order number	:											
C-O-C number	:	Date Samples Received	: 10-OCT-2013									
Sampler	: KY	Issue Date	: 17-OCT-2013									
Site	: PKC - PRIMARY SCHOOL											
		No. of samples received	: 28									
Quote number	: SY/493/13	No. of samples analysed	: 12									

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
- Surrogate Control Limits

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 | PHONE +61-2-8784 8555 | Facsimile +61-2-8784 8500 Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



www.alsglobal.com



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.

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
- EG005T: Poor matrix spike recovery was obtained for Copper on sample ES1322093 2. Results have been confirmed by re-extraction and reanalysis.
- EG005T: Poor precision was obtained for Manganese on sample ES1322093 9 due to sample heterogeneity. Results have been confirmed by re-extraction and reanalysis.
- EK057G/EK059G/EK058G:LOR raised for Nitrite/NOx and Nitrate analysis on various samples due to sample matrix.
- EK067G: Spike failed for Total P analysis due to matrix interferences(Confirmed by re-digestion and re-analysis)

NATA Accredited Laboratory 825	Signatories This document has been electronically	signed by the authorized signatories indica	ated below. Electronic signing has been carried out in
Accredited for compliance with	compliance with procedures specified in 21 C	FR Part 11.	
ISO/IEC 17025.	Signatories	Position	Accreditation Category
	Alex Rossi	Organic Chemist	Sydney Organics
	Ankit Joshi	Inorganic Chemist	Sydney Inorganics
	Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
	Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
	Pabi Subba	Senior Organic Chemist	Sydney Organics



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH4-0.4-09/10/13	BH4-1.0-09/10/13	BH5-0.1-09/10/13	BH5-1.0-09/10/13	BH6-0.3-09/10/13
	Cli	ient samplii	ng date / time	09-OCT-2013 15:00				
Compound CAS	Number	LOR	Unit	ES1322093-002	ES1322093-004	ES1322093-007	ES1322093-009	ES1322093-012
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	19.5	20.1	11.5	20.9	12.1
EG005T: Total Metals by ICP-AES								
Manganese 74	439-96-5	5	mg/kg	248	75	161	103	550
Selenium 7	782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Arsenic 74	440-38-2	5	mg/kg	73	<5	5	11	<5
Cadmium 74	440-43-9	1	mg/kg	5	<1	1	<1	<1
Chromium 74	440-47-3	2	mg/kg	26	31	6	26	32
Copper 74	440-50-8	5	mg/kg	717	79	574	83	130
Lead 74	439-92-1	5	mg/kg	404	14	92	44	10
Nickel 74	440-02-0	2	mg/kg	24	9	3	7	30
Zinc 74	440-66-6	5	mg/kg	798	76	190	31	111
EG035T: Total Recoverable Mercury by FIMS								
Mercury 74	439-97-6	0.1	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
EK055: Ammonia as N								
Ammonia as N 7	664-41-7	20	mg/kg	<20	30	<20		<20
EK057G: Nitrite as N by Discrete Analyser								
Nitrite as N (Sol.)		0.1	mg/kg	<1.0	<1.0			
EK058G: Nitrate as N by Discrete Analyser								
Nitrate as N (Sol.)		0.1	mg/kg	<1.0	<1.0			
EK059G: Nitrite plus Nitrate as N (NOx) by Disc	rete Ana	lyser						
Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	<1.0	<1.0			
EK061G: Total Kjeldahl Nitrogen By Discrete An	alyser							
Total Kjeldahl Nitrogen as N		20	mg/kg	120	880			
EK062: Total Nitrogen as N (TKN + NOx)								
[^] Total Nitrogen as N		20	mg/kg	120	880			
EK067G: Total Phosphorus as P by Discrete Ana	alyser							
Total Phosphorus as P		2	mg/kg	338	186			
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

Page : 4 of 15 Work Order : ES1322093 Client : GOLDER ASSOCIATES Project : 137623028



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH4-0.4-09/10/13	BH4-1.0-09/10/13	BH5-0.1-09/10/13	BH5-1.0-09/10/13	BH6-0.3-09/10/13
	Cl	ient samplii	ng date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-002	ES1322093-004	ES1322093-007	ES1322093-009	ES1322093-012
EP068A: Organochlorine Pesticides (OC) - Continued							
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
^ 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
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg	<0.5		<0.5		<0.5
2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5		<0.5		<0.5
2-Methylphenol	95-48-7	0.5	mg/kg	<0.5		<0.5		<0.5
3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1		<1		<1
2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5		<0.5		<0.5
2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5		<0.5		<0.5
2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5		<0.5		<0.5
2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5		<0.5		<0.5
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5		<0.5		<0.5
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5		<0.5		<0.5
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5		<0.5		<0.5
Pentachlorophenol	87-86-5	2	mg/kg	<2		<2		<2

Page : 5 of 15 Work Order : ES1322093 Client : GOLDER ASSOCIATES Project : 137623028



Sub-Matrix: SOIL (Matrix: SOIL)	Cl	ient sample ID	BH4-0.4-09/10/13	BH4-1.0-09/10/13	BH5-0.1-09/10/13	BH5-1.0-09/10/13	BH6-0.3-09/10/13
	Client sampl	ing date / time	09-OCT-2013 15:00				
Compound CAS Numb	r LOR	Unit	ES1322093-002	ES1322093-004	ES1322093-007	ES1322093-009	ES1322093-012
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
Phenanthrene 85-01	8 0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Pyrene 129-00	0 0.5	mg/kg	<0.5		<0.5		<0.5
Benz(a)anthracene 56-55	3 0.5	mg/kg	<0.5		<0.5		<0.5
Chrysene 218-01	9 0.5	mg/kg	<0.5		<0.5		<0.5
Benzo(b)fluoranthene 205-99	2 0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Indeno(1.2.3.cd)pyrene 193-39	5 0.5	mg/kg	<0.5		<0.5		<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		<0.5		<0.5
Sum of polycyclic aromatic hydrocarbons	0.5	mg/kg	<0.5		<0.5		<0.5
^ Benzo(a)pyrene TEQ (zero)	0.5	mg/kg	<0.5		<0.5		<0.5
A Benzo(a)pyrene TEQ (half LOR)	0.5	mg/kg	0.6		0.6		0.6
A Benzo(a)pyrene TEQ (LOR)	0.5	mg/kg	1.2		1.2		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		<100		<100
C29 - C36 Fraction	100	mg/kg	<100		<100		<100
C10 - C36 Fraction (sum)	50	mg/kg	<50		<50		<50
EP080/071: Total Recoverable Hydrocarbons - NEPM 2	013						
C6 - C10 Fraction C6_C	0 10	mg/kg	<10		<10		<10
C6_C10-BTE C6_C10-BTE	X 10	mg/kg	<10		<10		<10
(F1) >C10 - C16 Fraction	e 50	ma/ka	<50		<50		<50
>C16_C24 Eraction	100	mg/kg	<100		<100		<100
>C34 - C40 Eraction	100	ma/ka	<100		<100		<100
>C10 - C40 Fraction (sum)	50	mg/kg	<50		<50		<50



Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	BH4-0.4-09/10/13	BH4-1.0-09/10/13	BH5-0.1-09/10/13	BH5-1.0-09/10/13	BH6-0.3-09/10/13
	Cl	lient sampl	ing date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-002	ES1322093-004	ES1322093-007	ES1322093-009	ES1322093-012
EP080/071: Total Recoverable Hydrod	carbons - NEPM 201	13 - Contin	ued					
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
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 Su	urrogate							
Dibromo-DDE	21655-73-2	0.1	%	77.1		86.9		79.2
EP068T: Organophosphorus Pesticid	e Surrogate							
DEF	78-48-8	0.1	%	64.4		85.2		74.6
EP075(SIM)S: Phenolic Compound Su	urrogates							
Phenol-d6	13127-88-3	0.1	%	110		110		110
2-Chlorophenol-D4	93951-73-6	0.1	%	110		103		109
2.4.6-Tribromophenol	118-79-6	0.1	%	95.7		95.8		104
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%	95.8		97.6		100
Anthracene-d10	1719-06-8	0.1	%	91.2		89.6		94.1
4-Terphenyl-d14	1718-51-0	0.1	%	85.3		82.8		86.9
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%	91.7		99.9		104
Toluene-D8	2037-26-5	0.1	%	96.6		104		102
4-Bromofluorobenzene	460-00-4	0.1	%	100		109		111



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH6-1.0-09/10/13	BH3-0.1-09/10/13	BH3-1.0-09/10/13	BH2-0.1-09/10/13	BH2-1.0-09/10/13
	Cl	ient sampli	ng date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-013	ES1322093-015	ES1322093-017	ES1322093-019	ES1322093-021
EA055: Moisture Content								
Moisture Content (dried @ 103°C)		1.0	%	13.4	16.3	27.2	11.6	18.8
EG005T: Total Metals by ICP-AES								
Manganese	7439-96-5	5	mg/kg	87	147	16	92	21
Selenium	7782-49-2	5	mg/kg	<5	<5	<5	<5	<5
Arsenic	7440-38-2	5	mg/kg	<5	37	<5	6	<5
Cadmium	7440-43-9	1	mg/kg	<1	3	<1	<1	<1
Chromium	7440-47-3	2	mg/kg	25	20	26	9	30
Copper	7440-50-8	5	mg/kg	137	436	102	82	68
Lead	7439-92-1	5	mg/kg	8	350	9	219	7
Nickel	7440-02-0	2	mg/kg	15	8	3	4	15
Zinc	7440-66-6	5	mg/kg	90	257	54	1150	38
EG035T: Total Recoverable Mercury by F	IMS							
Mercury	7439-97-6	0.1	mg/kg	<0.1	0.2	<0.1	0.2	<0.1
EK055: Ammonia as N								
Ammonia as N	7664-41-7	20	mg/kg		<20		<20	
EP068A: Organochlorine Pesticides (OC)								
alpha-BHC	319-84-6	0.05	mg/kg		<0.05		<0.05	
Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg		<0.05		<0.05	
beta-BHC	319-85-7	0.05	mg/kg		<0.05		<0.05	
gamma-BHC	58-89-9	0.05	mg/kg		<0.05		<0.05	
delta-BHC	319-86-8	0.05	mg/kg		<0.05		<0.05	
Heptachlor	76-44-8	0.05	mg/kg		<0.05		<0.05	
Aldrin	309-00-2	0.05	mg/kg		<0.05		<0.05	
Heptachlor epoxide	1024-57-3	0.05	mg/kg		<0.05		<0.05	
[^] Total Chlordane (sum)		0.05	mg/kg		<0.05		<0.05	
trans-Chlordane	5103-74-2	0.05	mg/kg		<0.05		<0.05	
alpha-Endosulfan	959-98-8	0.05	mg/kg		<0.05		<0.05	
cis-Chlordane	5103-71-9	0.05	mg/kg		<0.05		<0.05	
Dieldrin	60-57-1	0.05	mg/kg		<0.05		<0.05	
4.4`-DDE	72-55-9	0.05	mg/kg		<0.05		<0.05	
Endrin	72-20-8	0.05	mg/kg		<0.05		<0.05	
beta-Endosulfan	33213-65-9	0.05	mg/kg		<0.05		<0.05	
[^] Endosulfan (sum)	115-29-7	0.05	mg/kg		<0.05		<0.05	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH6-1.0-09/10/13	BH3-0.1-09/10/13	BH3-1.0-09/10/13	BH2-0.1-09/10/13	BH2-1.0-09/10/13
	Cl	ient sampli	ng date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-013	ES1322093-015	ES1322093-017	ES1322093-019	ES1322093-021
EP068A: Organochlorine Pesticides	(OC) - Continued							
4.4`-DDD	72-54-8	0.05	mg/kg		<0.05		<0.05	
Endrin aldehyde	7421-93-4	0.05	mg/kg		<0.05		<0.05	
Endosulfan sulfate	1031-07-8	0.05	mg/kg		<0.05		<0.05	
4.4`-DDT	50-29-3	0.2	mg/kg		<0.2		<0.2	
Endrin ketone	53494-70-5	0.05	mg/kg		<0.05		<0.05	
Methoxychlor	72-43-5	0.2	mg/kg		<0.2		<0.2	
^ Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.05	mg/kg		<0.05		<0.05	
[^] Sum of DDD + DDE + DDT		0.05	mg/kg		<0.05		<0.05	
EP075(SIM)A: Phenolic Compounds								
Phenol	108-95-2	0.5	mg/kg		<0.5		<0.5	
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5		<0.5	
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5		<0.5	
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1		<1	
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5		<0.5	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5		<0.5	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5		<0.5	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5		<0.5	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5		<0.5	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5		<0.5	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5		<0.5	
Pentachlorophenol	87-86-5	2	mg/kg		<2		<2	
EP075(SIM)B: Polynuclear Aromatic	Hydrocarbons							
Naphthalene	91-20-3	0.5	mg/kg		<0.5		<0.5	
Acenaphthylene	208-96-8	0.5	mg/kg		<0.5		<0.5	
Acenaphthene	83-32-9	0.5	mg/kg		<0.5		<0.5	
Fluorene	86-73-7	0.5	mg/kg		<0.5		<0.5	
Phenanthrene	85-01-8	0.5	mg/kg		<0.5		<0.5	
Anthracene	120-12-7	0.5	mg/kg		<0.5		<0.5	
Fluoranthene	206-44-0	0.5	mg/kg		<0.5		<0.5	
Pyrene	129-00-0	0.5	mg/kg		<0.5		<0.5	
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5		<0.5	
Chrysene	218-01-9	0.5	mg/kg		<0.5		<0.5	
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5		<0.5	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5		<0.5	



Sub-Matrix: SOIL (Matrix: SOIL)		Cli	ent sample ID	BH6-1.0-09/10/13	BH3-0.1-09/10/13	BH3-1.0-09/10/13	BH2-0.1-09/10/13	BH2-1.0-09/10/13
	Cli	ent sampli	ng date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-013	ES1322093-015	ES1322093-017	ES1322093-019	ES1322093-021
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons - Conti	inued						
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5		<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5		<0.5	
Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg		<0.5		<0.5	
Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg		<0.5		<0.5	
Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg		<0.5		<0.5	
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg		<0.5		<0.5	
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg		0.6		0.6	
^ Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg		1.2		1.2	
EP080/071: Total Petroleum Hydrocarl	oons							
C6 - C9 Fraction		10	mg/kg		<10		<10	
C10 - C14 Fraction		50	mg/kg		<50		<50	
C15 - C28 Fraction		100	mg/kg		<100		<100	
C29 - C36 Fraction		100	mg/kg		<100		<100	
[^] C10 - C36 Fraction (sum)		50	mg/kg		<50		<50	
EP080/071: Total Recoverable Hydroc	arbons - NEPM 201	3						
C6 - C10 Fraction	C6_C10	10	mg/kg		<10		<10	
[^] C6 - C10 Fraction minus BTEX (F1)	C6_C10-BTEX	10	mg/kg		<10		<10	
>C10 - C16 Fraction	>C10_C16	50	mg/kg		<50		<50	
>C16 - C34 Fraction		100	mg/kg		<100		<100	
>C34 - C40 Fraction		100	mg/kg		<100		<100	
^ >C10 - C40 Fraction (sum)		50	mg/kg		<50		<50	
C10 - C16 Fraction minus Naphthalene (F2)		50	mg/kg		<50		<50	
EP080: BTEXN								
Benzene	71-43-2	0.2	mg/kg		<0.2		<0.2	
Toluene	108-88-3	0.5	mg/kg		<0.5		<0.5	
Ethylbenzene	100-41-4	0.5	mg/kg		<0.5		<0.5	
meta- & para-Xylene	108-38-3 106-42-3	0.5	mg/kg		<0.5		<0.5	
ortho-Xylene	95-47-6	0.5	mg/kg		<0.5		<0.5	
Sum of BTEX		0.2	mg/kg		<0.2		<0.2	
^ Total Xylenes	1330-20-7	0.5	mg/kg		<0.5		<0.5	
Naphthalene	91-20-3	1	mg/kg		<1		<1	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH6-1.0-09/10/13	BH3-0.1-09/10/13	BH3-1.0-09/10/13	BH2-0.1-09/10/13	BH2-1.0-09/10/13
	Cli	ent sampli	ng date / time	09-OCT-2013 15:00				
Compound	CAS Number	LOR	Unit	ES1322093-013	ES1322093-015	ES1322093-017	ES1322093-019	ES1322093-021
EP068S: Organochlorine Pesticide Surr	rogate							
Dibromo-DDE	21655-73-2	0.1	%		79.0		78.1	
EP068T: Organophosphorus Pesticide	Surrogate							
DEF	78-48-8	0.1	%		68.2		77.1	
EP075(SIM)S: Phenolic Compound Sur	rogates							
Phenol-d6	13127-88-3	0.1	%		108		112	
2-Chlorophenol-D4	93951-73-6	0.1	%		113		103	
2.4.6-Tribromophenol	118-79-6	0.1	%		93.3		64.6	
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%		98.2		101	
Anthracene-d10	1719-06-8	0.1	%		92.7		90.5	
4-Terphenyl-d14	1718-51-0	0.1	%		86.4		84.5	
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%		96.0		96.8	
Toluene-D8	2037-26-5	0.1	%		97.7		95.9	
4-Bromofluorobenzene	460-00-4	0.1	%		104		98.3	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH1-0.5-09/10/13	BH1-1.0-09/10/13	 	
	Client sampling date / time		09-OCT-2013 15:00	09-OCT-2013 15:00	 		
Compound	CAS Number	LOR	Unit	ES1322093-025	ES1322093-026	 	
EA055: Moisture Content							
Moisture Content (dried @ 103°C)		1.0	%	29.2	19.0	 	
EG005T: Total Metals by ICP-AES							
Manganese	7439-96-5	5	mg/kg	19	<5	 	
Selenium	7782-49-2	5	mg/kg	<5	<5	 	
Arsenic	7440-38-2	5	mg/kg	<5	<5	 	
Cadmium	7440-43-9	1	mg/kg	<1	<1	 	
Chromium	7440-47-3	2	mg/kg	32	11	 	
Copper	7440-50-8	5	mg/kg	74	49	 	
Lead	7439-92-1	5	mg/kg	8	7	 	
Nickel	7440-02-0	2	mg/kg	6	<2	 	
Zinc	7440-66-6	5	mg/kg	28	17	 	
EG035T: Total Recoverable Mercury by F	IMS						
Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	 	
EK055: Ammonia as N							
Ammonia as N	7664-41-7	20	mg/kg		<20	 	
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	 	
Èndosulfan (sum)	115-29-7	0.05	mg/kg		<0.05	 	



Sub-Matrix: SOIL (Matrix: SOIL)		Clie	ent sample ID	BH1-0.5-09/10/13	BH1-1.0-09/10/13	 	
	Cl	ient sampliı	ng date / time	09-OCT-2013 15:00	09-OCT-2013 15:00	 	
Compound	CAS Number	I OR	l Init	ES1322093-025	ES1322093-026	 	
ED062A: Organachlarina Bastiaidea (LOIT	Onic				
4.4'-DDD	72-54-8	0.05	ma/ka		<0.05	 	
Endrin aldehyde	7421-93-4	0.05	ma/ka		<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	 	
EP075(SIM)A: Phenolic Compounds							
Phenol	108-95-2	0.5	mg/kg		<0.5	 	
2-Chlorophenol	95-57-8	0.5	mg/kg		<0.5	 	
2-Methylphenol	95-48-7	0.5	mg/kg		<0.5	 	
3- & 4-Methylphenol	1319-77-3	1	mg/kg		<1	 	
2-Nitrophenol	88-75-5	0.5	mg/kg		<0.5	 	
2.4-Dimethylphenol	105-67-9	0.5	mg/kg		<0.5	 	
2.4-Dichlorophenol	120-83-2	0.5	mg/kg		<0.5	 	
2.6-Dichlorophenol	87-65-0	0.5	mg/kg		<0.5	 	
4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg		<0.5	 	
2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg		<0.5	 	
2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg		<0.5	 	
Pentachlorophenol	87-86-5	2	mg/kg		<2	 	
EP075(SIM)B: Polynuclear Aromatic H	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	 	
Fluorene	86-73-7	0.5	mg/kg		<0.5	 	
Phenanthrene	85-01-8	0.5	mg/kg		<0.5	 	
Anthracene	120-12-7	0.5	mg/kg		<0.5	 	
Fluoranthene	206-44-0	0.5	mg/kg		<0.5	 	
Pyrene	129-00-0	0.5	mg/kg		<0.5	 	
Benz(a)anthracene	56-55-3	0.5	mg/kg		<0.5	 	
Chrysene	218-01-9	0.5	mg/kg		<0.5	 	
Benzo(b)fluoranthene	205-99-2	0.5	mg/kg		<0.5	 	
Benzo(k)fluoranthene	207-08-9	0.5	mg/kg		<0.5	 	



Sub-Matrix: SOIL (Matrix: SOIL)	Client sample ID		BH1-0.5-09/10/13	BH1-1.0-09/10/13	 		
	Client sampling date / time		09-OCT-2013 15:00	09-OCT-2013 15:00	 		
Compound	CAS Number	LOR	Unit	ES1322093-025	ES1322093-026	 	
EP075(SIM)B: Polynuclear Aromatic H	ydrocarbons - Cont	inued					
Benzo(a)pyrene	50-32-8	0.5	mg/kg		<0.5	 	
Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg		<0.5	 	
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		<0.5	 	
Sum of polycyclic aromatic hydrocarbons		0.5	mg/kg		<0.5	 	
^ Benzo(a)pyrene TEQ (zero)		0.5	mg/kg		<0.5	 	
^ Benzo(a)pyrene TEQ (half LOR)		0.5	mg/kg		0.6	 	
[^] Benzo(a)pyrene TEQ (LOR)		0.5	mg/kg		1.2	 	
EP080/071: Total Petroleum Hydrocart	oons						
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 Hydroca	arbons - NEPM 201	3					
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		<100	 	
>C34 - C40 Fraction		100	mg/kg		<100	 	
>C10 - C40 Fraction (sum)		50	mg/kg		<50	 	
C10 - C16 Fraction minus Naphthalene (F2)		50	mg/kg		<50	 	
EP080: BTEXN							
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	 	



Sub-Matrix: SOIL (Matrix: SOIL)		Client sample ID		BH1-0.5-09/10/13	BH1-1.0-09/10/13			
	Cli	ent sampli	ng date / time	09-OCT-2013 15:00	09-OCT-2013 15:00			
Compound	CAS Number	LOR	Unit	ES1322093-025	ES1322093-026			
EP068S: Organochlorine Pesticide Surrog	jate							
Dibromo-DDE	21655-73-2	0.1	%		74.9			
EP068T: Organophosphorus Pesticide Su	rrogate							
DEF	78-48-8	0.1	%		65.0			
EP075(SIM)S: Phenolic Compound Surrogates								
Phenol-d6	13127-88-3	0.1	%		106			
2-Chlorophenol-D4	93951-73-6	0.1	%		111			
2.4.6-Tribromophenol	118-79-6	0.1	%		100			
EP075(SIM)T: PAH Surrogates								
2-Fluorobiphenyl	321-60-8	0.1	%		98.9			
Anthracene-d10	1719-06-8	0.1	%		90.0			
4-Terphenyl-d14	1718-51-0	0.1	%		84.9			
EP080S: TPH(V)/BTEX Surrogates								
1.2-Dichloroethane-D4	17060-07-0	0.1	%		101			
Toluene-D8	2037-26-5	0.1	%		96.9			
4-Bromofluorobenzene	460-00-4	0.1	%		104			

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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







Environmental Division

Automated Guideline Comparison Report

Work Order	ES1322093	Page	: 1 of 3
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: MS CAROLINA OLMOS		
Address	: LEVEL 1, 124 PACIFIC HIGHWAY	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
	ST LEONARDS NSW, AUSTRALIA 2065		
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	: +61 02 9478 3900	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 9478 3901	Facsimile	: +61-2-8784 8500
Project	: 137623028	Date Received	: 10-OCT-2013
Order number	:	Date Analysed	: 14-OCT-2013
C-O-C number	:	Date Issued	: 17-OCT-2013
No. of samples received	: 28		
No. of samples analysed	: 12	Quote number	: SY/493/13

General Comments

This guideline comparison report only provides evaluation data where chemical parameters specifically listed within the IWRG 621 (2009) guideline are analysed by ALS using **P-16 package in full.**

This guideline comparison report only provides evaluation of total concentration data against upper limit thresholds for the 'Fill Material', 'C', 'B' Categories.

This Automated Guideline Comparison report assesses potential chemical 'contaminants' versus guideline criteria. Other parameters may impact classification and 95% upper control limits may also be applied – refer to EPA Victoria's Industrial Waste Resource Regulatory Framework and associated Guidelines.

If the total concentration of Polychlorinated biphenyls is equal to, or exceeds, the upper limit threshold for the 'Fill Material' Category, please refer to Note 6 in EPA Victoria Publication IWRG 621 (2009).

Red shading is applied where the result is equal to or greater than the guideline upper limit. Red shading is not applied to the Summary of Thresholds Reached or Exceeded.

For the 'Summary of Thresholds Reached or Exceeded' to accurately function, all samples must be analysed and included in the 'Analytical Results' section of the following report. Please verify that all required sample IDs are listed and analysed.

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Summary of Thresholds Reached or Exceeded

Results for all samples detailed in this report do not exceed threshold limits for fill material.



Sub-Matrix:	Client sample ID					 	 	
	Sampling date/time			Guideline	Guideline	 	 	
				Lower	Upper	 	 	
Compound	Method	LOR	Unit	l imit	l imit			
		-	-			 	 	



QUALITY CONTROL REPORT : ES1322093 Work Order Page : 1 of 14 Client : GOLDER ASSOCIATES Laboratory : Environmental Division Sydney Contact : MS CAROLINA OLMOS Contact : Loren Schiavon Address Address : LEVEL 1, 124 PACIFIC HIGHWAY : 277-289 Woodpark Road Smithfield NSW Australia 2164 ST LEONARDS NSW, AUSTRALIA 2065 E-mail : colmos@golder.com.au E-mail : loren.schiavon@alsglobal.com Telephone Telephone : +61 2 8784 8503 : +61 02 9478 3900 Facsimile : +61 02 9478 3901 Facsimile : +61 2 8784 8500 Project : 137623028 QC Level : NEPM 2013 Schedule B(3) and ALS QCS3 requirement : PKC - PRIMARY SCHOOL Site C-O-C number Date Samples Received · ____ : 10-OCT-2013 Sampler : KY Issue Date : 17-OCT-2013 Order number : -----No. of samples received : 28 No. of samples analysed Quote number : SY/493/13 : 12

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

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Work Order	ES1322093
Client	: GOLDER ASSOCIATES
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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 Signatories

Laboratory 825

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.

Accredited for	Signatories	Position	Accreditation Category
ISO/IEC 17025.	Alex Rossi Organic Chemist		Sydney Organics
	Ankit Joshi	Inorganic Chemist	Sydney Inorganics
	Celine Conceicao	Senior Spectroscopist	Sydney Inorganics
	Hoa Nguyen	Senior Inorganic Chemist	Sydney Inorganics
	Pabi Subba	Senior Organic Chemist	Sydney Organics

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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 L	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA055: Moisture Cont	tent (QC Lot: 3107649)								
ES1322093-007	BH5-0.1-09/10/13	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	11.5	12.3	7.1	0% - 50%
ES1322142-002	Anonymous	EA055-103: Moisture Content (dried @ 103°C)		1.0	%	4.8	5.4	12.7	No Limit
EG005T: Total Metals	by ICP-AES (QC Lot: 3107	7025)							
ES1322093-002	BH4-0.4-09/10/13	EG005T: Cadmium	7440-43-9	1	mg/kg	5	6	19.1	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	31	16.4	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	24	28	14.6	0% - 50%
		EG005T: Arsenic	7440-38-2	5	mg/kg	73	67	8.8	0% - 50%
		EG005T: Copper	7440-50-8	5	mg/kg	717	813	12.5	0% - 20%
		EG005T: Lead	7439-92-1	5	mg/kg	404	432	6.8	0% - 20%
		EG005T: Manganese	7439-96-5	5	mg/kg	248	264	6.2	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	798	854	6.7	0% - 20%
ES1322093-009	BH5-1.0-09/10/13	EG005T: Cadmium	7440-43-9	1	mg/kg	<1	<1	0.0	No Limit
		EG005T: Chromium	7440-47-3	2	mg/kg	26	26	0.0	0% - 50%
		EG005T: Nickel	7440-02-0	2	mg/kg	7	6	0.0	No Limit
		EG005T: Arsenic	7440-38-2	5	mg/kg	11	6	56.6	No Limit
		EG005T: Copper	7440-50-8	5	mg/kg	83	89	6.6	0% - 50%
		EG005T: Lead	7439-92-1	5	mg/kg	44	18	83.3	No Limit
		EG005T: Manganese	7439-96-5	5	mg/kg	103	63	# 47.9	0% - 20%
		EG005T: Selenium	7782-49-2	5	mg/kg	<5	<5	0.0	No Limit
		EG005T: Zinc	7440-66-6	5	mg/kg	31	27	14.7	No Limit
EG035T: Total Recov	verable Mercury by FIMS(C	QC Lot: 3107026)							
ES1322093-002	BH4-0.4-09/10/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
ES1322093-009	BH5-1.0-09/10/13	EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	<0.1	0.0	No Limit
EK055: Ammonia as I	N (QC Lot: 3109190)								
ES1322093-007	BH5-0.1-09/10/13	EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	<20	0.0	No Limit
EK057G: Nitrite as N	by Discrete Analyser (QC	Lot: 3105009)							
ES1322093-002	BH4-0.4-09/10/13	EK057G: Nitrite as N (Sol.)		0.1	mg/kg	<1.0	<1.0	0.0	No Limit
EK059G: Nitrite plus	Nitrate as N (NOx) by Disc	rete Analyser (QC Lot: 3105010)							
ES1322093-002	BH4-0.4-09/10/13	EK059G: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	<1.0	<1.0	0.0	No Limit
EK061G: Total Kjelda	hl Nitrogen By Discrete An	alyser (QC Lot: 3105385)							
ES1322093-002	BH4-0.4-09/10/13	EK061G: Total Kjeldahl Nitrogen as N		20	mg/kg	120	180	39.8	No Limit
EK067G: Total Phosp	horus as P by Discrete Ana	alyser (QC Lot: 3105386)							
ES1322093-002	BH4-0.4-09/10/13	EK067G: Total Phosphorus as P		2	mg/kg	338	363	7.2	0% - 20%

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Client	: GOLDER ASSOCIATES
Project	137623028



Sub-Matrix: SOIL						Laboratory I	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochlo	rine Pesticides (OC) (QC I	Lot: 3105573)							
ES1322154-016	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
ES1322093-007	BH5-0.1-09/10/13	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

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Sub-Matrix: SOIL						Laboratory Duplicate (DUP) Report Original Result Duplicate Result RPD (%) Recovery			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP068A: Organochic	orine Pesticides (OC) (Q	C Lot: 3105573) - continued							
ES1322093-007	BH5-0.1-09/10/13	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
EP075(SIM)A: Pheno	lic Compounds (QC Lot	: 3104577)							
ES1322093-002	BH4-0.4-09/10/13	EP075(SIM) [:] Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
ES1322094-011	Anonymous	EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
	EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	<0.5	0.0	No Limit	
		EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1	mg/kg	<1	<1	0.0	No Limit
		EP075(SIM): Pentachlorophenol	87-86-5	2	mg/kg	<2	<2	0.0	No Limit
EP075(SIM)B: Polyn	uclear Aromatic Hydroca	rbons (QC Lot: 3104577)							
ES1322093-002	BH4-0.4-09/10/13	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

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Sub-Matrix: SOIL			Γ	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: Polynu	clear Aromatic Hydrocarbo	ns (QC Lot: 3104577) - continued							
ES1322093-002	BH4-0.4-09/10/13	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		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
ES1322094-011	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		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
		hydrocarbons							
		EP075(SIM): Benzo(a)pyrene TEQ (zero)		0.5	mg/kg	<0.5	<0.5	0.0	No Limit
EP080/071: Total Petr	oleum Hydrocarbons (QC	Lot: 3104576)							
ES1322093-002	BH4-0.4-09/10/13	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
ES1322094-011	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 Petr	oleum Hydrocarbons (QC	Lot: 3106443)							
ES1322142-001	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
ES1322142-009	Anonymous	EP080: C6 - C9 Fraction		10	mg/kg	<10	<10	0.0	No Limit
EP080/071: Total Rec	overable Hydrocarbons - N	EPM 2013 (QC Lot: 3104576)							
ES1322093-002	BH4-0.4-09/10/13	EP071: >C16 - C34 Fraction		100	ma/ka	<100	<100	0.0	No Limit
		EP071: >C34 - C40 Fraction		100	ma/ka	<100	<100	0,0	No Limit
		EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	<50	0.0	No Limit

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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 Rec	overable Hydrocarbons - N	EPM 2013 (QC Lot: 3104576) - continued									
ES1322094-011	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 Rec	overable Hydrocarbons - N	IEPM 2013 (QC Lot: 3106443)									
ES1322142-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit		
ES1322142-009	Anonymous	EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	<10	0.0	No Limit		
EP080: BTEXN (QC I	_ot: 3106443)										
ES1322142-001	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		
ES1322142-009	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				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG005T: Total Metals by ICP-AES (QCLot: 3107025)								
EG005T: Arsenic	7440-38-2	5	mg/kg	<5	21.7 mg/kg	120	87	129
EG005T: Cadmium	7440-43-9	1	mg/kg	<1	4.64 mg/kg	103	80	122
EG005T: Chromium	7440-47-3	2	mg/kg	<2	43.9 mg/kg	129	71	133
EG005T: Copper	7440-50-8	5	mg/kg	<5	32.0 mg/kg	118	86	128
EG005T: Lead	7439-92-1	5	mg/kg	<5	40.0 mg/kg	112	81	123
EG005T: Manganese	7439-96-5	5	mg/kg	<5	130 mg/kg	123	85	127
EG005T: Nickel	7440-02-0	2	mg/kg	<2	55.0 mg/kg	116	84	130
EG005T: Selenium	7782-49-2	5	mg/kg	<5	5.37 mg/kg	126	75	131
EG005T: Zinc	7440-66-6	5	mg/kg	<5	60.8 mg/kg	116	81	133
EG035T: Total Recoverable Mercury by FIMS (QCLot: 3	107026)							
EG035T: Mercury	7439-97-6	0.1	mg/kg	<0.1	2.57 mg/kg	85.1	66	112
EK055: Ammonia as N (QCLot: 3109190)								
EK055: Ammonia as N	7664-41-7	20	mg/kg	<20	125 mg/kg	93.1	63	113
EK057G: Nitrite as N by Discrete Analyser (QCLot: 310)	5009)							
EK057G: Nitrite as N (Sol.)		0.1	mg/kg	<0.1	2.5 mg/kg	94.0	82	120
FK059G: Nitrite plus Nitrate as N (NOx), by Discrete Ana	alvser (QCI of: 31	105010)						
EK059G: Nitrite + Nitrate as N (Sol.)		0.1	mg/kg	<0.1	2.5 mg/kg	110	89	115
FK061G: Total Kieldahl Nitrogen By Discrete Analyser(QCI of: 3105385)							
EK061G: Total Kieldahl Nitrogen as N		20	mg/kg	<20	500 mg/kg	94.0	70	127
EK067G: Total Phosphorus as P by Discrete Analyser (0	QCLot: 3105386)							
EK067G: Total Phosphorus as P		2	mg/kg	<2	442 mg/kg	97.8	69	124
FP068A: Organochlorine Pesticides (OC) (OCI of: 31055	573)							
EP068: alpha-BHC	319-84-6	0.05	mg/kg	<0.05	0.5 mg/kg	80.3	71	113
EP068: Hexachlorobenzene (HCB)	118-74-1	0.05	mg/kg	<0.05	0.5 mg/kg	88.0	66	122
EP068: beta-BHC	319-85-7	0.05	mg/kg	<0.05	0.5 mg/kg	78.7	69	119
EP068: gamma-BHC	58-89-9	0.05	mg/kg	<0.05	0.5 mg/kg	86.2	71	115
EP068: delta-BHC	319-86-8	0.05	mg/kg	<0.05	0.5 mg/kg	76.0	65	113
EP068: Heptachlor	76-44-8	0.05	mg/kg	<0.05	0.5 mg/kg	77.1	68	116
EP068: Aldrin	309-00-2	0.05	mg/kg	<0.05	0.5 mg/kg	85.2	68	118
EP068: Heptachlor epoxide	1024-57-3	0.05	mg/kg	<0.05	0.5 mg/kg	83.2	68	116
EP068: trans-Chlordane	5103-74-2	0.05	mg/kg	<0.05	0.5 mg/kg	76.9	68	120
EP068: alpha-Endosulfan	959-98-8	0.05	mg/kg	<0.05	0.5 mg/kg	78.3	69	119
EP068: cis-Chlordane	5103-71-9	0.05	mg/kg	<0.05	0.5 mg/kg	81.4	67	121
EP068: Dieldrin	60-57-1	0.05	mg/kg	<0.05	0.5 mg/kg	75.8	66	118

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Sub-Matrix: SOIL			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC) (QCL	ot: 3105573) - continued							
EP068: 4.4`-DDE	72-55-9	0.05	mg/kg	<0.05	0.5 mg/kg	74.9	69	117
EP068: Endrin	72-20-8	0.05	mg/kg	<0.05	0.5 mg/kg	81.6	67	123
EP068: beta-Endosulfan	33213-65-9	0.05	mg/kg	<0.05	0.5 mg/kg	80.7	76	120
EP068: 4.4`-DDD	72-54-8	0.05	mg/kg	<0.05	0.5 mg/kg	86.0	76	120
EP068: Endrin aldehyde	7421-93-4	0.05	mg/kg	<0.05	0.5 mg/kg	72.4	57.3	115
EP068: Endosulfan sulfate	1031-07-8	0.05	mg/kg	<0.05	0.5 mg/kg	88.5	60	124
EP068: 4.4`-DDT	50-29-3	0.2	mg/kg	<0.2	0.5 mg/kg	79.2	67	127
EP068: Endrin ketone	53494-70-5	0.05	mg/kg	<0.05	0.5 mg/kg	87.0	65	123
EP068: Methoxychlor	72-43-5	0.2	mg/kg	<0.2	0.5 mg/kg	81.6	65	129
EP075(SIM)A: Phenolic Compounds (QCLot: 31	104577)							
EP075(SIM): Phenol	108-95-2	0.5	mg/kg	<0.5	4 mg/kg	102	74	116
EP075(SIM): 2-Chlorophenol	95-57-8	0.5	mg/kg	<0.5	4 mg/kg	107	74	116
EP075(SIM): 2-Methylphenol	95-48-7	0.5	mg/kg	<0.5	4 mg/kg	100	72	116
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	1.0	mg/kg	<1	8 mg/kg	106	69	123
EP075(SIM): 2-Nitrophenol	88-75-5	0.5	mg/kg	<0.5	4 mg/kg	82.3	60.3	117
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.5	mg/kg	<0.5	4 mg/kg	106	69	117
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.5	mg/kg	<0.5	4 mg/kg	105	68	112
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.5	mg/kg	<0.5	4 mg/kg	109	73	117
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.5	mg/kg	<0.5	4 mg/kg	104	76.4	114
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.5	mg/kg	<0.5	4 mg/kg	85.6	57	111
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.5	mg/kg	<0.5	4 mg/kg	94.9	68.9	112
EP075(SIM): Pentachlorophenol	87-86-5	1.0	mg/kg	<1	8 mg/kg	41.2	3.9	57
EP075(SIM)B: Polynuclear Aromatic Hydrocarbo	ons (QCLot: 3104577)							
EP075(SIM): Naphthalene	91-20-3	0.5	mg/kg	<0.5	4 mg/kg	108	80	124
EP075(SIM): Acenaphthylene	208-96-8	0.5	mg/kg	<0.5	4 mg/kg	108	77	123
EP075(SIM): Acenaphthene	83-32-9	0.5	mg/kg	<0.5	4 mg/kg	109	79	123
EP075(SIM): Fluorene	86-73-7	0.5	mg/kg	<0.5	4 mg/kg	108	77	123
EP075(SIM): Phenanthrene	85-01-8	0.5	mg/kg	<0.5	4 mg/kg	113	79	123
EP075(SIM): Anthracene	120-12-7	0.5	mg/kg	<0.5	4 mg/kg	112	79	123
EP075(SIM): Fluoranthene	206-44-0	0.5	mg/kg	<0.5	4 mg/kg	113	79	123
EP075(SIM): Pyrene	129-00-0	0.5	mg/kg	<0.5	4 mg/kg	115	79	125
EP075(SIM): Benz(a)anthracene	56-55-3	0.5	mg/kg	<0.5	4 mg/kg	104	73	121
EP075(SIM): Chrysene	218-01-9	0.5	mg/kg	<0.5	4 mg/kg	110	81	123
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.5	mg/kg	<0.5	4 mg/kg	98.9	70	118
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.5	mg/kg	<0.5	4 mg/kg	106	77	123
EP075(SIM): Benzo(a)pyrene	50-32-8	0.5	mg/kg	<0.5	4 mg/kg	105	76	122
EP075(SIM): Indeno(1.2.3.cd)pyrene	193-39-5	0.5	mg/kg	<0.5	4 mg/kg	102	71	113
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.5	mg/kg	<0.5	4 mg/kg	103	71.7	113
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.5	mg/kg	<0.5	4 mg/kg	99.8	72.4	114

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Sub-Matrix: SOIL				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP080/071: Total Petroleum Hydrocarbons(Q	CLot: 3104576)								
EP071: C10 - C14 Fraction		50	mg/kg	<50	200 mg/kg	97.0	71	131	
EP071: C15 - C28 Fraction		100	mg/kg	<100	300 mg/kg	93.6	74	138	
EP071: C29 - C36 Fraction		100	mg/kg	<100	200 mg/kg	80.8	64	128	
EP080/071: Total Petroleum Hydrocarbons(Q	CLot: 3106443)								
EP080: C6 - C9 Fraction		10	mg/kg	<10	26 mg/kg	117	68.4	128	
EP080/071: Total Recoverable Hydrocarbons	- NEPM 2013 (QCLot: 3104	576)							
EP071: >C10 - C16 Fraction	>C10_C16	50	mg/kg	<50	250 mg/kg	93.2	70	130	
EP071: >C16 - C34 Fraction		100	mg/kg	<100	350 mg/kg	90.0	74	138	
EP071: >C34 - C40 Fraction		100	mg/kg	<100					
		50	mg/kg		150 mg/kg	69.2	63	131	
EP080/071: Total Recoverable Hydrocarbons	- NEPM 2013 (QCLot: 31064	143)							
EP080: C6 - C10 Fraction	C6_C10	10	mg/kg	<10	31 mg/kg	119	68.4	128	
EP080: BTEXN (QCLot: 3106443)									
EP080: Benzene	71-43-2	0.2	mg/kg	<0.2	1 mg/kg	106	62	116	
EP080: Toluene	108-88-3	0.5	mg/kg	<0.5	1 mg/kg	108	62	128	
EP080: Ethylbenzene	100-41-4	0.5	mg/kg	<0.5	1 mg/kg	108	58	118	
EP080: meta- & para-Xylene	108-38-3	0.5	mg/kg	<0.5	2 mg/kg	107	60	120	
	106-42-3								
EP080: ortho-Xylene	95-47-6	0.5	mg/kg	<0.5	1 mg/kg	108	60	120	
EP080: Naphthalene	91-20-3	1	mg/kg	<1	1 mg/kg	102	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 L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG005T: Total Met	als by ICP-AES (QCLot: 3107025)						
ES1322093-002 BH4-0.4-09/10/13		EG005T: Arsenic	7440-38-2	50 mg/kg	96.5	70	130
		EG005T: Cadmium	7440-43-9	50 mg/kg	104	70	130
		EG005T: Chromium	7440-47-3	50 mg/kg	110	70	130
		EG005T: Copper	7440-50-8	250 mg/kg	# 174	70	130
		EG005T: Lead	7439-92-1	125 mg/kg	112	70	130
		EG005T: Nickel	7440-02-0	50 mg/kg	106	70	130
		EG005T: Selenium	7782-49-2	50 mg/kg	99.0	70	130
		EG005T: Zinc	7440-66-6	250 mg/kg	113	70	130
EG035T: Total Red	coverable Mercury by FIMS (QCLot: 3107026)						

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Sub-Matrix: SOIL		Matrix Spike (MS) Report					
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG035T: Total Re	coverable Mercury by FIMS (QCLot: 3107026) - conti	nued					
ES1322093-002	BH4-0.4-09/10/13	EG035T: Mercury	7439-97-6	5 mg/kg	101	70	130
EK055: Ammonia a	as N (QCLot: 3109190)						
ES1322093-012	BH6-0.3-09/10/13	EK055: Ammonia as N	7664-41-7	50 mg/kg	82.0	70	130
EK057G: Nitrite as	N by Discrete Analyser (QCLot: 3105009)						
ES1322093-002	BH4-0.4-09/10/13	EK057G: Nitrite as N (Sol.)		2.5 mg/kg	98.0	70	130
	Lug Nitrate og N (NOx) by Digerate Anglyger (OCI et:	2405040)					
	DUA 0.4.00/40/42			0.5 mmm///m	104	70	100
ES1322093-002	BH4-0.4-09/10/13	EK059G: Nitrite + Nitrate as N (Sol.)		2.5 mg/kg	104	70	130
EK061G: Total Kje	Idahl Nitrogen By Discrete Analyser (QCLot: 310538	5)					
ES1322093-002	BH4-0.4-09/10/13	EK061G: Total Kjeldahl Nitrogen as N		500 mg/kg	111	70	130
EK067G: Total Pho	osphorus as P by Discrete Analyser(QCLot: 3105386)					
ES1322093-002	BH4-0.4-09/10/13	EK067G: Total Phosphorus as P		100 mg/kg	# 59.9	70	130
EP068A: Organoch	nlorine Pesticides (OC) (QCLot: 3105573)						
ES1322154-016	Anonymous	EP068: gamma-BHC	58-89-9	0.5 mg/kg	93.2	70	130
		EP068: Heptachlor	76-44-8	0.5 mg/kg	107	70	130
		EP068: Aldrin	309-00-2	0.5 mg/kg	91.3	70	130
		EP068: Dieldrin	60-57-1	0.5 mg/kg	95.8	70	130
		EP068: Endrin	72-20-8	2 mg/kg	101	70	130
		EP068: 4.4`-DDT	50-29-3	2 mg/kg	104	70	130
EP075(SIM)A: Phe	nolic Compounds (QCLot: 3104577)						
ES1322093-002	BH4-0.4-09/10/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	105	70	130
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	101	70	130
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	83.2	60	130
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	102	70	130
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	55.8	20	130
EP075(SIM)B: Poly	vnuclear Aromatic Hydrocarbons (QCLot: 3104577)						
ES1322093-002	BH4-0.4-09/10/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.6	70	130
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100	70	130
EP080/071: Total P	Petroleum Hydrocarbons (QCLot: 3104576)						
ES1322093-002	BH4-0.4-09/10/13	EP071: C10 - C14 Fraction		640 mg/kg	81.4	73	137
		EP071: C15 - C28 Fraction		3140 mg/kg	81.8	53	131
		EP071: C29 - C36 Fraction		2860 mg/kg	71.6	52	132
EP080/071: Total P	Petroleum Hydrocarbons (QCLot: 3106443)						
ES1322142-001	Anonymous	EP080: C6 - C9 Fraction		32.5 mg/kg	94.3	70	130
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2013 (QCLot: 310	4576)					
ES1322093-002	BH4-0.4-09/10/13	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102	73	137

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Sub-Matrix: SOIL	ub-Matrix: SOIL					Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery Li	imits (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3104576) - continued										
ES1322093-002 BH4-0.4-09/10/13		EP071: >C16 - C34 Fraction		4800 mg/kg	75.5	53	131			
		EP071: >C34 - C40 Fraction		2400 mg/kg	53.9	52	132			
EP080/071: Total Recoverable Hydrocarbons - NEPM 2013 (QCLot: 3106443)										
ES1322142-001	Anonymous	EP080: C6 - C10 Fraction	C6_C10	37.5 mg/kg	93.4	70	130			
EP080: BTEXN (QC	CLot: 3106443)									
ES1322142-001	Anonymous	EP080: Benzene	71-43-2	2.5 mg/kg	80.6	70	130			
		EP080: Toluene	108-88-3	2.5 mg/kg	89.2	70	130			
		EP080: Ethylbenzene	100-41-4	2.5 mg/kg	97.4	70	130			
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	107	70	130			
			106-42-3							
		EP080: ortho-Xylene	95-47-6	2.5 mg/kg	99.0	70	130			
		EP080: Naphthalene	91-20-3	2.5 mg/kg	79.6	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 Rec	Spike Recovery (%)		Recovery Limits (%))s (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EP080/071: Total P	etroleum Hydrocarbons (QCLot: 3104576)								
ES1322093-002	BH4-0.4-09/10/13	EP071: C10 - C14 Fraction		640 mg/kg	81.4		73	137		
		EP071: C15 - C28 Fraction		3140 mg/kg	81.8		53	131		
		EP071: C29 - C36 Fraction		2860 mg/kg	71.6		52	132		
EP080/071: Total R	ecoverable Hydrocarbons - NEPM 2013(QCLot: 3104576)								
ES1322093-002	BH4-0.4-09/10/13	EP071: >C10 - C16 Fraction	>C10_C16	850 mg/kg	102		73	137		
		EP071: >C16 - C34 Fraction		4800 mg/kg	75.5		53	131		
		EP071: >C34 - C40 Fraction		2400 mg/kg	53.9		52	132		
EP075(SIM)A: Phen	olic Compounds (QCLot: 3104577)									
ES1322093-002	BH4-0.4-09/10/13	EP075(SIM): Phenol	108-95-2	10 mg/kg	105		70	130		
		EP075(SIM): 2-Chlorophenol	95-57-8	10 mg/kg	101		70	130		
		EP075(SIM): 2-Nitrophenol	88-75-5	10 mg/kg	83.2		60	130		
		EP075(SIM): 4-Chloro-3-methylphenol	59-50-7	10 mg/kg	102		70	130		
		EP075(SIM): Pentachlorophenol	87-86-5	10 mg/kg	55.8		20	130		
EP075(SIM)B: Polyi	nuclear Aromatic Hydrocarbons (QCLot:	3104577)								
ES1322093-002	BH4-0.4-09/10/13	EP075(SIM): Acenaphthene	83-32-9	10 mg/kg	98.6		70	130		
		EP075(SIM): Pyrene	129-00-0	10 mg/kg	100		70	130		
EK057G: Nitrite as	N by Discrete Analyser (QCLot: 3105009									

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Sub-Matrix: SOIL				Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report						
				Spike Spike Recovery (%) Recovery Limits (%) RP			RP	Ds (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EK057G: Nitrite as	N by Discrete Analyser (QCLot: 3105	009) - continued								
ES1322093-002	BH4-0.4-09/10/13	EK057G: Nitrite as N (Sol.)		2.5 mg/kg	98.0		70	130		
EK059G: Nitrite plu	us Nitrate as N (NOx) by Discrete Anal	yser (QCLot: 3105010)								
ES1322093-002	BH4-0.4-09/10/13	EK059G: Nitrite + Nitrate as N (Sol.)		2.5 mg/kg	104		70	130		
EK061G: Total Kiel	dahl Nitrogen By Discrete Analyser(C	CLot: 3105385)								
ES1322093-002	BH4-0.4-09/10/13	EK061G: Total Kieldahl Nitrogen as N		500 mg/kg	111		70	130		
EK067G: Total Pho	osphorus as P by Discrete Analyser (O	CL ot: 3105386)								
ES1322093-002	BH4-0.4-09/10/13	EK067G: Total Phosphorus as P		100 ma/ka	# 59.9		70	130		
ED069A: Organoch	Norina Restigidas (OC) (OC) et: 21055			3 3						
ES1322154-016	Anonymous	ED068: commo PHC	58-89-9	0.5 ma/ka	93.2		70	130		
	, thoriginous		76-44-8	0.5 mg/kg	107		70	130		
			309-00-2	0.5 mg/kg	91.3		70	130		
		EP068: Dieldrin	60-57-1	0.5 mg/kg	95.8		70	130		
		EP068: Endrin	72-20-8	2 mg/kg	101		70	130		
		EP068: 4 4'-DDT	50-29-3	2 mg/kg	104		70	130		
EP080/071: Total P	etroleum Hydrocarbons (OCI of: 3106/	443)								
ES1322142-001	Anonymous	EP080: C6 - C9 Eraction		32.5 mg/kg	94.3		70	130		
ED090/074, Total B	Acceleration and the second seco									
EF060/071. Total R	Aponymous	ED080: C6 (10 Erection	C6 C10	37.5 ma/ka	03.4		70	130		
		EP080. C6 - CT0 Flaction	00_010	57.5 mg/kg	55.4		70	150		
EP080: BTEXN (Q0	CLot: 3106443)		74.40.0	0.5 mailin	00.0		70	100		
ES1322142-001	Anonymous	EP080: Benzene	/1-43-2	2.5 mg/kg	80.6		70	130		
		EP080: Toluene	108-88-3	2.5 mg/kg	89.2		70	130		
			100-41-4	2.5 mg/kg	97.4		70	130		
		EP080: meta- & para-Xylene	108-38-3	2.5 mg/kg	107		70	130		
		EP080: ortho Xylene	95-47-6	2.5 ma/ka	99.0		70	130		
		EP080: Nanhthalene	91-20-3	2.5 mg/kg	79.6		70	130		
ECONET: Total Mate										
ES1322003-002	BH4-0 4-09/10/13		7440-38-2	50 mg/kg	96.5		70	130		
L31322093-002	5114-0.4-09/10/13	EG0051: Arsenic	7440-30-2	50 mg/kg	104		70	130		
		EG005T: Cadmium	7440-47-3	50 mg/kg	110		70	130		
		EG005T: Copper	7440-50-8	250 mg/kg	# 174		70	130		
		EG005T: Lead	7439-92-1	125 mg/kg	112		70	130		
		EG005T: Nickel	7440-02-0	50 ma/ka	106		70	130		
		EG005T: Selenium	7782-49-2	50 mg/kg	99.0		70	130		
		EG005T: Zinc	7440-66-6	250 mg/kg	113		70	130		
EG035T: Total Rec	coverable Mercury by FIMS (OCL et: 31	07026)								
ES1322093-002	BH4-0 4-09/10/13	EG035T: Mercury	7439-97-6	5 mg/kg	101		70	130		
	2 0.1 00/10/10		1400 01-0	S	101					

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Sub-Matrix: SOIL		Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report								
				Spike	Spike Red	covery (%)	Recovery	Limits (%)	RPDs	s (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	MSD	Low	High	Value	Control Limit
EK055: Ammonia as N (QCLot: 3109190)										
ES1322093-012	BH6-0.3-09/10/13	EK055: Ammonia as N	7664-41-7	50 mg/kg	82.0		70	130		



	INTERPRETIVE	<u>E QUALITY CONTROL F</u>	REPORT
Work Order	ES1322093	Page	: 1 of 8
Client	: GOLDER ASSOCIATES	Laboratory	: Environmental Division Sydney
Contact	: MS CAROLINA OLMOS	Contact	: Loren Schiavon
Address	: LEVEL 1, 124 PACIFIC HIGHWAY ST LEONARDS NSW, AUSTRALIA 2065	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colmos@golder.com.au	E-mail	: loren.schiavon@alsglobal.com
Telephone	: +61 02 9478 3900	Telephone	: +61 2 8784 8503
Facsimile	: +61 02 9478 3901	Facsimile	: +61 2 8784 8500
Project	: 137623028	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: PKC - PRIMARY SCHOOL		
C-O-C number	:	Date Samples Received	: 10-OCT-2013
Sampler	: KY	Issue Date	: 17-OCT-2013
Order number	:		
		No. of samples received	: 28
Quote number	: SY/493/13	No. of samples analysed	: 12

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

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500 Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



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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 <u>VOC in soils</u> 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 <u>or</u> Vinyl Chloride and Styrene are not key analytes of interest/concern.

Matrix: SOIL		Evaluation: \star = Holding time breach ; \checkmark = Within holding time							
Method		Sample Date	Ex	traction / Preparation			Analysis		
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EA055: Moisture Content									
Soil Glass Jar - Unpreserved (EA055-103)									
BH4-0.4-09/10/13,	BH4-1.0-09/10/13,	09-OCT-2013				15-OCT-2013	23-OCT-2013	✓	
BH5-0.1-09/10/13,	BH5-1.0-09/10/13,								
BH6-0.3-09/10/13,	BH6-1.0-09/10/13,								
BH3-0.1-09/10/13,	BH3-1.0-09/10/13,								
BH2-0.1-09/10/13,	BH2-1.0-09/10/13,								
BH1-0.5-09/10/13,	BH1-1.0-09/10/13								
EG005T: Total Metals by ICP-AES									
Soil Glass Jar - Unpreserved (EG005T)									
BH4-0.4-09/10/13,	BH4-1.0-09/10/13,	09-OCT-2013	15-OCT-2013	07-APR-2014	1	16-OCT-2013	07-APR-2014	✓	
BH5-0.1-09/10/13,	BH5-1.0-09/10/13,								
BH6-0.3-09/10/13,	BH6-1.0-09/10/13,								
BH3-0.1-09/10/13,	BH3-1.0-09/10/13,								
BH2-0.1-09/10/13,	BH2-1.0-09/10/13,								
BH1-0.5-09/10/13,	BH1-1.0-09/10/13								
EG035T: Total Recoverable Mercury by FIMS									
Soil Glass Jar - Unpreserved (EG035T)									
BH4-0.4-09/10/13,	BH4-1.0-09/10/13,	09-OCT-2013	15-OCT-2013	06-NOV-2013	✓	16-OCT-2013	06-NOV-2013	✓	
BH5-0.1-09/10/13,	BH5-1.0-09/10/13,								
BH6-0.3-09/10/13,	BH6-1.0-09/10/13,								
BH3-0.1-09/10/13,	BH3-1.0-09/10/13,								
BH2-0.1-09/10/13,	BH2-1.0-09/10/13,								
BH1-0.5-09/10/13,	BH1-1.0-09/10/13								
EK055: Ammonia as N									
Soil Glass Jar - Unpreserved (EK055)									
BH4-0.4-09/10/13,	BH4-1.0-09/10/13,	09-OCT-2013				16-OCT-2013	07-APR-2014	\checkmark	
BH5-0.1-09/10/13,	BH6-0.3-09/10/13,								
BH3-0.1-09/10/13,	BH2-0.1-09/10/13,								
BH1-1.0-09/10/13									
EK057G: Nitrite as N by Discrete Analyser									
Soil Glass Jar - Unpreserved (EK057G)									
BH4-0 4-09/10/13	BH4-1 0-09/10/13	09-OCT-2013	15-OCT-2013	07-APR-2014		15-OCT-2013	07-APR-2014		

Page	: 3 of 8
Work Order	: ES1322093
Client	: GOLDER ASSOCIATES
Project	: 137623028



Matrix: SOIL	Evaluation: ×					* = Holding time breach ; \checkmark = Within holding time.			
thod		Sample Date	Extraction / Preparation			Analysis			
Container / Client Sample ID(s)			Date extracted	Due for extraction	Evaluation	Date analysed	Due for analysis	Evaluation	
EK059G: Nitrite plus Nitrate as N (NOx) by Dis	crete Analyser								
Soil Glass Jar - Unpreserved (EK059G)									
BH4-0.4-09/10/13,	BH4-1.0-09/10/13	09-OCT-2013	15-OCT-2013	07-APR-2014	~	15-OCT-2013	07-APR-2014	\checkmark	
EK061G: Total Kjeldahl Nitrogen By Discrete A	nalyser								
Soil Glass Jar - Unpreserved (EK061G)		00.007.0040	45 007 0040	07 400 0044		45 007 0040	07 400 0044		
BH4-0.4-09/10/13,	BH4-1.0-09/10/13	09-001-2013	15-001-2013	07-APR-2014	~	15-001-2013	07-APR-2014	✓	
EK067G: Total Phosphorus as P by Discrete Ar	alyser		I						
Soil Glass Jar - Unpreserved (EK067G)		00 OCT 2012	45 OCT 2042	07 400 2014		45 OCT 2042			
BH4-0.4-09/10/13,	BH4-1.0-09/10/13	09-001-2013	15-001-2013	07-APR-2014	~	15-001-2013	07-AFR-2014	✓	
EP068A: Organochlorine Pesticides (OC)									
Soil Glass Jar - Unpreserved (EP068)		00 OCT 2012	16 OCT 2012	23 OCT 2013		16 OCT 2012	25 NOV 2013		
BH4-0.4-09/10/13,	BH5-0.1-09/10/13,	09-001-2013	10-001-2013	23-001-2013	~	16-001-2013	23-110-2013	✓	
BH6-0.3-09/10/13,	BH3-0.1-09/10/13,								
BH2-0.1-09/10/13,	BH1-1.0-09/10/13								
EP080/071: Total Petroleum Hydrocarbons						1			
Soil Glass Jar - Unpreserved (EP071)		09-OCT-2013	14-OCT-2013	23-OCT-2013		15-OCT-2013	23-NOV-2013		
BH4-0.4-09/10/13, BH6 0.3 00/10/13	BH3-0.1-09/10/13,	03-001-2013	14-001-2013	20-001-2010	~	13-001-2013	20-110 -2010	v	
BH0-0.3-09/10/13, BH2 0.1.00/10/12									
ВН2-0.1-09/10/13,	BH1-1.0-09/10/13								
EP075(SIM)A: Phenolic Compounds									
Soil Glass Jar - Unpreserved (EP075(SIM))		09-OCT-2013	14-OCT-2013	23-OCT-2013	/	16-OCT-2013	23-NOV-2013		
BH4-0.4-09/10/13, BH6 0.2 00/10/12		00-001-2010	14-001-2010	20 001 2010	•	10-001-2010	201101 2010	v	
BH2 0 1 00/10/13	BH3-0.1-09/10/13, BH1 1.0.00/10/13								
	BITT-1.0-03/10/13								
EP075(SIM)B: Polynuclear Aromatic Hydrocarb	ons								
BH4-0 4-09/10/13	BH5-0 1-09/10/13	09-OCT-2013	14-OCT-2013	23-OCT-2013		16-OCT-2013	23-NOV-2013		
BH6-0 3-09/10/13	BH3-0 1-09/10/13				•			•	
BH2-0 1-09/10/13	BH1-1 0-09/10/13								
EPU60: BTEAN									
BH4-0 4-09/10/13	BH5-0 1-09/10/13	09-OCT-2013	15-OCT-2013	23-OCT-2013	1	15-OCT-2013	23-OCT-2013	1	
BH6-0 3-09/10/13	BH3-0 1-09/10/13				-			•	
BH2-0 1-09/10/13	BH1-1 0-09/10/13								
EP080/071: Total Recoverable Hydrocarbons				11					
Soil Glass Jar - Unpreserved (FP080)									
BH4-0.4-09/10/13.	BH5-0.1-09/10/13.	09-OCT-2013	15-OCT-2013	23-OCT-2013	1	15-OCT-2013	23-OCT-2013		
BH6-0.3-09/10/13,	BH3-0.1-09/10/13.							Ţ	
BH2-0.1-09/10/13,	BH1-1.0-09/10/13								



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.

Outly Control Seruptor TotalCurrRefar (3)Centrol SpecificationAnalysical Methods6X/000Rootal6X/000Feadoral<	Aatrix: SOIL Evaluation: * = Quality Control frequency not within specification ; * = Quality Control frequency within specifi								
Analysed Method OC Recular Actual de Exocodo Fundamini Loberlador Dybughouss DUP	Quality Control Sample Type		С	ount	Rate (%)			Quality Control Specification	
Inbordery Duplications (DuP) University NEPM 2013 Schedule B(3) and ALS DCS3 requirement Mosture Content EXOSS 10 2 20 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement Mosture Content EXOSS 00 1 6 16.7 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement Analyser NEPM 2013 Schedule B(3) and ALS DCS3 requirement NEPM 2013 Schedule B(3) and ALS DCS3 requirement PANPFnoxis (SM) EPO75(SM) 2 18 11.1 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement PANPFnoxis (SM) EPO75(SM) 2 10 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement CAU MCaruly PK MS EEXOSTG 2 20 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement CAU MCaruly PK MS EEXOSTG 1 5 20 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement CAU MCaruly PK MS EEXOSTG 1 5 20 10.0 V NEPM 2013 Schedule B(3) and ALS DCS3 requirement CAU MCaruly PK MS EEXOSTG	Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation		
Bachi Ammania EK685 1 7 14.0 70 10.00 ✓ NEM2 013 Schedule B(3) and ALS OCS3 requirement Nitrie and Nitrate as (NOx)- Soluble by Discrete Analyser EK0960 1 2 000 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement Analyser Nitrie as N. Soluble by Discrete Analyser EK0970 1 2 000 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement Analyser Nitrie as N. Soluble by Discrete Analyser EK0970 1 2 100 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement ALS OCS3 requirement PathEnded by OCNS EE0061 2 102 10.0 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement TAN as Ng Discrete Analyser EK0675 1 5 200 10.0 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement Tada Marcury PF MS EG0037 2 20 10.0 10.0 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement Tada Marcury PF MS EG0037 2 20 10.0 10.0 V NEPA 2013 Schedule B(3) and ALS OCS3 requirement	Laboratory Duplicates (DUP)								
Modeline Content EADS5-03 2 20 10.0 10.0 V NEPM 2013 Schedule (R) and ALS OCS3 requirement Analyser - - - - - NEPM 2013 Schedule (R) and ALS OCS3 requirement Ninite as N. Soluble by Discrete Analyser EEX037G 1 2 50.0 10.0 - NEPM 2013 Schedule (R) and ALS OCS3 requirement PAHJPhenos (SiM) EEV037GM 2 16 11.00 - NEPM 2013 Schedule (R) and ALS OCS3 requirement TAIA Brokenos (SiM) EEV037G 1 2 10.0 - NEPM 2013 Schedule (R) and ALS OCS3 requirement Taid Marcury PIMS EEX037G 2 20 10.0 - NEPM 2013 Schedule (R) and ALS OCS3 requirement Taid Marcury PIMS EEX037G 2 20 10.0 - NEPM 2013 Schedule (R) and ALS OCS3 requirement Taid Marcury PIMS EEX037G 1 5 20.0 10.0 - NEPM 2013 Schedule (R) and ALS OCS3 requirement Taid Marcury PIMS EEX037G 1 7 14.3 5.0 NEPM 2013 Schedule	Buchi Ammonia	EK055	1	7	14.3	10.0	\checkmark	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Nittle as N (No.)- Soluble by Discrete Analyser EKOSG 1 6 16.7 10.0 √ NEPM 2013 Schedule (R) and ALS OCS3 requirement Natile as N - Soluble by Discrete Analyser EKOSG 1 2 0.00 10.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement Pesidoas by OCNS EFORSG 2 12 16.7 10.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement Pesidoas by OCNS EFORSG 2 12 16.7 10.0 V NEPM 2013 Schedule (R) and ALS OCS3 requirement Total Marcury by FIMS EGOS5T 2 20 10.0 10.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement Total Matcury by FIMS EGOS5T 2 20 10.0 10.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement Total Matcury by FIMS EGOS5T 2 20 10.0 10.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement Total Matcury by FIMS EGOS5T 7 7 14.3 5.0 ✓ NEPM 2013 Schedule (R) and ALS OCS3 requirement	Moisture Content	EA055-103	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
AnalyserImageImageImageImagePAH-Phends (SM)EP075(SM)21811.410.0VNEPM 2013 Schedule B(3) and ALS CGS requirementPAH-Phends (SM)EP075(SM)21811.410.0VNEPM 2013 Schedule B(3) and ALS CGS requirementPSHJOPPIDIS (SM)EP085(S1616.79.5VNEPM 2013 Schedule B(3) and ALS CGS requirementTO at Macry by FINSEG035122010.010.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTotal Matta by ICP-AESEG035122010.010.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTotal Matta by ICP-AESEG03571520.010.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTotal Matta by ICP-AESEG037721811.110.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTotal Matta by ICP-AESEE03761714.35.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTPH Voitalles/TEXEP030EP057128.005.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTPH Voitalles/TEXEP030EP0575128.005.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTPH Voitalles/TEXEP0375128.005.0VNEPM 2013 Schedule B(3) and ALS CGS requirementTPH Voitalles/TEXEP0575128.005.0VNEPM 2013 Schedule	Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	6	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Nitrit as N - Soluble by Discrete Analyser EKOSTO 1 2 500 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement Petal/Density GKMS EFORS[SMN EFORS[SMN 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement Pestidates by GKMS EFORS[SMN EFORS[SMN 2 12 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement TAM as N Public/be halgiver EEORST 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement Tatal Metails by ICP-AES EEORST 1 5 20.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement TPH Volates/SP Ubsertee Analyser EEORST 1 7 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement TPH Volates/SP Ubsertee Analyser EEORST 1 7 11.3 10.0 ✓ NEPM 2013 Schedule B(3) and ALS CCS3 requirement TPH Volates/SP Ubsertee Analyser EEORST 1 7 11.3 5.0 ✓ <t< td=""><td>Analyser</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Analyser								
PALP Prevoids (SIM) PED 75(SIM) PED 75(SIM) <td>Nitrite as N - Soluble by Discrete Analyser</td> <td>EK057G</td> <td>1</td> <td>2</td> <td>50.0</td> <td>10.0</td> <td>\checkmark</td> <td>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</td>	Nitrite as N - Soluble by Discrete Analyser	EK057G	1	2	50.0	10.0	\checkmark	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Peakides by GCMS EP068 2 12 16.7 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement TNa as Ng Discrete Analyser EG0357 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Metats by ICP.AES EG0357 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Analyser EK067G 1 5 200 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement TPH v Saltes/SMETK EF0671 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Laboratory Control Samples (LCS) EF0671 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Laboratory Control Samples (LCS) EK0556 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Nitrite as N (NOX)- Soluble by Discrete Analyser EK057G 1 2 50.0 S.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement	PAH/Phenols (SIM)	EP075(SIM)	2	18	11.1	10.0	\checkmark	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
TKN as Np Discrete Analyser EK061G 1 6 16.7 9.5 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Mercury PFINS EG0357 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Mercury PFINS EG0357 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Mercury PFINS EG0357 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement TPH - Semicidalife Fraction EF071 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement TPH Volatiles/BTEX EF000 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Laboratory Control Samples (LCS) Ex04756 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Laboratory Control Samples (LCS) Ex04756 1 2 50.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Nat	Pesticides by GCMS	EP068	2	12	16.7	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Total Mechany by FIMS EG035T 2 20 10.0 √ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Melask by (DP-AES EG060T 1 5 20.0 10.0 √ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Phosporus By Discrete Analyser EF060T 2 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TPH VolatileSPEX EF060 2 20.0 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Hold Melask by CD-AES EF060 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nutrite and Nutrate as N(NO-Soluble by Discrete EK056 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nutrate as N(NO-Soluble by Discrete Analyser EK0567 1 2 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nutrate as N(NO-Soluble by Discrete Analyser EK0576 1 20 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PAHPhenols (SIM) <td< td=""><td>TKN as N By Discrete Analyser</td><td>EK061G</td><td>1</td><td>6</td><td>16.7</td><td>9.5</td><td>✓</td><td>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</td></td<>	TKN as N By Discrete Analyser	EK061G	1	6	16.7	9.5	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Total Metals by ICP-AES EE0005T I D 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TDH - Semivolatile Fraction EP071 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TDH - Semivolatile Fraction EP070 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TDH Valailes/BTEX EP080 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TDH Valailes/BTEX EP080 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Taboratory Control Samples (LCS) EK055G 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Analyser EK057G 1 2 500 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PaliPhenolic (SIM) E0035T 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EC035T	Total Mercury by FIMS	EG035T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Total Phosponus By Discrete Analyser EK067G 1 5 20.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement TPH - Semivolatile Fraction EP060 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Laboratory Control Samples (LCS) NEPM 2013 Schedule B(3) and ALS OCS3 requirement Buchi Ammonia EK055 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Nitrie and Nitrate as N (NOX)- Soluble by Discrete EK055G 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Nitrie and Nitrate as N (NOX)- Soluble by Discrete EK057G 1 2 50.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement PatriPhonale (SIM) 1 18 5.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement PatriPhonale (SIM) 18 8.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS OCS3 requirement Total Metaby Discrete Analyser EK056G 1 20 5.0 </td <td>Total Metals by ICP-AES</td> <td>EG005T</td> <td>2</td> <td>20</td> <td>10.0</td> <td>10.0</td> <td>✓</td> <td>NEPM 2013 Schedule B(3) and ALS QCS3 requirement</td>	Total Metals by ICP-AES	EG005T	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
TPH - Semivolatile Fraction EPO71 2 18 11.1 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TPH Volatiles/BTEX EPO80 2 20 10.0 10.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Buch Ammonia EK0556 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nitrite and Nitrate as N (NOX)- Soluble by Discrete EK0556 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Analyser EK0576 1 2 50.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PaH/Phenols (SIM) EP075(SIM) 1 18 5.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metraly by FIMS EE00571 1 20 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metraly by FIMS EE0057 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metraly by FIMS EE0057	Total Phosporus By Discrete Analyser	EK067G	1	5	20.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
TPH Volailies/IEX EP000 2 200 10.0 √ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Laboratory Control Samples (LCS) v NEPM 2013 Schedule B(3) and ALS QCS3 requirement Buchl Ammonia EK055 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Native and Nitrate as N (NOX)- Soluble by Discrete Analyser EK0557 1 2 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PAH/Phenois (SIM) EK0576 1 2 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PSHICles by QCMS EF075(SIM) 1 18 5.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metals by Discrete Analyser EK0616 3 6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metals by Discrete Analyser EK0616 3 6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Metals by Discrete Analyser EK0656 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(TPH - Semivolatile Fraction	EP071	2	18	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
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Buchi Ammonia EK055 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nitrite an N litrate as N (NOx)- Soluble by Discrete EK059G 1 6 16.7 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nitrite as N - Soluble by Discrete Analyser EK057G 1 2 50.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PAH/Phenols (SIM) EP075(SIM) 1 12 8.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Pesticides by GCMS EP068 1 12 8.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EG035T 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EG035T 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EG035T 1 20 5.0 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EG035T 1 20 5.0 5.0 </td <td>Laboratory Control Samples (LCS)</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Laboratory Control Samples (LCS)								
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Method Blanks (MB) Buchi Ammonia EK055 1 7 14.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Nitrite and Nitrate as N (NOx)- Soluble by Discrete EK059G 1 6 16.7 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Analyser Nitrite as N - Soluble by Discrete Analyser EK057G 1 2 50.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement PAH/Phenols (SIM) EF075(SIM) 1 18 5.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Pesticides by GCMS EP075(SIM) 1 18 5.6 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement TKN as N By Discrete Analyser EP068 1 12 8.3 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement Total Mercury by FIMS EG035T 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	
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AnalyserImage: Constraint of the second	Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Nitrite as N - Soluble by Discrete AnalyserEK057G1250.05.0✓NEPM 2013Schedule B(3) and ALS QCS3 requirementPAH/Phenols (SIM)EP075(SIM)1185.65.0✓NEPM 2013Schedule B(3) and ALS QCS3 requirementPesticides by GCMSEP0681128.35.0✓NEPM 2013Schedule B(3) and ALS QCS3 requirementTKN as N By Discrete AnalyserEK061G1616.74.8✓NEPM 2013Schedule B(3) and ALS QCS3 requirementTotal Mercury by FIMSEG035T1205.05.0✓NEPM 2013Schedule B(3) and ALS QCS3 requirement	Analyser								
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Pesticides by GCMSEP0681128.35.0NEPM 2013Schedule B(3) and ALS QCS3 requirementTKN as N By Discrete AnalyserEK061G1616.74.8NEPM 2013Schedule B(3) and ALS QCS3 requirementTotal Mercury by FIMSEG035T1205.05.0NEPM 2013Schedule B(3) and ALS QCS3 requirement	PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
TKN as N By Discrete AnalyserEK061G1616.74.8✓NEPM 2013 Schedule B(3) and ALS QCS3 requirementTotal Mercury by FIMSEG035T1205.05.0✓NEPM 2013 Schedule B(3) and ALS QCS3 requirement	Pesticides by GCMS	EP068	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Total Mercury by FIMS EG035T 1 20 5.0 ✓ NEPM 2013 Schedule B(3) and ALS QCS3 requirement	TKN as N By Discrete Analyser	EK061G	1	6	16.7	4.8	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
	Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
I otal Metals by ICP-AES EG005T 1 20 5.0 5.0 V NEPM 2013 Schedule B(3) and ALS QCS3 requirement	Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement	
Page	: 5 of 8								
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Work Order	: ES1322093								
Client	: GOLDER ASSOCIATES								
Project	: 137623028								



Matrix: SOIL				Evaluation	n: 🗴 = Quality Cor	ntrol frequency r	to twithin specification ; \checkmark = Quality Control frequency within specification.
Quality Control Sample Type		Co	ount		Rate (%)		Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Method Blanks (MB) - Continued							
Total Phosporus By Discrete Analyser	EK067G	1	5	20.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Spikes (MS)							
Buchi Ammonia	EK055	1	7	14.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx)- Soluble by Discrete	EK059G	1	6	16.7	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Analyser							
Nitrite as N - Soluble by Discrete Analyser	EK057G	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (SIM)	EP075(SIM)	1	18	5.6	5.0	\checkmark	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	12	8.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TKN as N By Discrete Analyser	EK061G	1	6	16.7	4.8	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-AES	EG005T	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosporus By Discrete Analyser	EK067G	1	5	20.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	18	5.6	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).
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 (SnCl2)(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 SnCl2 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)
Buchi Ammonia	EK055	SOIL	APHA 21st ed., 4500 NH3+-B&G, H Samples are steam distilled (Buchi) prior to analysis and quantified using titration, FIA or Discrete Analyser.
Nitrite as N - Soluble by Discrete Analyser	EK057G	SOIL	APHA 21st ed., 4500 NO3- B. Nitrite in a water extract is determined by direct colourimetry by Discrete Analyser.
Nitrate as N - Soluble by Discrete Analyser	EK058G	SOIL	APHA 21st ed., 4500 NO3F. Nitrate in the 1:5 soil:water extract is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results.
Nitrite and Nitrate as N (NOx)- Soluble by Discrete Analyser	EK059G	SOIL	APHA 21st ed., 4500 NO3- F. Combined oxidised Nitrogen (NO2+NO3) in a water extract is determined by Chemical Reduction, and direct colourimetry by Discrete Analyser.
TKN as N By Discrete Analyser	EK061G	SOIL	APHA 21st ed., 4500-Norg-D Soil samples are digested using Kjeldahl digestion followed by determination by Discrete Analyser.
Total Nitrogen as N (TKN + NOx) By Discrete Analyser	EK062G	SOIL	APHA 21st ed., 4500 Norg/NO3- Total Nitrogen is determined as the sum of TKN and Oxidised Nitrrogen, each determined seperately as N.
Total Phosporus By Discrete Analyser	EK067G	SOIL	APHA 21st ed., 4500 P-B&F This procedure involves sulfuric acid digestion and quantification using Discrete Analyser.
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)

Page	: 7 of 8
Work Order	: ES1322093
Client	: GOLDER ASSOCIATES
Project	: 137623028



Preparation Methods	Method	Matrix	Method Descriptions
Hot Block Digest for metals in soils sediments and sludges	EN69	SOIL	USEPA 200.2 Mod. Hot Block Acid Digestion 1.0g of sample is heated with Nitric and Hydrochloric acids, then cooled. Peroxide is added and samples heated and cooled again before being filtered and bulked to volume for analysis. Digest is appropriate for determination of selected metals in sludge, sediments, and soils. This method is compliant with NEPM (2013) Schedule B(3) (Method 202)
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	ES1322093-009	BH5-1.0-09/10/13	Manganese	7439-96-5	47.9 %	0-20%	RPD exceeds LOR based limits
Matrix Spike (MS) Recoveries							
EG005T: Total Metals by ICP-AES	ES1322093-002	BH4-0.4-09/10/13	Copper	7440-50-8	174 %	70-130%	Recovery greater than upper data
							quality objective
EK067G: Total Phosphorus as P by Discrete Analyser	ES1322093-002	BH4-0.4-09/10/13	Total Phosphorus as P		59.9 %	70-130%	Recovery less than lower data quality
							objective

- For all matrices, no Method Blank value 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.

• 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.





SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES1	322093		
Client Contact Address	: GOLD : MS C/ : LEVE ST LE 2065	ER ASSOCIATES AROLINA OLMOS L 1, 124 PACIFIC HIGHWAY ONARDS NSW, AUSTRALIA	Laboratory Contact Address	 Environmental Division Sydney Loren Schiavon 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail Telephone Facsimile	: colmo : +61 02 : +61 02	s@golder.com.au 2 9478 3900 2 9478 3901	E-mail Telephone Facsimile	: loren.schiavon@alsglobal.com : +61 2 8784 8503 : +61 2 8784 8500
Project Order number	: 13762 :	3028	Page	: 1 of 3
C-O-C number Site	: : PKC -	PRIMARY SCHOOL	Quote number	: ES2013GOLASS0484 (SY/493/13)
Sampler	: KY		QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dates				
Date Samples Rec	eived	: 10-OCT-2013	Issue Date	: 14-OCT-2013 08:46
Client Requested [Due Date	: 17-OCT-2013	Scheduled Reporting E	Date 17-OCT-2013
Delivery Det	ails			
Mode of Delivery		: Carrier	Temperature	: 8.6'C - Ice present
No. of coolers/boxe	es	: 2 HARD	No. of samples receive	ed : 28
Security Seal		: Intact.	No. of samples analyse	ed : 12

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Sample(s) requiring volatile organic compound analysis received in airtight containers (ZHE).
- Please direct any gueries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500

Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company

www.alsglobal.com

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Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exist.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package. If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

Matrix: SOIL	Client sampling	Client sample ID	Hold) SOIL		Content	EG005T (I Metals by I0	EK055 (sc	nonia as N	EP068A (anochlorine F	NT-8S	, NUZ, NU3, - S-02	etals (incl. Dic	- S-27	/BTEXN/PAH
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Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.

ALS

Requested Deliverables

MR GRAEME MILLER

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN
- Chain of Custody (CoC) (COC)
- Chromatogram (CHROM)
- EDI Format ENMRG (ENMRG)
- EDI Format EQUIS V5 Generic (EQUIS_V5)
- EDI Format ESDAT (ESDAT)
- EDI Format GOLDER_EXCEL (GOLDER_EXCEL)

MR KE YE

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN
- A4 AU Tax Invoice (INV)
- Chain of Custody (CoC) (COC)
- Chromatogram (CHROM)
- EDI Format ENMRG (ENMRG)
- EDI Format EQUIS V5 Generic (EQUIS_V5)
- EDI Format ESDAT (ESDAT)
- EDI Format GOLDER_EXCEL (GOLDER_EXCEL)

MS CAROLINA OLMOS

- *AU Certificate of Analysis NATA (COA)
- *AU Interpretive QC Report DEFAULT (Anon QCI Rep) (QCI)
- *AU QC Report DEFAULT (Anon QC Rep) NATA (QC)
- A4 AU Sample Receipt Notification Environmental HT (SRN)
 A4 AU Tax Invoice (INV)
- AU IWRG 621 2009 Guideline Report (COA_GL_IWRG_621)
- Chain of Custody (CoC) (COC)
- Chromatogram (CHROM)
- EDI Format ENMRG (ENMRG)
- EDI Format EQUIS V5 Generic (EQUIS_V5)
- EDI Format ESDAT (ESDAT)
- EDI Format GOLDER_EXCEL (GOLDER_EXCEL)

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THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

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	SAMPL	E CHAIN OF CUSTODY DOCUMENTATION	Sheet. 762
137623028	ALS ALS	COLDER ASSOCIATES FYY LTD	Phone: : (02) 9478 3900
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Golder Form No. GA_SNA- Revision 0 - Date: 25/t1/04

THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIERIS; LABORATORY ON RECEIPT OF SAMPLES.

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activation	137623028 PKC - Primary School	E Sterner L	ALS ev 403 12	COLDER ASSOCIATES PTY LTD		Phene: 1 (02) 9478 3500	
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أويد لا المراجع	24hrs C 48hrs C 24hrs C 24hrs C 26hrs	Standard Date Required By:	•	Job Contact :	KeYc	Phane. 0409 212 705 Email:	Arconter con au
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The second	PDF EXCEL	ESDAT	EQUIS 📕	5	ANALY	SIS REQUIRED	
Comments/Special fusir Please email report to	orciou: o colmos@golder.com.au and grmiller@golder.com KXXC	Bolder. w	1919 1919 1919 1919 1919 1919 1919 19	Cd, Cr, Cu, Ni, Ph, Zn, Min, Se, Hg) PlayPhilS/Phinola OC	Total K Total K Phesphorus Asbestos PH, TOC, CEC and Iron	Сесо - втех Сесо - втех	
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SAMPLE MATRIX = S	col/Sediment/FilWAter/Other	SAMPLE TYPE = (Composited CMDiscreted DCJ/Dlanu bed(DS)/	Core(CR). Grab Sample (GS)	HIGH CONCENTRATION: circle expected para	motorn in acadysis file i	
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· * , • , THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER'S; LABORATORY ON RECEIPT OF SAMPLES.

Goldsr Form No. GA_SNA- Revision 0 - Date: 25/11/04

Wael Saleh

 From:
 Loren Schiavon

 Sent:
 Monday, 14 October 2013 9:13 AM

 To:
 Wael Saleh

 Subject:
 FW: Your Reference : 137623028. COC/SRN for ALSE Workorder : ES1322093

 Attachments:
 ES1322093_COC.pdf; ES1322093_0_SRN_131011172616.pdf; 1801_001.pdf

Hi Wael,

Can you please look into this for me?

Thanks!

Kind Regards

Loren Schiavon CLIENT SERVICES CO-ORDINATOR ALS | Environmental Division 277-289 Woodpark Road Smithfield NSW 2164 Australia

How was your customer experience? Please send us your feedback Please see our latest EnviroMail 68 - Sampling and Analysis Implications of the new NEPM - July 2013

EnviroMail 69 - Testing Requirements of the new NEPM - July 2013

EnviroMail 70 - Variation of Naphthalene by SVOC and VOC Methods in Water - July 2013

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Winner of the inaugural CARE Award 2011 – Sustainable Technology & Innovation: Reduction in Sample Volumes – Improving quality, safety, efficiency and sustainability in environmental practices

-----Original Message-----From: Olmos, Carolina [mailto:COlmos@golder.com.au] Sent: Sunday, 13 October 2013 8:47 PM To: Loren Schiavon Cc: Ye, Ke; Miller, Graeme Subject: FW: Your Reference : 137623028. COC/SRN for ALSE Workorder : ES1322093

Hi Loren:

We received this COC and SRN for job number 137623028, I have checked the COC (updated version Ke sent it on Friday and attached to this email as 1801_001) and SRN, and there are some missing analysis as the following:

A) Sample BH04_0.4 (ALS#002) is missing Ammonia analysis.

B) Sample BH01_0.5 (ALS#025) even though in the updated is not marked, can you please analyse it for total metals?

Cheers,

Carolina.

Carolina Olmos (BEnv Eng) | Environmental Engineer | Golder Associates Pty Ltd 124 Pacific Highway, St. Leonards, New South Wales 2065, Australia (PO Box 1302, Crows Nest NSW 1585) T: +61 2 9478 3900 | D: +61 2 9478 3900 (Working days Tuesdays - Wednesdays - Thursdays) | F: +61 2 9478 3901 | M: 0433 564 447 | E: <u>COlmos@golder.com.au</u> | <u>www.golder.com</u>

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Please consider the environment before printing this email.

-----Original Message-----From: alse.sydney.aus@alsglobal.com [mailto:alse.sydney.aus@alsglobal.com] Sent: Friday, 11 October 2013 5:29 PM To: Olmos, Carolina Subject: Your Reference : 137623028. COC/SRN for ALSE Workorder : ES1322093

This e-mail has been automatically generated.

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Environmental Division

Work Order

CERTIFICATE OF ANALYSIS Page : 1 of 9 Laboratory : Environmental Division

Client	: PORT KEMBLA COPPER	Laboratory	: Environmental Division Sydney
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	: SYDNEY	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project	: 137623028	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Order number	:		
C-O-C number	:	Date Samples Received	: 17-JUL-2013
Sampler	: CO	Issue Date	: 24-JUL-2013
Site	: PHC-PRIMARY SCHOOL		
		No. of samples received	: 3
Quote number	:	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:

Accredited for compliance with

ISO/IEC 17025.

: ES1316167

- General Comments
- Analytical Results
- Surrogate Control Limits



NATA Accredited Laboratory 825	Signatories
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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	
Alex Rossi	Organic Chemist	Sydney Organics	
Alex Rossi	Organic Chemist	Sydney Organics	
Ankit Joshi	Inorganic Chemist	Sydney Inorganics	
Ankit Joshi	Inorganic Chemist	Sydney Inorganics	
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics	

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500 Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



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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.

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

• EG051G:Spike failed for Ferrous Iron analysis due to matrix interference(confirmed by re analysis)



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	CI	lient sampli	ng date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
Compound	CAS Number	LOR	Unit	ES1316167-001	ES1316167-002	ES1316167-003	
FA015: Total Dissolved Solids	Che Mamber						
Total Dissolved Solids @180°C		10	mg/L	567	1860		
ED037P: Alkalinity by PC Titrator							
Hydroxide Alkalinity as CaCO3	DMO-210-001	1	mg/L	<1	<1		
Carbonate Alkalinity as CaCO3	3812-32-6	1	mg/L	<1	<1		
Bicarbonate Alkalinity as CaCO3	71-52-3	1	mg/L	20	9		
Total Alkalinity as CaCO3		1	mg/L	20	9		
ED038A: Acidity							
Acidity as CaCO3		1	mg/L	103	99		
ED041G: Sulfate (Turbidimetric) as SO4 2	2- by DA						
Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	122	597		
ED045G: Chloride Discrete analyser							
Chloride	16887-00-6	1	mg/L	208	270		
ED093F: Dissolved Major Cations							
Calcium	7440-70-2	1	mg/L	5	3		
Magnesium	7439-95-4	1	mg/L	5	18		
Sodium	7440-23-5	1	mg/L	189	682		
Potassium	7440-09-7	1	mg/L	4	3		
EG020F: Dissolved Metals by ICP-MS							
Aluminium	7429-90-5	0.01	mg/L	0.38	0.26		
Arsenic	7440-38-2	0.001	mg/L	0.002	0.001		
Cadmium	7440-43-9	0.0001	mg/L	0.0009	<0.0001		
Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001		
Cobalt	7440-48-4	0.001	mg/L	0.003	0.013		
Copper	7440-50-8	0.001	mg/L	0.082	0.033		
Lead	7439-92-1	0.001	mg/L	<0.001	<0.001		
Manganese	7439-96-5	0.001	mg/L	0.033	0.114		
Nickel	7440-02-0	0.001	mg/L	0.004	0.012		
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01		
Zinc	7440-66-6	0.005	mg/L	0.082	0.041		
Iron	7439-89-6	0.05	mg/L	0.48	<0.05		
EG020T: Total Metals by ICP-MS							
Arsenic	7440-38-2	0.001	mg/L	0.004	0.005	<0.001	
Cadmium	7440-43-9	0.0001	mg/L	0.0011	<0.0001	<0.0001	



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	Cl	ient sampli	ng date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
Compound	CAS Number	LOR	Unit	ES1316167-001	ES1316167-002	ES1316167-003	
EG020T: Total Metals by ICP-MS - Continu	ed						
Chromium	7440-47-3	0.001	mg/L	0.003	0.003	<0.001	
Copper	7440-50-8	0.001	mg/L	0.163	0.062	<0.001	
Nickel	7440-02-0	0.001	mg/L	0.008	0.015	<0.001	
Lead	7439-92-1	0.001	mg/L	0.004	0.003	<0.001	
Zinc	7440-66-6	0.005	mg/L	0.105	0.055	<0.005	
Manganese	7439-96-5	0.001	mg/L	0.042	0.150	<0.001	
Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	<0.01	
EG035F: Dissolved Mercury by FIMS							
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001		
EG035T: Total Recoverable Mercury by F	IMS						
Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	<0.0001	
EG051G: Ferrous Iron by Discrete Analys	er						
Ferrous Iron		0.05	mg/L	0.45	<0.05		
EG052G: Silica by Discrete Analyser							
Reactive Silica		0.10	mg/L	64.1	112		
EK055G: Ammonia as N by Discrete Anal	yser						
Ammonia as N	7664-41-7	0.01	mg/L	0.08	<0.01		
EK057G: Nitrite as N by Discrete Analyse	er						
Nitrite as N		0.01	mg/L	<0.01	<0.01		
EK058G: Nitrate as N by Discrete Analys	er						
Nitrate as N	14797-55-8	0.01	mg/L	0.02	120		
EK059G: Nitrite plus Nitrate as N (NOx)	by Discrete Ana	lyser					
Nitrite + Nitrate as N		0.01	mg/L	0.02	120		
EK061G: Total Kjeldahl Nitrogen By Disc	rete Analyser						
Total Kjeldahl Nitrogen as N		0.1	mg/L	0.8	29.8		
EK062G: Total Nitrogen as N (TKN + NOx) by Discrete An	alyser					
[^] Total Nitrogen as N		0.1	mg/L	0.8	150		
EK067G: Total Phosphorus as P by Discr	ete Analyser						
Total Phosphorus as P		0.01	mg/L	0.47	0.62		
EN055: Ionic Balance							
Total Anions		0.01	meq/L	8.81			
Total Anions		0.01	meq/L		28.8		
Total Cations		0.01	meq/L	8.98	31.4		



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	Cl	ient sampli	ng date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
Compound	CAS Number	I OR	LInit	ES1316167-001	ES1316167-002	ES1316167-003	
EN055 Jonio Bolonoo Continued	CAS Number	LOIT	Onic				
Ionic Balance		0.01	%	0.97			
Ionic Balance		0.01	%		4.28		
EP068A: Organochloring Posticidas	(00)						
alpha-BHC	319-84-6	0.5	µg/L	<0.5	<0.5		
Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	<0.5		
beta-BHC	319-85-7	0.5	µg/L	<0.5	<0.5		
gamma-BHC	58-89-9	0.5	µg/L	<0.5	<0.5		
delta-BHC	319-86-8	0.5	µg/L	<0.5	<0.5		
Heptachlor	76-44-8	0.5	μg/L	<0.5	<0.5		
Aldrin	309-00-2	0.5	µg/L	<0.5	<0.5		
Heptachlor epoxide	1024-57-3	0.5	μg/L	<0.5	<0.5		
trans-Chlordane	5103-74-2	0.5	μg/L	<0.5	<0.5		
alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	<0.5		
cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	<0.5		
Dieldrin	60-57-1	0.5	µg/L	<0.5	<0.5		
4.4`-DDE	72-55-9	0.5	µg/L	<0.5	<0.5		
Endrin	72-20-8	0.5	µg/L	<0.5	<0.5		
beta-Endosulfan	33213-65-9	0.5	µg/L	<0.5	<0.5		
4.4`-DDD	72-54-8	0.5	µg/L	<0.5	<0.5		
Endrin aldehyde	7421-93-4	0.5	µg/L	<0.5	<0.5		
Endosulfan sulfate	1031-07-8	0.5	µg/L	<0.5	<0.5		
4.4`-DDT	50-29-3	2.0	μg/L	<2.0	<2.0		
Endrin ketone	53494-70-5	0.5	μg/L	<0.5	<0.5		
Methoxychlor	72-43-5	2.0	µg/L	<2.0	<2.0		
[^] Total Chlordane (sum)		0.5	µg/L	<0.5	<0.5		
[^] Sum of DDD + DDE + DDT		0.5	µg/L	<0.5	<0.5		
[^] Sum of Aldrin + Dieldrin	309-00-2/60-57-1	0.5	µg/L	<0.5	<0.5		
EP068B: Organophosphorus Pestici	des (OP)						
Dichlorvos	62-73-7	0.5	µg/L	<0.5	<0.5		
Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	<0.5		
Monocrotophos	6923-22-4	2.0	µg/L	<2.0	<2.0		
Dimethoate	60-51-5	0.5	µg/L	<0.5	<0.5		
Diazinon	333-41-5	0.5	µg/L	<0.5	<0.5		
Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	<0.5		



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	Cli	ient sampliı	ng date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
Compound	CAS Number	LOR	Linit	ES1316167-001	ES1316167-002	ES1316167-003	
ED068P: Organonhaanharua Baatiaidaa (/		LON	0/m				
Parathian methyl		2.0	ug/l	<2.0	<2.0		
Malathion	296-00-0	0.5	µg/L	<0.5	<0.5		
Fenthion	55 29 0	0.5	µg/L	<0.5	<0.5		
Chlorpyrifos	2021 88 2	0.5	μg/L	<0.5	<0.5		
Parathion	56 38 2	2.0	µg/L	<2.0	<2.0		
Pirimphos-ethyl	23505 41 1	0.5	µg/L	<0.5	<0.5		
Chlorfenvinnhos	470-90-6	0.5	μ <u>g</u> /L	<0.5	<0.5		
Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	<0.5		
Fenaminhos	22224 02 6	0.5	μ <u>g</u> /L	<0.5	<0.5		
Prothiofos	34643-46-4	0.5	µg/L	<0.5	<0.5		
Ethion	563-12-2	0.5	µg/L	<0.5	<0.5		
Carbophenothion	786-19-6	0.5	µg/L	<0.5	<0.5		
Azinphos Methyl	86-50-0	0.5	µg/L	<0.5	<0.5		
EP075(SIM)A: Phenolic Compounds							
Phenol	108-95-2	1.0	µg/L	<1.0	<1.0	<1.0	
2-Chlorophenol	95-57-8	1.0	µg/L	<1.0	<1.0	<1.0	
2-Methylphenol	95-48-7	1.0	µg/L	<1.0	<1.0	<1.0	
3- & 4-Methylphenol	1319-77-3	2.0	µg/L	<2.0	<2.0	<2.0	
2-Nitrophenol	88-75-5	1.0	µg/L	<1.0	<1.0	<1.0	
2.4-Dimethylphenol	105-67-9	1.0	µg/L	<1.0	<1.0	<1.0	
2.4-Dichlorophenol	120-83-2	1.0	µg/L	<1.0	<1.0	<1.0	
2.6-Dichlorophenol	87-65-0	1.0	µg/L	<1.0	<1.0	<1.0	
4-Chloro-3-Methylphenol	59-50-7	1.0	µg/L	<1.0	<1.0	<1.0	
2.4.6-Trichlorophenol	88-06-2	1.0	µg/L	<1.0	<1.0	<1.0	
2.4.5-Trichlorophenol	95-95-4	1.0	µg/L	<1.0	<1.0	<1.0	
Pentachlorophenol	87-86-5	2.0	µg/L	<2.0	<2.0	<2.0	
EP075(SIM)B: Polynuclear Aromatic Hydr	ocarbons						
Naphthalene	91-20-3	1.0	µg/L	<1.0	<1.0	<1.0	
Acenaphthylene	208-96-8	1.0	µg/L	<1.0	<1.0	<1.0	
Acenaphthene	83-32-9	1.0	µg/L	<1.0	<1.0	<1.0	
Fluorene	86-73-7	1.0	µg/L	<1.0	<1.0	<1.0	
Phenanthrene	85-01-8	1.0	µg/L	<1.0	<1.0	<1.0	
Anthracene	120-12-7	1.0	µg/L	<1.0	<1.0	<1.0	

Page: 7 of 9Work Order: ES1316167Client: PORT KEMBLA COPPERProject: 137623028



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	Cl	ient sampli	ng date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
Compound	CAS Number	LOR	Unit	ES1316167-001	ES1316167-002	ES1316167-003	
EP075(SIM)B: Polynuclear Aromatic Hy	vdrocarbons - Cont	inued					
Fluoranthene	206-44-0	1.0	µg/L	<1.0	<1.0	<1.0	
Pyrene	129-00-0	1.0	µg/L	<1.0	<1.0	<1.0	
Benz(a)anthracene	56-55-3	1.0	µg/L	<1.0	<1.0	<1.0	
Chrysene	218-01-9	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(b)fluoranthene	205-99-2	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(k)fluoranthene	207-08-9	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(a)pyrene	50-32-8	0.5	µg/L	<0.5	<0.5	<0.5	
Indeno(1.2.3.cd)pyrene	193-39-5	1.0	µg/L	<1.0	<1.0	<1.0	
Dibenz(a.h)anthracene	53-70-3	1.0	µg/L	<1.0	<1.0	<1.0	
Benzo(g.h.i)perylene	191-24-2	1.0	µg/L	<1.0	<1.0	<1.0	
Sum of polycyclic aromatic hydrocarbons		0.5	µg/L	<0.5	<0.5	<0.5	
A Benzo(a)pyrene TEQ (WHO)		0.5	µg/L	<0.5	<0.5	<0.5	
EP080/071: Total Petroleum Hydrocarb	ons						
C6 - C9 Fraction		20	µg/L	<20	<20	<20	
C10 - C14 Fraction		50	µg/L	<50	<50	<50	
C15 - C28 Fraction		100	µg/L	<100	<100	<100	
C29 - C36 Fraction		50	µg/L	<50	<50	<50	
[^] C10 - C36 Fraction (sum)		50	µg/L	<50	<50	<50	
EP080/071: Total Recoverable Hydroca	rbons - NEPM 201	0 Draft					
C6 - C10 Fraction		20	µg/L	<20	<20	<20	
[^] C6 - C10 Fraction minus BTEX (F1)		20	µg/L	<20	<20	<20	
>C10 - C16 Fraction		100	µg/L	<100	<100	<100	
>C16 - C34 Fraction		100	µg/L	<100	<100	<100	
>C34 - C40 Fraction		100	µg/L	<100	<100	<100	
^ >C10 - C40 Fraction (sum)		100	µg/L	<100	<100	<100	
EP080: BTEXN							
Benzene	71-43-2	1	µg/L	<1	<1	<1	
Toluene	108-88-3	2	µg/L	<2	<2	<2	
Ethylbenzene	100-41-4	2	µg/L	<2	<2	<2	
meta- & para-Xylene	108-38-3 106-42-3	2	µg/L	<2	<2	<2	
ortho-Xylene	95-47-6	2	µg/L	<2	<2	<2	
[^] Total Xylenes	1330-20-7	2	µg/L	<2	<2	<2	
Sum of BTEX		1	µg/L	<1	<1	<1	



Sub-Matrix: WATER (Matrix: WATER)		Clie	ent sample ID	D1_17/07/13	D4_17/07/13	QC300_17/07/13	
	CI	ient sampli	na date / time	17-JUL-2013 02:30	17-JUL-2013 03:30	17-JUL-2013 15:00	
		100		ES1216167 001	ES1316167 002	ES1316167 003	
Compound	CAS Number	LOR	Unit	E31310107-001	231316167-002	231310107-003	
EP080: BTEXN - Continued							
Naphthalene	91-20-3	5	µg/L	<5	<5	<5	
EP068S: Organochlorine Pesticide Surro	gate						
Dibromo-DDE	21655-73-2	0.1	%	74.3	69.7		
EP068T: Organophosphorus Pesticide S	urrogate						
DEF	78-48-8	0.1	%	85.7	77.1		
EP075(SIM)S: Phenolic Compound Surro	ogates						
Phenol-d6	13127-88-3	0.1	%	24.2	24.4	27.5	
2-Chlorophenol-D4	93951-73-6	0.1	%	56.9	55.8	59.4	
2.4.6-Tribromophenol	118-79-6	0.1	%	62.5	61.4	68.2	
EP075(SIM)T: PAH Surrogates							
2-Fluorobiphenyl	321-60-8	0.1	%	64.8	68.7	68.0	
Anthracene-d10	1719-06-8	0.1	%	64.8	68.6	69.2	
4-Terphenyl-d14	1718-51-0	0.1	%	64.2	62.4	64.6	
EP080S: TPH(V)/BTEX Surrogates							
1.2-Dichloroethane-D4	17060-07-0	0.1	%	104	103	105	
Toluene-D8	2037-26-5	0.1	%	113	115	110	
4-Bromofluorobenzene	460-00-4	0.1	%	112	110	112	

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Surrogate Control Limits

Sub-Matrix: WATER		Recovery	Limits (%)
Compound	CAS Number	Low	High
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	15.9	102
2.4.6-Tribromophenol	118-79-6	17	125
EP075(SIM)T: PAH Surrogates			
2-Fluorobiphenyl	321-60-8	20.4	112
Anthracene-d10	1719-06-8	29.6	118
4-Terphenyl-d14	1718-51-0	21.5	126
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







Environmental Division

QUALITY CONTROL REPORT

Work Order	: ES1316167	Page	: 1 of 15
Client		Laboratory	: Environmental Division Sydney
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	: SYDNEY	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project	: 137623028	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: PHC-PRIMARY SCHOOL		
C-O-C number	:	Date Samples Received	: 17-JUL-2013
Sampler	: CO	Issue Date	: 24-JUL-2013
Order number	:		
		No. of samples received	: 3
Quote number	:	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

Accredited for compliance with ISO/IEC 17025.



NATA Accredited Laboratory 825 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	
Alex Rossi	Organic Chemist	Sydney Organics	
Alex Rossi	Organic Chemist	Sydney Organics	
Ankit Joshi	Inorganic Chemist	Sydney Inorganics	
Ankit Joshi	Inorganic Chemist	Sydney Inorganics	
Celine Conceicao	Senior Spectroscopist	Sydney Inorganics	

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500 Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



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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 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: WATER						Laboratory I	Duplicate (DUP) Report	t	
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EA015: Total Dissol	ved Solids (QC Lot: 29726	524)							
ES1316166-016	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	14000	14200	1.2	0% - 20%
ES1316166-024	Anonymous	EA015H: Total Dissolved Solids @180°C		10	mg/L	5150	5140	0.2	0% - 20%
ED037P: Alkalinity b	y PC Titrator (QC Lot: 29	73103)							
ES1316166-027	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	616	622	1.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3		1	mg/L	616	622	1.0	0% - 20%
ES1316175-003	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	41	40	3.0	0% - 20%
		ED037-P: Total Alkalinity as CaCO3		1	mg/L	41	40	3.0	0% - 20%
ED038A: Acidity (Q	C Lot: 2974460)								
ES1316118-005	Anonymous	ED038: Acidity as CaCO3		1	mg/L	30	29	3.4	0% - 20%
ED041G: Sulfate (Tu	rbidimetric) as SO4 2- by	DA (QC Lot: 2973198)							
ES1316103-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	36	35	0.0	0% - 20%
ES1316164-003	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	48	47	2.2	0% - 20%
ED045G: Chloride D	iscrete analyser (QC Lot:	2973197)							
ES1316103-001	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	30	30	0.0	0% - 20%
ES1316164-003	Anonymous	ED045G: Chloride	16887-00-6	1	mg/L	11	7	43.0	0% - 50%
ED093F: Dissolved I	Aajor Cations (QC Lot: 29	73195)							
ES1316103-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	1	1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	4	4	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	27	26	0.0	0% - 20%
		ED093F: Potassium	7440-09-7	1	mg/L	2	3	0.0	No Limit
ES1316176-001	Anonymous	ED093F: Calcium	7440-70-2	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Magnesium	7439-95-4	1	mg/L	<1	<1	0.0	No Limit
		ED093F: Sodium	7440-23-5	1	mg/L	4	4	0.0	No Limit
		ED093F: Potassium	7440-09-7	1	mg/L	<1	<1	0.0	No Limit
EG020F: Dissolved I	Metals by ICP-MS (QC Lo	t: 2976208)							
ES1316299-001	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	<0.001	78.8	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit

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Sub-Matrix: WATER						Laboratory D	Duplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EG020F: Dissolved M	letals by ICP-MS(QC Lot: :	2976208) - continued							
ES1316299-001	Anonymous	EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.019	0.019	0.0	0% - 50%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.09	0.0	No Limit
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.24	0.22	7.1	No Limit
ES1316299-002	Anonymous	EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit
		EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Copper	7440-50-8	0.001	mg/L	0.002	0.002	0.0	No Limit
		EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Manganese	7439-96-5	0.001	mg/L	0.018	0.018	0.0	0% - 50%
		EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	<0.005	0.0	No Limit
		EG020A-F: Aluminium	7429-90-5	0.01	mg/L	0.10	0.11	0.0	0% - 50%
		EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
		EG020A-F: Iron	7439-89-6	0.05	mg/L	0.24	0.24	0.0	No Limit
EG020T: Total Metals	by ICP-MS (QC Lot: 29762	209)							
ES1316140-001	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	<0.001	<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	0.006	0.006	0.0	No Limit
		EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	<0.001	0.0	No Limit
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	0.004	0.004	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	0.010	0.011	0.0	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
ES1316299-002	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	<0.001	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: Manganese	7439-96-5	0.001	mg/L	0.020	0.022	7.8	0% - 20%
		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	0.012	0.014	8.3	No Limit
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	<0.01	0.0	No Limit
EG020T: Total Metals	by ICP-MS (QC Lot: 29764	16)							
ES1316116-002	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Not Authorised	# Not Authorised	11.4	0% - 50%

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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 (%)	
EG020T: Total Metals	by ICP-MS (QC Lot: 29764	16) - continued								
ES1316116-002	Anonymous	EG020A-T: Chromium	7440-47-3	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	Not Authorised	# Not Authorised	4.8	0% - 20%	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Zinc	7440-66-6	0.005	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
ES1316130-004	Anonymous	EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Arsenic	7440-38-2	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Chromium	7440-47-3	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Copper	7440-50-8	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Lead	7439-92-1	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Manganese	7439-96-5	0.001	mg/L	Not Authorised	# Not Authorised	0.0	0% - 20%	
		EG020A-T: Nickel	7440-02-0	0.001	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
		EG020A-T: Selenium	7782-49-2	0.01	mg/L	Not Authorised	# Not Authorised	0.0	No Limit	
EG035F: Dissolved M	lercury by FIMS (QC Lot: 29	976207)								
ES1316140-001	Anonymous	EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EG035T: Total Recov	verable Mercury by FIMS (C	C Lot: 2972659)								
EN1302615-001	Anonymous	EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	<0.0001	0.0	No Limit	
EG051G: Ferrous Iro	n by Discrete Analyser (QC	Lot: 2974973)								
ES1316166-016	Anonymous	EG051G: Ferrous Iron		0.05	mg/L	0.38	0.51	29.4	0% - 50%	
ES1316166-029	Anonymous	EG051G: Ferrous Iron		0.05	mg/L	< 0.05	< 0.05	0.0	No Limit	
EG052G: Silica by Dis	screte Analyser (QC Lot: 29	073199)								
ES1316167-001	D1_17/07/13	EG052G: Reactive Silica		0.10	mg/L	64.1	64.6	0.8	0% - 20%	
EK055G: Ammonia as	s N bv Discrete Analvser(C	C Lot: 2972761)			_				I	
ES1316102-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	27.2	27.4	1.0	0% - 20%	
ES1316138-001	Anonymous	EK055G: Ammonia as N	7664-41-7	0.01	mg/L	145	146	0.5	0% - 20%	
EK057G: Nitrite as N	by Discrete Analyser (QC)	Lot: 2973196)								
ES1316103-001	Anonymous	EK057G: Nitrite as N		0.01	mg/l	<0.01	0.01	0.0	No Limit	
ES1316167-001	D1 17/07/13	EK057G: Nitrite as N		0.01	mg/L	<0.01	<0.01	0.0	No Limit	
EK059G: Nitrite plus	Nitrate as N (NOx), by Disc									
ES1316102-001		EK050C: Nitrite Nitrate es N		0.01	mg/l	22.0	22.3	11	0% - 20%	
ES1316138-001	Anonymous	EK059G. Nitrite + Nitrate as N		0.01	mg/L	0.02	0.02	0.0	No Limit	
EVICTOR Total Kields	hi Nitrogen By Discrete An			0.01	ing/E	0.02	0.02	0.0		
EK061G. 10tal Kjelua	Anonymous			0.1		<0 F	<0.5	0.0	No Limit	
ES1310100-001	Anonymous	EKUDIG: Total Kjeldahl Nitrogen as N		0.1	mg/L	<u></u>	<u>\U.5</u>	0.0	NO LIMIT	
E31310140-007	Anonymous	EKUDIG: Total Kjeldahl Nitrogen as N		0.1	mg/L	0.5	0.5	0.0		
EK067G: Total Phosp	norus as P by Discrete Ana	lyser (QC Lot: 2971997)								
ES1316146-008	Anonymous	EK067G: Total Phosphorus as P		0.01	mg/L	< 0.05	<0.05	0.0	No Limit	
EW1302087-002	Anonymous	EK067G: Total Phosphorus as P		0.01	mg/L	0.03	<0.01	101	0% - 20%	

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Sub-Matrix: WATER						Laboratory D	ouplicate (DUP) Report		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	LOR	Unit	Original Result	Duplicate Result	RPD (%)	Recovery Limits (%)
EP080/071: Total Peti	roleum Hydrocarbons (QC L	_ot: 2973613)							
ES1316224-001	Anonymous	EP080: C6 - C9 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080/071: Total Recoverable Hydrocarbons - NEPM 2010 Draft (QC Lot: 2973613)									
ES1316224-001	Anonymous	EP080: C6 - C10 Fraction		20	µg/L	<20	<20	0.0	No Limit
EP080: BTEXN (QC I	.ot: 2973613)								
ES1316224-001	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: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)	
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EA015: Total Dissolved Solids (QCLot: 2972624)									
EA015H: Total Dissolved Solids @180°C		10	mg/L	<10	293 mg/L	96.0	87	125	
ED037P: Alkalinity by PC Titrator (QCLot: 2973103)									
ED037-P: Total Alkalinity as CaCO3		1	mg/L		200 mg/L	89.0	81	111	
ED038A: Acidity (QCLot: 2974460)									
ED038: Acidity as CaCO3		1	mg/L	<1	20 mg/L	100	93	109	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA (OCL	_ot: 2973198)								
ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	1	mg/L	<1	25 mg/L	104	86	122	
ED045G: Chloride Discrete analyser (OCI of: 2973197)					_				
ED045G ⁻ Chloride	16887-00-6	1	mg/L	<1	1000 mg/L	93.3	77	123	
ED093E: Dissolved Major Cations (OCI at: 2973195)			Ū						
ED0351: Dissolved Major Cations (QCEOL 2373133)	7440-70-2	1	ma/L	<1	50 mg/L	100	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	88.4	79	113	
ED093F: Potassium	7440-09-7	1	mg/L	<1	50 mg/L	91.0	87	115	
EG020F: Dissolved Metals by ICP-MS (QCLot: 2976208	3)								
EG020A-F: Aluminium	7429-90-5	0.01	mg/L	<0.01	0.5 mg/L	100	80	116	
EG020A-F: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	109	80	118	
EG020A-F: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	98.2	82	112	
EG020A-F: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	97.2	81	111	
EG020A-F: Cobalt	7440-48-4	0.001	mg/L	<0.001	0.1 mg/L	99.6	81	113	
EG020A-F: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	95.5	80	112	
EG020A-F: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	104	83	111	
EG020A-F: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	93.6	81	113	
EG020A-F: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	99.6	81	113	
EG020A-F: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	105	73	125	
EG020A-F: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	102	80	116	
EG020A-F: Iron	7439-89-6	0.05	mg/L	<0.05	0.5 mg/L	101	77	115	
EG020T: Total Metals by ICP-MS (QCLot: 2976209)									
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	102	79	121	
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	89.9	82	114	
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	89.7	83	115	
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	91.5	83	117	
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	95.4	85	115	
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	92.6	83	115	

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EG020T: Total Metals by ICP-MS (QCLot: 2976209) - co	ontinued							
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	91.7	83	117
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	97.1	68	128
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	94.1	76	118
EG020T: Total Metals by ICP-MS (QCLot: 2976416)								
EG020A-T: Arsenic	7440-38-2	0.001	mg/L	<0.001	0.1 mg/L	118	79	121
EG020A-T: Cadmium	7440-43-9	0.0001	mg/L	<0.0001	0.1 mg/L	103	82	114
EG020A-T: Chromium	7440-47-3	0.001	mg/L	<0.001	0.1 mg/L	92.2	83	115
EG020A-T: Copper	7440-50-8	0.001	mg/L	<0.001	0.1 mg/L	102	83	117
EG020A-T: Lead	7439-92-1	0.001	mg/L	<0.001	0.1 mg/L	108	85	115
EG020A-T: Manganese	7439-96-5	0.001	mg/L	<0.001	0.1 mg/L	105	83	115
EG020A-T: Nickel	7440-02-0	0.001	mg/L	<0.001	0.1 mg/L	95.6	83	117
EG020A-T: Selenium	7782-49-2	0.01	mg/L	<0.01	0.1 mg/L	109	68	128
EG020A-T: Zinc	7440-66-6	0.005	mg/L	<0.005	0.1 mg/L	103	76	118
EG035F: Dissolved Mercury by FIMS (QCLot: 2976207)								
EG035F: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	89.4	78	114
EG035T: Total Recoverable Mercury by FIMS (QCLot: 2	2972659)							
EG035T: Mercury	7439-97-6	0.0001	mg/L	<0.0001	0.010 mg/L	95.1	77	115
EG051G: Ferrous Iron by Discrete Analyser (QCLot: 29	74973)							
EG051G: Ferrous Iron		0.10	mg/L	<0.10	2.00 mg/L	99.7	89	113
EG052G: Silica by Discrete Analyser (QCLot: 2973199)								
EG052G: Reactive Silica		0.1	mg/L	<0.10	5 mg/L	105	94	114
EK055G: Ammonia as N by Discrete Analyser (QCLot: 2	2972761)							
EK055G: Ammonia as N	7664-41-7	0.01	mg/L	<0.01	1.00 mg/L	109	86	112
EK057G: Nitrito as N by Discrete Analyser (OCI et: 297	(3196)							
EK057G: Nitrite as N		0.01	ma/L	<0.01	0.5 ma/L	102	83	119
EK050C: Nitrite alue Nitrete ee N (NOv) by Discrete An		70700)						
EK059G: Nitrite + Nitrate as N		0.01	ma/l	<0.01	0.5 mg/l	101	87	119
EK0040, Tatal Kialdahl Nitranan Du Diaanta Analyan	(0.01 -++ 0.074.005)	0.01	ing/L	-0.01	0.0 mg/L	101	07	110
EK061G: Total Kjeldani Nitrogen By Discrete Analyser	(QCL0t: 2971995)	0.1	ma/l	<0.1	5 mg/l	81.0	66	126
EK061G: Total Kjeldani Nitrogen as N		0.1	ing/L	-0.1	5 mg/L	01.9	00	120
EK067G: Total Phosphorus as P by Discrete Analyser (QCLot: 2971997)	0.04		-0.04	4.40 mm/	04.5	67	404
EK067G: Total Phosphorus as P		0.01	mg/L	<0.01	4.42 mg/L	91.5	67	124
EP068A: Organochlorine Pesticides (OC) (QCLot: 2972)	180)							
EP068: alpha-BHC	319-84-6	0.5	μg/L 	<0.5	5 µg/L	96.7	61	117
EP068: Hexachlorobenzene (HCB)	118-74-1	0.5	µg/L	<0.5	5 µg/L	98.0	56	116
EP068: beta-BHC	319-85-7	0.5	µg/L	<0.5	5 µg/L	84.7	60	118
EP068: gamma-BHC	58-89-9	0.5	µg/L	<0.5	5 µg/L	93.7	62	118
EP068: delta-BHC	319-86-8	0.5	μg/L	<0.5	5 µg/L	83.5	64	116

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP068A: Organochlorine Pesticides (OC)(QCLot: 2972180) - continued							
EP068: Heptachlor	76-44-8	0.5	µg/L	<0.5	5 µg/L	91.2	63	117
EP068: Aldrin	309-00-2	0.5	µg/L	<0.5	5 µg/L	91.7	65	121
EP068: Heptachlor epoxide	1024-57-3	0.5	µg/L	<0.5	5 µg/L	80.9	63	117
EP068: trans-Chlordane	5103-74-2	0.5	μg/L	<0.5	5 µg/L	84.4	64	120
EP068: alpha-Endosulfan	959-98-8	0.5	µg/L	<0.5	5 µg/L	94.6	67	119
EP068: cis-Chlordane	5103-71-9	0.5	µg/L	<0.5	5 µg/L	82.5	63	123
EP068: Dieldrin	60-57-1	0.5	μg/L	<0.5	5 µg/L	79.9	64	122
EP068: 4.4`-DDE	72-55-9	0.5	µg/L	<0.5	5 µg/L	87.2	64	118
EP068: Endrin	72-20-8	0.5	μg/L	<0.5	5 µg/L	94.1	64	126
EP068: beta-Endosulfan	33213-65-9	0.5	μg/L	<0.5	5 µg/L	93.7	68	122
EP068: 4.4`-DDD	72-54-8	0.5	μg/L	<0.5	5 µg/L	89.2	66	122
EP068: Endrin aldehyde	7421-93-4	0.5	μg/L	<0.5	5 µg/L	101	62	112
EP068: Endosulfan sulfate	1031-07-8	0.5	μg/L	<0.5	5 µg/L	84.0	60	124
EP068: 4.4`-DDT	50-29-3	2.0	μg/L	<2.0	5 µg/L	98.2	54	126
EP068: Endrin ketone	53494-70-5	0.5	μg/L	<0.5	5 µg/L	81.3	55	119
EP068: Methoxychlor	72-43-5	2.0	μg/L	<2.0	5 µg/L	106	53	127
EP068B: Organophosphorus Pesticides (OP	P) (QCLot: 2972180)							
EP068: Dichlorvos	62-73-7	0.5	µg/L	<0.5	5 µg/L	77.5	52	128
EP068: Demeton-S-methyl	919-86-8	0.5	µg/L	<0.5	5 µg/L	78.4	28.4	150
EP068: Monocrotophos	6923-22-4	0.5	µg/L		5 µg/L	27.1	10	89.1
		2.0	µg/L	<2.0				
EP068: Dimethoate	60-51-5	0.5	µg/L	<0.5	5 µg/L	76.6	61	117
EP068: Diazinon	333-41-5	0.5	µg/L	<0.5	5 µg/L	89.0	64	122
EP068: Chlorpyrifos-methyl	5598-13-0	0.5	µg/L	<0.5	5 µg/L	96.5	67	121
EP068: Parathion-methyl	298-00-0	2.0	µg/L	<2.0	5 µg/L	101	59	123
EP068: Malathion	121-75-5	0.5	µg/L	<0.5	5 µg/L	90.1	57	123
EP068: Fenthion	55-38-9	0.5	µg/L	<0.5	5 µg/L	82.7	67	119
EP068: Chlorpyrifos	2921-88-2	0.5	µg/L	<0.5	5 µg/L	83.0	67	121
EP068: Parathion	56-38-2	2.0	µg/L	<2.0	5 µg/L	102	64	118
EP068: Pirimphos-ethyl	23505-41-1	0.5	µg/L	<0.5	5 µg/L	83.6	64	118
EP068: Chlorfenvinphos	470-90-6	0.5	µg/L	<0.5	5 µg/L	87.4	59	123
EP068: Bromophos-ethyl	4824-78-6	0.5	µg/L	<0.5	5 µg/L	82.6	62	122
EP068: Fenamiphos	22224-92-6	0.5	µg/L	<0.5	5 µg/L	85.6	59	131
EP068: Prothiofos	34643-46-4	0.5	µg/L	<0.5	5 µg/L	87.2	64	116
EP068: Ethion	563-12-2	0.5	µg/L	<0.5	5 µg/L	88.9	68	120
EP068: Carbophenothion	786-19-6	0.5	µg/L	<0.5	5 µg/L	89.3	62	120
EP068: Azinphos Methyl	86-50-0	0.5	μg/L	<0.5	5 µg/L	82.3	39	131
EP075(SIM)A: Phenolic Compounds (QCLo	t: 2972179)							

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Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report			
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)A: Phenolic Compounds (QCLot: 2	972179) - continued							
EP075(SIM): Phenol	108-95-2	0.2	μg/L		5 µg/L	47.0	24.5	61.9
		1	µg/L	<1.0				
EP075(SIM): 2-Chlorophenol	95-57-8	0.2	µg/L		5 µg/L	65.1	63.8	110
		1	μg/L	<1.0				
EP075(SIM): 2-Methylphenol	95-48-7	0.2	µg/L		5 µg/L	65.4	55.9	112
		1	μg/L	<1.0				
EP075(SIM): 3- & 4-Methylphenol	1319-77-3	0.4	µg/L		10 µg/L	61.5	42.5	114
		2	μg/L	<2.0				
EP075(SIM): 2-Nitrophenol	88-75-5	0.2	µg/L		5 µg/L	66.1	62.7	117
		1	μg/L	<1.0				
EP075(SIM): 2.4-Dimethylphenol	105-67-9	0.2	µg/L		5 µg/L	78.3	59.9	112
		1	μg/L	<1.0				
EP075(SIM): 2.4-Dichlorophenol	120-83-2	0.2	μg/L		5 µg/L	71.0	59.3	122
		1	μg/L	<1.0				
EP075(SIM): 2.6-Dichlorophenol	87-65-0	0.2	μg/L		5 µg/L	73.6	64.3	118
		1	μg/L	<1.0				
EP075(SIM): 4-Chloro-3-Methylphenol	59-50-7	0.2	µg/L		5 µg/L	83.1	63	119
		1	μg/L	<1.0				
EP075(SIM): 2.4.6-Trichlorophenol	88-06-2	0.2	μg/L		5 µg/L	81.5	58.7	118
		1	μg/L	<1.0				
EP075(SIM): 2.4.5-Trichlorophenol	95-95-4	0.2	μg/L		5 µg/L	87.6	51.2	118
		1	μg/L	<1.0				
EP075(SIM): Pentachlorophenol	87-86-5	0.4	μg/L		10 µg/L	57.6	6.85	95.6
		2	μg/L	<2.0				
EP075(SIM)B: Polynuclear Aromatic Hydrocarb	oons (QCI of: 2972179)							
EP075(SIM): Nanhthalene	91-20-3	0.2	ua/L		5 µg/L	65.8	58.6	119
		1	µg/L	<1.0				
EP075(SIM): Acenaphthylene	208-96-8	0.2	µg/L		5 µg/L	79.4	63.6	114
		1	µg/L	<1.0				
EP075(SIM): Acenaphthene	83-32-9	0.2	µg/L		5 µg/L	74.8	62.2	113
		1	µg/L	<1.0				
EP075(SIM): Eluorene	86-73-7	0.2	µg/L		5 µg/L	83.2	63.9	115
		1	µg/L	<1.0				
EP075(SIM) [:] Phenanthrene	85-01-8	0.2	µg/L		5 µg/L	83.7	62.6	116
		1	μg/L	<1.0				
EP075(SIM): Anthracene	120-12-7	0.2	μg/L		5 µg/L	83.0	64.3	116
		1	μg/L	<1.0				
EP075(SIM): Fluoranthene	206-44-0	0.2	μg/L		5 µg/L	94.5	63.6	118
		1	µg/L	<1.0				

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Sub-Matrix: WATER			Method Blank (MB)	Laboratory Control Spike (LCS) Report				
				Report	Spike	Spike Recovery (%)	Recovery	Limits (%)
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High
EP075(SIM)B: Polynuclear Aromatic Hydrocarbons	(QCLot: 2972179) - coi	ntinued						
EP075(SIM): Pyrene	129-00-0	0.2	μg/L		5 µg/L	93.4	63.1	118
		1	µg/L	<1.0				
EP075(SIM): Benz(a)anthracene	56-55-3	0.2	µg/L		5 µg/L	90.8	64.1	117
		1	µg/L	<1.0				
EP075(SIM): Chrysene	218-01-9	0.2	µg/L		5 µg/L	89.0	62.5	116
		1	µg/L	<1.0				
EP075(SIM): Benzo(b)fluoranthene	205-99-2	0.2	µg/L		5 µg/L	90.8	61.7	119
		1	µg/L	<1.0				
EP075(SIM): Benzo(k)fluoranthene	207-08-9	0.2	µg/L		5 µg/L	90.5	61.7	117
		1	µg/L	<1.0				
EP075(SIM): Benzo(a)pyrene	50-32-8	0.2	µg/L		5 µg/L	90.4	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	89.0	59.9	118
		1	µg/L	<1.0				
EP075(SIM): Dibenz(a.h)anthracene	53-70-3	0.2	µg/L		5 µg/L	89.7	61.2	117
	101.01.0	1	µg/L	<1.0				
EP075(SIM): Benzo(g.h.i)perylene	191-24-2	0.2	µg/L		5 µg/L	88.7	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:	2972181)							
EP071: C10 - C14 Fraction		50	µg/L	<50	2000 µg/L	96.0	58.9	131
EP071: C15 - C28 Fraction		100	µg/L	<100	3000 µg/L	101	73.9	138
EP071: C29 - C36 Fraction		50	µg/L	<50	2000 µg/L	101	62.7	131
EP080/071: Total Petroleum Hydrocarbons (QCLot:	2973613)							
EP080: C6 - C9 Fraction		20	µg/L	<20	260 µg/L	95.4	75	127
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2010 Draft (QCLot: 29	972181)						
EP071: >C10 - C16 Fraction		100	µg/L	<100	2500 µg/L	82.3	58.9	131
EP071: >C16 - C34 Fraction		100	µg/L	<100	3500 µg/L	93.7	73.9	138
EP071: >C34 - C40 Fraction		100	µg/L	<100				
		50	μg/L		1500 µg/L	97.7	62.7	131
EP080/071: Total Recoverable Hydrocarbons - NEP	M 2010 Draft (QCLot: 29	973613)						
EP080: C6 - C10 Fraction		20	μg/L	<20	310 µg/L	97.6	75	127
EP080: BTEXN (OCI of: 2973613)								
EP080: Benzene	71-43-2	1	ya/L	<1	10 µa/L	103	70	124
EP080: Toluene	108-88-3	2	ua/L	<2	10 µa/L	101	66	132
EP080: Ethylbenzene	100-41-4	2	ua/L	<2	10 µa/L	98.6	70	120
EP080: meta_ & para_Xylene	108-38-3	2	μα/Ι	<2	10 µg/l	106	69	121
	106-42-3	-	r'3' =	_	- mg/		50	
EP080: ortho-Xvlene	95-47-6	2	µq/L	<2	10 µq/L	108	72	122
			10	1	1.0	1	1	1



Sub-Matrix: WATER				Method Blank (MB)	Laboratory Control Spike (LCS) Report				
			Report	Spike Spike Recovery (%)		Recovery Limits (%)			
Method: Compound	CAS Number	LOR	Unit	Result	Concentration	LCS	Low	High	
EP080: BTEXN (QCLot: 2973613) - continued									
EP080: Naphthalene	91-20-3	5	µg/L	<5	10 µg/L	104	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: WATER					Matrix Spike (MS) Report				
				Spike	SpikeRecovery(%)	Recovery L	imits (%)		
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High		
ED041G: Sulfate (T	urbidimetric) as SO4 2- by DA (QCLot: 2973198)								
ES1316103-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	98.9	70	130		
ED045G: Chloride	Discrete analyser (QCLot: 2973197)								
ES1316103-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	102	70	130		
EG020F: Dissolved	I Metals by ICP-MS (QCLot: 2976208)								
ES1316299-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	84.7	70	130		
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	105	70	130		
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	105	70	130		
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	107	70	130		
		EG020A-F: Copper	7440-50-8	0.2 mg/L	105	70	130		
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102	70	130		
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	102	70	130		
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	107	70	130		
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	108	70	130		
EG020T: Total Met	als by ICP-MS (QCLot: 2976209)								
ES1316140-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	80.8	70	130		
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104	70	130		
		EG020A-T: Chromium	7440-47-3	1 mg/L	110	70	130		
		EG020A-T: Copper	7440-50-8	1 mg/L	99.2	70	130		
		EG020A-T: Lead	7439-92-1	1 mg/L	100	70	130		
		EG020A-T: Manganese	7439-96-5	1 mg/L	99.7	70	130		
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.8	70	130		
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.0	70	130		
EG020T: Total Met	als by ICP-MS (QCLot: 2976416)								
ES1316118-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	88.7	70	130		
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	107	70	130		
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.1	70	130		
		EG020A-T: Copper	7440-50-8	1 mg/L	107	70	130		
		EG020A-T: Lead	7439-92-1	1 mg/L	103	70	130		

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Sub-Matrix: WATER				Matrix Spike (MS) Report			
				Spike	SpikeRecovery(%)	Recovery L	imits (%)
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High
EG020T: Total Met	als by ICP-MS (QCLot: 2976416) - continued						
ES1316118-001	Anonymous	EG020A-T: Manganese	7439-96-5	1 mg/L	108	70	130
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.9	70	130
		EG020A-T: Zinc	7440-66-6	1 mg/L	98.6	70	130
EG035F: Dissolve	d Mercury by FIMS (QCLot: 2976207)						
ES1316140-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7	70	130
EG035T: Total Re	coverable Mercury by FIMS (QCLot: 2972659)						
ES1316167-003	QC300_17/07/13	EG035T: Mercury	7439-97-6	0.010 mg/L	72.5	70	130
EG051G: Ferrous	Iron by Discrete Analyser (QCLot: 2974973)						
ES1316166-016	Anonymous	EG051G: Ferrous Iron		1.00 mg/L	# 26.7	68	128
EG052G: Silica by	Discrete Analyser (QCLot: 2973199)						
ES1316167-001	D1 17/07/13	EG052C: Reactive Silica		5.0 mg/l	# Not	70	130
					Determined		
EK055G: Ammonia	a as N by Discrete Analyser (QCLot: 2972761)						
ES1316102-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.00 mg/L	# Not	70	130
					Determined		
EK057G: Nitrite as	s N by Discrete Analyser (QCLot: 2973196)						
ES1316103-001	Anonymous	EK057G: Nitrite as N		0.5 mg/L	101	70	130
EK059G: Nitrite p	us Nitrate as N (NOx) by Discrete Analyser (QCLot	2972760)					
ES1316102-001	Anonymous	EK059G: Nitrite + Nitrate as N		0.5 mg/L	# Not	70	130
					Determined		
EK061G: Total Kie	Idahl Nitrogen By Discrete Analyser (QCLot: 297199	(5)					
ES1316108-001	Anonymous	EK061G: Total Kieldahl Nitrogen as N		25 mg/L	85.0	70	130
FK067G: Total Pho	osphorus as P by Discrete Analyser (QCI of: 297199	7)					
ES1316146-008	Anonymous	EK067G: Total Phosphorus as P		5 mg/l	95.2	70	130
EP080/071: Total F	Potroloum Hydrocarbons (OCI ot: 2973613)			0			100
ES1316224-001		ED080: C6 C0 Fraction		325 µg/l	108	70	130
E31310224-001				525 µg/L	100	70	130
EP080/071: Total F	Recoverable Hydrocarbons - NEPM 2010 Draπ (QCL	bt: 2973613)		275	407	70	100
ES1316224-001	Anonymous	EP080: C6 - C10 Fraction		375 µg/L	107	70	130
EP080: BTEXN (Q	CLot: 2973613)						
ES1316224-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	119	70	130
		EP080: Toluene	108-88-3	25 µg/L	118	70	130
		EP080: Ethylbenzene	100-41-4	25 µg/L	126	70	130
		EP080: meta- & para-Xylene	108-38-3 106-42-3	∠э µg/∟	122	70	130
		EP080: ortho-Xylene	95-47-6	25 µg/L	121	70	130

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Sub-Matrix: WATER				Matrix Spike (MS) Report						
				Spike SpikeRecovery(%) Recovery Lin			imits (%)			
Laboratory sample ID	Client sample ID	Method: Compound	CAS Number	Concentration	MS	Low	High			
EP080: BTEXN (QCLot: 2973613) - continued										
ES1316224-001	Anonymous	EP080: Naphthalene	91-20-3	25 µg/L	118	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: 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
EK061G: Total Kjel	dahl Nitrogen By Discrete A	Analyser (QCLot: 2971995)								
ES1316108-001	Anonymous	EK061G: Total Kjeldahl Nitrogen as N		25 mg/L	85.0		70	130		
EK067G: Total Pho	sphorus as P by Discrete A	nalyser (QCLot: 2971997)								
ES1316146-008	Anonymous	EK067G: Total Phosphorus as P		5 mg/L	95.2		70	130		
EG035T: Total Rec	overable Mercury by FIMS	(QCLot: 2972659)								
ES1316167-003	QC300_17/07/13	EG035T: Mercury	7439-97-6	0.010 mg/L	72.5		70	130		
EK059G: Nitrite pl	us Nitrate as N (NOx) by Di	screte Analyser (QCLot: 2972760)								
ES1316102-001	Anonymous	EK059G: Nitrite + Nitrate as N		0.5 mg/L	# Not		70	130		
					Determined					
EK055G: Ammonia	as N by Discrete Analyser	(QCLot: 2972761)								
ES1316102-001	Anonymous	EK055G: Ammonia as N	7664-41-7	1.00 mg/L	# Not		70	130		
					Determined					
EK057G: Nitrite as	N by Discrete Analyser (Q	CLot: 2973196)								
ES1316103-001	Anonymous	EK057G: Nitrite as N		0.5 mg/L	101		70	130		
ED045G: Chloride	Discrete analyser (QCLot: 2	2973197)								
ES1316103-001	Anonymous	ED045G: Chloride	16887-00-6	250 mg/L	102		70	130		
ED041G: Sulfate (T	urbidimetric) as SO4 2- by I	DA (QCLot: 2973198)								
ES1316103-001	Anonymous	ED041G: Sulfate as SO4 - Turbidimetric	14808-79-8	10 mg/L	98.9		70	130		
EG052G: Silica by	Discrete Analyser (QCLot:	2973199)								
ES1316167-001	D1_17/07/13	EG052G: Reactive Silica		5.0 mg/L	# Not		70	130		
					Determined					
EP080/071: Total P	etroleum Hydrocarbons (Q	CLot: 2973613)								
ES1316224-001	Anonymous	EP080: C6 - C9 Fraction		325 µg/L	108		70	130		
EP080/071: Total R	ecoverable Hydrocarbons -	NEPM 2010 Draft (QCLot: 2973613)								
ES1316224-001	Anonymous	EP080: C6 - C10 Fraction		375 µg/L	107		70	130		
EP080: BTEXN (QC	CLot: 2973613)									
ES1316224-001	Anonymous	EP080: Benzene	71-43-2	25 µg/L	119		70	130		
		EP080: Toluene	108-88-3	25 µg/L	118		70	130		


Sub-Matrix: WATER			Matrix Spike (MS) and Matrix Spike Duplicate (MSD) Report							
				Spike	Spike Re	covery (%)) Recovery Limits (%)		RPL	Ds (%)
Laboratory sample ID	Client sample ID	Method: Compound	Method: Compound CAS Number		MS	MSD	Low	High	Value	Control Limit
EP080: BTEXN (QC	CLot: 2973613) - continue	ed								
ES1316224-001	Anonymous	EP080: Ethylbenzene	100-41-4	25 µg/L	126		70	130		
		EP080: meta- & para-Xylene	108-38-3	25 µg/L	122		70	130		
			106-42-3							
		EP080: ortho-Xylene	95-47-6	25 µg/L	121		70	130		
		EP080: Naphthalene	91-20-3	25 µg/L	118		70	130		
EG051G: Ferrous I	ron by Discrete Analyser	(QCLot: 2974973)								
ES1316166-016	Anonymous	EG051G: Ferrous Iron		1.00 mg/L	# 26.7		68	128		
EG035F: Dissolved	Mercury by FIMS (QCLo	t: 2976207)								
ES1316140-002	Anonymous	EG035F: Mercury	7439-97-6	0.0100 mg/L	86.7		70	130		
EG020E: Dissolved	Metals by ICP-MS (OCI o	at: 2976208)								
ES1316299-002	Anonymous	EG020A-F: Arsenic	7440-38-2	0.2 mg/L	84.7		70	130		
		EG020A-F: Cadmium	7440-43-9	0.05 mg/L	105		70	130		
		EG020A-F: Chromium	7440-47-3	0.2 mg/L	105		70	130		
		EG020A-F: Cobalt	7440-48-4	0.2 mg/L	107		70	130		
		EG020A-F: Copper	7440-50-8	0.2 mg/L	105		70	130		
		EG020A-F: Lead	7439-92-1	0.2 mg/L	102		70	130		
		EG020A-F: Manganese	7439-96-5	0.2 mg/L	102		70	130		
		EG020A-F: Nickel	7440-02-0	0.2 mg/L	107		70	130		
		EG020A-F: Zinc	7440-66-6	0.2 mg/L	108		70	130		
EG020T: Total Meta	als by ICP-MS (QCLot: 29	76209)								
ES1316140-002	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	80.8		70	130		
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	104		70	130		
		EG020A-T: Chromium	7440-47-3	1 mg/L	110		70	130		
		EG020A-T: Copper	7440-50-8	1 mg/L	99.2		70	130		
		EG020A-T: Lead	7439-92-1	1 mg/L	100		70	130		
		EG020A-T: Manganese	7439-96-5	1 mg/L	99.7		70	130		
		EG020A-T: Nickel	7440-02-0	1 mg/L	99.8		70	130		
		EG020A-T: Zinc	7440-66-6	1 mg/L	95.0		70	130		
EG020T: Total Meta	als by ICP-MS (QCLot: 29	76416)								
ES1316118-001	Anonymous	EG020A-T: Arsenic	7440-38-2	1 mg/L	88.7		70	130		
		EG020A-T: Cadmium	7440-43-9	0.25 mg/L	107		70	130		
		EG020A-T: Chromium	7440-47-3	1 mg/L	90.1		70	130		
		EG020A-T: Copper	7440-50-8	1 mg/L	107		70	130		
		EG020A-T: Lead	7439-92-1	1 mg/L	103		70	130		
		EG020A-T: Manganese	7439-96-5	1 mg/L	108		70	130		
		EG020A-T: Nickel	7440-02-0	1 mg/L	94.9		70	130		
		EG020A-T: Zinc	7440-66-6	1 mg/L	98.6		70	130		





Food

Environmental Division

INTERPRETIVE QUALITY CONTROL REPORT

Work Order	: ES1316167	Page	: 1 of 10
Client	: PORT KEMBLA COPPER	Laboratory	: Environmental Division Sydney
Contact	: MS CAROLINA OLMOS	Contact	: Client Services
Address	: SYDNEY	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: colmos@golder.com.au	E-mail	: sydney@alsglobal.com
Telephone	:	Telephone	: +61-2-8784 8555
Facsimile	:	Facsimile	: +61-2-8784 8500
Project	: 137623028	QC Level	: NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Site	: PHC-PRIMARY SCHOOL		
C-O-C number	:	Date Samples Received	: 17-JUL-2013
Sampler	: CO	Issue Date	: 24-JUL-2013
Order number	:		
		No. of samples received	: 3
Quote number	:	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

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500 Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



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Analysis Holding Time Compliance

The following report summarises extraction / preparation and analysis times and compares with recommended holding times. Dates reported represent first date of extraction or analysis and precludes subsequent dilutions and reruns. Information is also provided re the sample container (preservative) from which the analysis aliquot was taken. Elapsed period to analysis represents number of days from sampling where no extraction / digestion is involved or period from extraction / digestion where this is present. For composite samples, sampling date is assumed to be that of the oldest sample contributing to the composite. Sample date for laboratory produced leachates is assumed as the completion date of the leaching process. Outliers for holding time are based on USEPA SW 846, APHA, AS and NEPM (1999). A listing of breaches is provided in the Summary of Outliers.

Holding times for leachate methods (excluding elutriates) vary according to the analytes being determined on the resulting solution. For non-volatile analytes, the holding time compliance assessment compares the leach date with the shortest analyte holding time for the equivalent soil method. These soil holding times are: Organics (14 days); Mercury (28 days) & other metals (180 days). A recorded breach therefore does not guarantee a breach for all non-volatile parameters.

Matrix: WATER					Evaluation:	🗴 = Holding time	breach ; ✓ = Withir	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	
EA015: Total Dissolved Solids									
Clear Plastic Bottle - Natural (EA015H) D1_17/07/13,	D4_17/07/13	17-JUL-2013		24-JUL-2013		18-JUL-2013	24-JUL-2013	1	
ED037P: Alkalinity by PC Titrator									
Clear Plastic Bottle - Natural (ED037-P) D1_17/07/13,	D4_17/07/13	17-JUL-2013		31-JUL-2013		18-JUL-2013	31-JUL-2013	1	
ED038A: Acidity									
Clear Plastic Bottle - Natural (ED038) D1_17/07/13,	D4_17/07/13	17-JUL-2013				19-JUL-2013	31-JUL-2013	~	
ED041G: Sulfate (Turbidimetric) as SO4 2- by DA									
Clear Plastic Bottle - Natural (ED041G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		18-JUL-2013	14-AUG-2013	✓	
ED045G: Chloride Discrete analyser									
Clear Plastic Bottle - Natural (ED045G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		18-JUL-2013	14-AUG-2013	~	
ED093F: Dissolved Major Cations									
Clear Plastic Bottle - Natural (ED093F) D1_17/07/13,	D4_17/07/13	17-JUL-2013		24-JUL-2013		18-JUL-2013	24-JUL-2013	~	
EG020F: Dissolved Metals by ICP-MS									
Clear Plastic Bottle - Nitric Acid; Filtered (EG020A-F) D1_17/07/13,	D4_17/07/13	17-JUL-2013		13-JAN-2014		20-JUL-2013	13-JAN-2014	~	
EG020T: Total Metals by ICP-MS									
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) D1_17/07/13,	D4_17/07/13	17-JUL-2013	20-JUL-2013	13-JAN-2014	~	20-JUL-2013	13-JAN-2014	~	
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG020A-T) QC300_17/07/13		17-JUL-2013	22-JUL-2013	13-JAN-2014	~	22-JUL-2013	13-JAN-2014	~	
EG035F: Dissolved Mercury by FIMS									
Clear Plastic Bottle - Nitric Acid; Filtered (EG035F) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		22-JUL-2013	14-AUG-2013	1	

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Project	: 137623028



Matrix: WATER					Evaluation	× = Holding time	breach ; 🗸 = Withii	n holding time.
Method		Sample Date	Ex	traction / 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								
Clear Plastic Bottle - Nitric Acid; Unfiltered (EG035T) D1_17/07/13, QC300_17/07/13	D4_17/07/13,	17-JUL-2013				18-JUL-2013	14-AUG-2013	~
EG051G: Ferrous Iron by Discrete Analyser								
Clear Plastic Bottle - HCI - Filtered (EG051G) D1_17/07/13,	D4_17/07/13	17-JUL-2013				19-JUL-2013	24-JUL-2013	✓
EG052G: Silica by Discrete Analyser								
Clear Plastic Bottle - Natural (EG052G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		18-JUL-2013	14-AUG-2013	~
EK055G: Ammonia as N by Discrete Analyser								
Clear Plastic Bottle - Sulfuric Acid (EK055G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		18-JUL-2013	14-AUG-2013	✓
EK057G: Nitrite as N by Discrete Analyser								
Clear Plastic Bottle - Natural (EK057G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		19-JUL-2013		18-JUL-2013	19-JUL-2013	~
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete A	Analyser							
Clear Plastic Bottle - Sulfuric Acid (EK059G) D1_17/07/13,	D4_17/07/13	17-JUL-2013		14-AUG-2013		18-JUL-2013	14-AUG-2013	~
EK061G: Total Kjeldahl Nitrogen By Discrete Analyse	r in the second s							
Clear Plastic Bottle - Sulfuric Acid (EK061G) D1_17/07/13,	D4_17/07/13	17-JUL-2013	18-JUL-2013	14-AUG-2013	1	18-JUL-2013	14-AUG-2013	~
EK067G: Total Phosphorus as P by Discrete Analyser	· · · · · · · · · · · · · · · · · · ·							
Clear Plastic Bottle - Sulfuric Acid (EK067G) D1_17/07/13,	D4_17/07/13	17-JUL-2013	18-JUL-2013	14-AUG-2013	1	18-JUL-2013	14-AUG-2013	✓
EP068A: Organochlorine Pesticides (OC)								
Amber Glass Bottle - Unpreserved (EP068) D1_17/07/13,	D4_17/07/13	17-JUL-2013	18-JUL-2013	24-JUL-2013	1	19-JUL-2013	27-AUG-2013	~
EP068B: Organophosphorus Pesticides (OP)								
Amber Glass Bottle - Unpreserved (EP068) D1_17/07/13,	D4_17/07/13	17-JUL-2013	18-JUL-2013	24-JUL-2013	1	19-JUL-2013	27-AUG-2013	~
EP080/071: Total Petroleum Hydrocarbons								
Amber Glass Bottle - Unpreserved (EP071) D1_17/07/13, QC300 17/07/13	D4_17/07/13,	17-JUL-2013	18-JUL-2013	24-JUL-2013	~	19-JUL-2013	27-AUG-2013	✓
EP075(SIM)A: Phenolic Compounds								
Amber Glass Bottle - Unpreserved (EP075(SIM)) D1_17/07/13, QC300_17/07/13	D4_17/07/13,	17-JUL-2013	18-JUL-2013	24-JUL-2013	✓	19-JUL-2013	27-AUG-2013	✓

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Matrix: WATER					Evaluation	× = Holding time	breach ; ✓ = Within	n holding time.
Method		Sample Date	Ex	traction / 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)) D1_17/07/13, QC300_17/07/13	D4_17/07/13,	17-JUL-2013	18-JUL-2013	24-JUL-2013	1	19-JUL-2013	27-AUG-2013	~
EP080: BTEXN								
Amber VOC Vial - Sulfuric Acid (EP080) D1_17/07/13, QC300_17/07/13	D4_17/07/13,	17-JUL-2013	18-JUL-2013	31-JUL-2013	~	18-JUL-2013	31-JUL-2013	~
EP080/071: Total Petroleum Hydrocarbons								
Amber VOC Vial - Sulfuric Acid (EP080) D1_17/07/13, QC300_17/07/13	D4_17/07/13,	17-JUL-2013	18-JUL-2013	31-JUL-2013	~	18-JUL-2013	31-JUL-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.

latrix: WATER Evaluation: * = Quality Control frequency not within specification; * = Quality Control frequency within specificat							
Quality Control Sample Type		Count		Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Duplicates (DUP)							
Acidity as Calcium Carbonate	ED038	1	3	33.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator	ED037-P	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	8	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	2	20	10.0	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
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Silica (Reactive) by Discrete Analyser	EG052G	1	2	50.0	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 Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	2	19	10.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	4	39	10.3	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	2	16	12.5	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Laboratory Control Samples (LCS)							
Acidity as Calcium Carbonate	ED038	1	3	33.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Alkalinity by PC Titrator	ED037-P	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	8	12.5	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	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
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Silica (Reactive) by Discrete Analyser	EG052G	1	2	50.0	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 Dissolved Solids (High Level)	EA015H	2	20	10.0	10.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	3	19	15.8	15.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement

Page	: 6 of 10
Work Order	: ES1316167
Client	: PORT KEMBLA COPPER
Project	: 137623028



Matrix: WATER		Evaluation: * = Quality Control frequency not within specification ; 🗸 = Quality Control frequency within specification					
ality Control Sample Type		С	ount	Rate (%)			Quality Control Specification
Analytical Methods	Method	QC	Reaular	Actual	Expected	Evaluation	
Laboratory Control Samples (LCS) - Continued							
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	3	16	18.8	15.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Method Blanks (MB)							
Acidity as Calcium Carbonate	ED038	1	3	33.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	8	12.5	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Major Cations - Dissolved	ED093F	1	20	5.0	5.0	 Image: A second s	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.3	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
PAH/Phenols (GC/MS - SIM)	EP075(SIM)	1	3	33.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Pesticides by GCMS	EP068	1	2	50.0	5.0	✓	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Silica (Reactive) by Discrete Analyser	EG052G	1	2	50.0	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	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Dissolved Solids (High Level)	EA015H	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.3	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.1	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	6.3	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH - Semivolatile Fraction	EP071	1	3	33.3	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	5.0	~	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Matrix Snikes (MS)							
Ammonia as N by Discrete analyser	EK055G	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Chloride by Discrete Analyser	ED045G	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Mercury by FIMS	EG035F	1	8	12.5	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Dissolved Metals by ICP-MS - Suite A	EG020A-F	1	19	5.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Ferrous Iron by Discrete Analyser	EG051G	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	1	19	5.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Nitrite as N by Discrete Analyser	EK057G	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Silica (Reactive) by Discrete Analyser	EG052G	1	2	50.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Sulfate (Turbidimetric) as SO4 2- by Discrete Analyser	ED041G	1	20	5.0	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	1	19	5.3	5.0	1	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Mercury by FIMS	EG035T	1	9	11.1	5.0	· -	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Metals by ICP-MS - Suite A	EG020A-T	2	39	5.1	5.0	- -	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
Total Phosphorus as P By Discrete Analyser	EK067G	1	16	6.3	5.0	- -	NEPM 2013 Schedule B(3) and ALS QCS3 requirement
TPH Volatiles/BTEX	EP080	1	9	11.1	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
Total Dissolved Solids (High Level)	EA015H	WATER	In-House, APHA 21st ed., 2540C A gravimetric procedure that determines the amount of `filterable` residue in an aqueous sample. A well-mixed sample is filtered through a glass fibre filter (1.2um). The filtrate is evaporated to dryness and dried to constant weight at 180+/-5C. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
Acidity as Calcium Carbonate	ED038	WATER	APHA 21st ed., 2310 B Acidity is determined by titration with a standardised alkali to an end-point pH of 8.3. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 librated thiocynate forms highly-coloured ferric thiocynate 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 (1999) Schedule B(3) (Appdx. 2)
			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 (1999) Schedule B(3) (Appdx. 2) Hardness parameters are calculated based on APHA 21st ed., 2340 B. This method is compliant with NEPM (1990) Schedule B(2) (Appdx. 2)
Dissolved Metals by ICP-MS - Suite A	EG020A-F	WATER	(APHA 21st ed., 3125; USEPA SW846 - 6020, ALS QWI-EN/EG020): Samples are 0.45 um filtered prior to analysis. 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.
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
Dissolved Mercury by FIMS	EG035F	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(Cold Vapour generation) AAS) Samples are 0.45 um filtered prior to analysis. FIM-AAS is an automated flameless atomic absorption technique. A bromate/bromide reagent is used to oxidise any organic mercury compounds in the filtered sample. The ionic mercury is reduced online to atomic mercury vapour by SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Mercury by FIMS	EG035T	WATER	AS 3550, APHA 21st ed. 3112 Hg - B (Flow-injection (SnCl2)(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 SnCl2 which is then purged into a heated quartz cell. Quantification is by comparing absorbance against a calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ferrous Iron by Discrete Analyser	EG051G	WATER	APHA 21st ed., 3500 Fe-B. A colorimetric determination based on the reaction between phenanthroline and ferrous iron at pH 3.2-3.3 to form an orange-red complex that is measured against a five-point calibration curve. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Silica (Reactive) by Discrete Analyser	EG052G	WATER	APHA 21st ed. 4500-SiO2 D: Under Acdic conditions reactive silicon combines with ammonium molybdate to form a yellow molybdosilicic acid complex. This is reduced by 1-amino-2-naphthol-4-sulfonic acid to a silicomolybdenum blue complex which is measured by discrete analyser at 670 nm. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Ammonia as N by Discrete analyser	EK055G	WATER	APHA 21st ed., 4500-NH3 G Ammonia is determined by direct colorimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite as N by Discrete Analyser	EK057G	WATER	APHA 21st ed., 4500-NO2- B. Nitrite is determined by direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrate as N by Discrete Analyser	EK058G	WATER	APHA 21st ed., 4500-NO3- F. Nitrate is reduced to nitrite by way of a chemical reduction followed by quantification by Discrete Analyser. Nitrite is determined seperately by direct colourimetry and result for Nitrate calculated as the difference between the two results. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Nitrite and Nitrate as N (NOx) by Discrete Analyser	EK059G	WATER	APHA 21st ed., 4500-NO3- F. Combined oxidised Nitrogen (NO2+NO3) is determined by Chemical Reduction and direct colourimetry by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Kjeldahl Nitrogen as N By Discrete Analyser	EK061G	WATER	APHA 21st ed., 4500-Norg D. 25mL water samples are digested using a traditional Kjeldahl digestion followed by determination by Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Nitrogen as N (TKN + Nox) By Discrete Analyser	EK062G	WATER	APHA 21st ed., 4500-Norg / 4500-NO3 This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
Total Phosphorus as P By Discrete Analyser	EK067G	WATER	APHA 21st ed., 4500-P B&F This procedure involves sulphuric acid digestion of a 100mL sample to break phosphorus down to orthophosphate. The orthophosphate reacts with ammonium molybdate and antimony potassium tartrate to form a complex which is then reduced and its concentration measured at 880nm using Discrete Analyser. This method is compliant with NEPM (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)



Analytical Methods	Method	Matrix	Method Descriptions
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2)
Preparation Methods	Method	Matrix	Method Descriptions
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 (1999) Schedule B(3) (Appdx. 2)
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 (1999) Schedule B(3) (Appdx. 2). 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							
EG051G: Ferrous Iron by Discrete Analyser	ES1316166-016	Anonymous	Ferrous Iron		26.7 %	68-128%	Recovery less than lower data quality
							objective
EG052G: Silica by Discrete Analyser	ES1316167-001	D1_17/07/13	Reactive Silica		Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EK055G: Ammonia as N by Discrete Analyser	ES1316102-001	Anonymous	Ammonia as N	7664-41-7	Not		MS recovery not determined,
					Determined		background level greater than or
							equal to 4x spike level.
EK059G: Nitrite plus Nitrate as N (NOx) by Discrete A	r ES1316102-001	Anonymous	Nitrite + Nitrate as N		Not		MS recovery not determined,
					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.

• 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.





SAMPLE RECEIPT NOTIFICATION (SRN)

Comprehensive Report

Work Order	: ES13	316167								
Client Contact Address	: PORT : MS C/ : SYDN	KEMBLA COPPER AROLINA OLMOS EY	Laboratory Contact Address	Envi Cliei 277- NSV	 Environmental Division Sydney Client Services 277-289 Woodpark Road Smithfield NSW Australia 2164 					
E-mail Telephone Facsimile	: colmo :	s@golder.com.au	E-mail Telephone Facsimile	: sydr : +61- : +61-	ney@alsglobal.com ·2-8784 8555 ·2-8784 8500					
Project Order number	: 13762	3028	Page	: 1 of	3					
C-O-C number	:		Quote number	:						
Site	: PHC-I	PRIMARY SCHOOL								
Sampler	: CO		QC Level	: NEF QCS	^o M 1999 Schedule B(3) and ALS S3 requirement					
Dates										
Date Samples Rec	eived	: 17-JUL-2013	Issue Date		: 18-JUL-2013 12:46					
Client Requested [Due Date	: 24-JUL-2013	Scheduled Reportir	ng Date	24-JUL-2013					
Delivery Det	ails									
Mode of Delivery		: Carrier	Temperature		5.2'C - Ice present					
No. of coolers/boxe	es	: 1 HARD	No. of samples rece	eived	: 3					
Security Seal		: Not intact.	No. of samples ana	lysed	: 3					

General Comments

- This report contains the following information:
 - Sample Container(s)/Preservation Non-Compliances
 - Summary of Sample(s) and Requested Analysis
 - Proactive Holding Time Report
 - Requested Deliverables
- Samples received in appropriately pretreated and preserved containers.
- Please refer to the Proactive Holding Time Report table below which summarises breaches of recommended holding times that have occurred prior to samples/instructions being received at the laboratory. The absence of this summary table indicates that all samples have been received within the recommended holding times for the analysis requested.
- Please direct any queries you have regarding this work order to the above ALS laboratory contact.
- Analytical work for this work order will be conducted at ALS Sydney.
- Sample Disposal Aqueous (14 days), Solid (60 days) from date of completion of work order.

Address 277-289 Woodpark Road Smithfield NSW Australia 2164 PHONE +61-2-8784 8555 Facsimile +61-2-8784 8500

Environmental Division Sydney ABN 84 009 936 029 Part of the ALS Group An ALS Limited Company



0037P, ED041G, ED045G &

Mg, Na, K)

Metals by ICPMS (including

screte Analyser

Leve

- High L

Sample Container(s)/Preservation Non-Compliances

All comparisons are made against pretreatment/preservation AS, APHA, USEPA standards.

• No sample container / preservation non-compliance exist.

Summary of Sample(s) and Requested Analysis

Some items described below may be part of a laboratory process neccessary for the execution of client requested tasks. Packages may contain additional analyses, such as the determination of moisture content and preparation tasks, that are included in the package.

If no sampling time is provided, the sampling time will default to 15:00 on the date of sampling. If no sampling date is provided, the sampling date will be assumed by the laboratory for processing purposes and will be shown bracketed without a time component.

laboratory for p bracketed without a Matrix: WATER	rocessing purposes a time component.	s and will	be sh	nown	EA015H olved Solids - Higl	ED038 CaCO3 CaCO3 only	EG020F Metals by ICPMS	EG020T verable Metals by	EG051G n by Discrete Anal	EG052G iscrete Analyser	EN055 - PG ice by ED037P, EI	vT-01 ons (Ca, Mg, Na, K
Laboratory sample ID	Client sampling date / time	Client sa	ample ID		WATER - F	WATER - F	WATER - F	WATER - F Total Reco	WATER - E	WATER - F	WATER - F	WATER - h Major Catio
ES1316167-001	17-JUL-2013 02:30	D1_17/07/13			✓	✓	✓	1	✓	✓	1	✓
ES1316167-002	17-JUL-2013 03:30	D4_17/07/13			✓	1	1	1	✓	1	1	✓
ES1316167-003	17-JUL-2013 15:00	QC300 17/07	7/13					1				

Matrix: WATER Laboratory sample ID	Client sampling date / time	Client sample ID	WATER - NT-02 Major Anions (Chloride, Sulphate, Alkalinity)	WATER - NT-08 Total Nitrogen + NO2 + NO3 + NH3 + Total P	WATER - W-02T 8 metals (Total)	WATER - W-12 OC/OP Pesticides	WATER - W-27 TPH/BTEX/PAH/Phenols/8 Metals	WATER - W-27T TPH/BTEX/PAH/Phenols/Total 8 Metals
ES1316167-001	17-JUL-2013 02:30	D1_17/07/13	✓	✓	1	1	✓	
ES1316167-002	17-JUL-2013 03:30	D4_17/07/13	✓	✓	1	1	✓	
ES1316167-003	17-JUL-2013 15:00	QC300_17/07/13						✓

Proactive Holding Time Report

Sample(s) have been received within the recommended holding times for the requested analysis.



Requested Deliverables

MR GRAEME MILLER

*ALL Cortificate of Analysis NATA (COA)	Email	armillor@goldor.com.ou
- AU Certificate of Allalysis - NATA (COA)		grinner@golder.com.au
- *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI)	Email	grmiller@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	grmiller@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN 	Email	grmiller@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	grmiller@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	grmiller@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	grmiller@golder.com.au
 EDI Format - GOLDER_EXCEL (GOLDER_EXCEL) 	Email	grmiller@golder.com.au
MR JIM BAILEY		
- A4 - AU Tax Invoice (INV)	Email	Jim.bailey@pkc.com.au
MS CAROLINA OLMOS		
 *AU Certificate of Analysis - NATA (COA) 	Email	colmos@golder.com.au
 *AU Interpretive QC Report - DEFAULT (Anon QCI Rep) (QCI) 	Email	colmos@golder.com.au
 *AU QC Report - DEFAULT (Anon QC Rep) - NATA (QC) 	Email	colmos@golder.com.au
 A4 - AU Sample Receipt Notification - Environmental HT (SRN 	Email	colmos@golder.com.au
 Chain of Custody (CoC) (COC) 	Email	colmos@golder.com.au
- EDI Format - ENMRG (ENMRG)	Email	colmos@golder.com.au
 EDI Format - EQUIS V5 Generic (EQUIS_V5) 	Email	colmos@golder.com.au
- EDI Format - ESDAT (ESDAT)	Email	colmos@golder.com.au
 EDI Format - GOLDER_EXCEL (GOLDER_EXCEL) 	Email	colmos@golder.com.au
MS MELINDA HALE		
- A4 - AU Tax Invoice (INV)	Email	Melinda.hale@pkc.com.au

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Date:
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THIS FORM IS TO BE SIGNED BY GOLDER STAFF; COURIER/S; LABORATORY ON RECEIPT OF SAMPLES.

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Ę	Golder Associates		a Colmos@golder.com.au		19. S.							LE Method of Shipmere
Phone: : (02) 9478 3900	Fax : (02) 9478 3901	Revieweds	Phone: 0433 564 447 Emails		s KEQUIKEI	The major antima 100 major antima 2000 Second anti- sina think and sina think and balonce	XXX	× × ×				All of the second
		Carolina Olmos	Carolina Olmos		VALIYSI	Display (1000) Display (1000)	× × × × ×	Y X X X X				nvironmental Division Sydney Work Order ES1316167 ES1316167 EPhone : +61-2-8784 8555 Ephone : +61-2-8784 8555 Ephone : +61-2-8784 8555
COLDER ASSOCIATES PTY LTD	124 Pacific Highway, Greenwich	Project Manager:	Job Contact :			Methals (As, Cd, Cr, Cu, Vi, Pb, Zn, Mn, Se, Hg) BTEXMTRHs PAHs and Phenols Ammonin As N	X X X X	XXXX	××××		-	Er Er Er Er Er Er Er Er Er Er Er Er Er E
ALS	SY - 493 - 13	3		ETIN BOARD	EQUIS	Low High Uneknown)		3	У З			memoring(C)Discret(DC)/Disturbed(DS memoring(C)Discret(DC)/Disturbed(DS memoring(C)Discret(DC)/Disturbed(DS
li Dicente	ADAMAN,	ONLONG SA	Standard Date Remired By	EMAIL BUIL	ESDAT	anaves avwers	2 120 13 2:30	4 3:30	1			SAMPLE TYPE = C
137623028	PKC - Primary School	Carolina Olmos	48hrs		· EXCEL 2	golder.com.au and grmifler@golder.com.au SAMPLE	1 21 64 61	1-17/07/12	200-1910年	1.00		utFillWaterOber TURE
2. of contract of the	We low a composition of the	A LUPICALITY	24hrs	P. R. S. Orthert	Report Control of PDF	CommentsSpecial lastractions: Please email report to colmos@ LAB		2 2	30			SAMPLE MATRIX = SaliSediate SAMPLE MATRIX = SaliSediate BRECEIVED BY RECEIVED BY

Sheet..... of.....

SAMPLE CHAIN OF CUSTODY DOCUMENTATION

1997 B			TABLE 4: DA	ATA VALIDATION SUMMAR	Y SHEET				
Project Name:		PKC - Phase II Primary	y School	Project Number:	137623028				
Primary Laboratory:		ALS		Workorder Number:	ES1316167				
Secondary Laboratory:		N/A		Workorder Number:	N/A				
Date Sampled:		17/07/2013		Sample Medium:	Water				
		Samp	le Information						
Number of Primary Samples:		2	Number o	Triplicate Samples:	0				
Number of Duplicate Samples:		0	Number o	Other QAQC Samples:	1				
		Documentation and a	Sample Handling Int	ormation	Commente				
COC completed properly?			Y	Signed by both field scient	tists and laboratory personnel				
I requested analysis completed?	>		Y	All.					
amples received intact and chille	ed?		Y	5.2'C - Ice present					
amples analysed within appropri	ate holding times?		Y						
ample volumes sufficient for QC	analysis?		Y						
re there non-NATA accredited m	ethods used?		N						
hromatograms supplied as appro	opriate?		N/A						
aboratory reports signed by auth	orised personnel?	male Information (Mathed Displa ND	Y Dincete Dienk, DD	All.					
T	QAQC Sa	mple Information (Method Blank - MB	, Rinsate Blank - RB	, Fleid Blank - FB, Trip Blan	IK - I B)				
I ype		Sample ID	All regults wors loss t	han LOPa	omments				
Rinsate Blank	· · · · · · · · · · · · · · · · · · ·	0C300 17/07/13	All results were less	han LORS					
Nilibate Didlik	`		1030113 WEIE 1855						
	1	Trip Sp	ike Information						
Analyte	Spike Concentrations	Recovery Concentration	% Recove	ry	Comments				
N/A	N/A	N/A	N/A	No trip spike was prepared	d for this batch.				
		Laboratory Cont	rol Spike (LCS) Anal	yses					
Analyte Gro	oup			Comments					
Major Cations, Jussived Soulds, Analinity, Acidity Mailots, Major Cations, Dissolved Metals, Total Metals, Mercury, Ferrous Iron, Ammonia as N, Total Kjeldahl Nitrogen, Total Phosphorus as P, TRH, TPH and BTEXN									
		Matrix Sp	ike (MS) Analyses						
Analyte Gr	oup			Comments					
Ferrous Ir	on	MS recovery of ferrous iron (26.7%) in a	anonymous sample wa	is less than lower data quality	objective (68%).				
Reactive Si	lica	MS recovery of reactive silica in sample	e D1_17/07/13 was no	t determined.					
Nitrite plus Nitrate	as N (NOx)	MS recovery of Nitrite + Nitrate as N in	anonymous sample was no	as not determined					
		Laboratory Du	plicates (LD) Analys	es					
Analyte Gr	oup	Sample ID		Co	omments				
Total Dissolved Solids, Alkalinit; Major Cations ,Dissolved Metals Ferrous Iron,Ammonia as N, Tota Phosphorus as P, TRH,	y, Acidity, Major Anions, s,Total Metals, Mercury, al Kjeldahl Nitrogen, Total TPH and BTEXN	Anonymous	All LD recoveries we						
Nitrite as N and Rea	active Silica	D1_17/07/13 and anonymous	All LD recoveries were below LOR.						
Australia 🕈	Bartan III	Field Dupli	cates (FD) Analyses	-					
Analyte Group	Primary ID	Duplicate ID	No Field Duplicates	vere taken for this batch.	omments				
		Field Triple	cates (FT) Analyses						
Analyta Group	Brimony ID	Triplicate ID	Cales (FT) Analyses	C/	ommonto				
Analyte Group	Filliary ID	Triplicate ID	No Field Triplicates y	vere taken for this batch	oniments				
			No Field Thpildates V						
		Surrogate Compo	ound Monitoring Ana	lyses					
Analyte Group	Analyte(s)			Comments					
		All surrogate recoveries were within acc	eptable recovery limit	S.					
	· · · · · · · · · · · · · · · · · · ·		· · ·						
	I	0.007	all Commonto						
e stated by ALS: Spike failed for F	errous Iron analysis due to a	Overa							
S Stated by ALS. Spike falled for Fi	circus iron analysis que to r	many menerence (communed by re analysis	3)						
latrix Spike recovery for Ammonia	as N, Nitrite plus Nitrate as	N (NOx) and reactive silica were not determ	nined due to backgroun	d level greater than or equal to t	four times spike level.				
lo duplicate or triplicate samples w	ere collected due to QC pro	gram proposed in the Golder (2013) SAQP	was reduced.						
This batch has been validated and it	s considered suitable for en	vironmental interpretive use.							

Note: Data validation assesses each analyte in terms of all the data validation variables and only the exceedances and outliers are reported in this form.

*When concentrations are less than the LOR for both primary and duplicate/triplicate results, no RPDs are calculated

Performed By: Date: Olga Bukhteeva 25/07/2013 Checked By: Date: Carolina Olmos 25/07/2013

7 7 4			DA	FA VALIDA	TION SUMMARY SHEET (S	ydney)		
Project Name:		PKC - Phase II Prin	mary School Port Kembla		Project Number: 137623028			
Primary Laboratory:			ALS		Workorder Number:	EW1301886		
Secondary Laboratory: Date Sampled:		25/06/20	013 - 27/06/2013		Workorder Number: Sample Medium:	93198 Soil		
			Sample Information		·			
Number of Primary Samples:	•	553		Number of 1	riplicate Samples:	3		
Number of Duplicate Samples.	•	Docume	entation and Sample Handli	ng Informati	on	0		
			Y/N			Comments		
COC completed properly?	12		Y		Signed for field scientist and labora	tory personnel.		
All requested analysis completed Samples received intact and chill	led?		ř Y		ALS: 0.6°C - Ice present, Envirolab	: 11.2°C - Ice.		
Samples analysed within appropi	iate holding times?		Y		All			
Sample volumes sufficient for Q0	C analysis?		Y					
Are there non-NATA accredited r	methods used?		Y		Estimations of Asbestos weight and Accreditation. See comments.	I percentages are not covered under the Scope of NATA		
Chromatograms supplied as app	ropriate?		N/A					
Laboratory reports signed by auth	horised personnel?	AQC Sample Information (Metho	Y d Blank - MB, Binsate Blan	k - RB Field	Blank - FB Trin Blank - TB)			
Туре	Sample	ID			Comment:	S		
MB	Method B	lank	All results less than LOR (A	LS and Enviro	lab).			
TB	QC400_25/	06/13	All results less than LOR, ex	cept mangan	ese (10 mg/kg) in QC400, mangane	se (12 mg/kg) in QC 401 and manganese (8 mg/kg) in QC402.		
		1	Trip Spike Informatio	n				
Analyte	Spike Concentrations	Recovery Cond	centration	% Recovery		Comments		
N/A	N/A	N/A		N/A	No	trip spike submitted for this batch.		
		Lab	oratory Control Spike (LCS) Analyses				
An	alyte Group	I CS AI S recoursion ware with a		limite	Comments			
All	I (Envirolab)	All Envirolab LCS recoveries were	within the laboratory recovery control	control limits				
		1	Matrix Spike (MS) Analy	ISAS				
An	alyte Group				Comments			
T,	otal Metals	MS recovery of arcenic (29.3%) in	sample TP30_0.0-0.1_25/06	13 were less	than lower data quality objective (70	0%).		
T,	otal Metals	MS recovery of copper in sample " MS recovery of copper in sample."	TP30_0.0-0.1_25/06/13 were TP15_0.0-0.1_26/06/13 were	not determin	id.			
т	otal Metals	MS recovery of lead (210%) in sar	mple TP30_0.0-0.1_25/06/13	were greater	than upper data quality objective (13	30%).		
T.	otal Metals	MS recovery of zinc (429%) in sar	nple TP30_0.0-0.1_25/06/13	were greater	han upper data quality objective (13	80%).		
Total Recoverab	le Hydrocarbons - NEPM	MS recovery of C6 - C9 Fraction C MS recovery of C6 - C10 Fraction	on anonymous sample were n on anonymous sample were	ot determined	d.			
	BTEXN	MS recovery of meta- & para-Xyler	ne Fraction on anonymous sa	mple were no	t determined.			
	BTEXN	MS recovery of ortho-Xylene on an	nonymous sample were not de	etermined.				
	All	All other MS recoveries from ALS	were within the laboratory cor I on Envirolab batch	ntrol limits.				
	7.01							
		La	shorotory Duplicator (ID) /	haluaga				
Analyte Group	Analyte(s)	Sample ID	aboratory Duplicates (LD) A	Analyses	Comment	8		
Analyte Group Total Metals	Analyte(s) Arsenic	Sample ID TP30_0.0-0.1_25/06/13	RPD of arcenic (30%) excee	Analyses	Comment: ed limits (20%).	\$		
Analyte Group Total Metals Total Metals	Analyte(s) Arsenic Zinc	Sample ID TP30_0.0-0.1_25/06/13 TP30_0.0-0.1_25/06/13	RPD of arcenic (30%) exceed RPD of zinc (30%) exceed RPD of zinc (30.7%) exceed	aded LOR bas	Comment: ed limits (20%). d limits (20%). recorded LOB based limits (20%).	\$		
Analyte Group Total Metals Total Metals Total Phosphorus as P All	Analyte(s) Arsenic Zinc Total Phosphorus as P	Sample ID TP30_0.0-0.1_25/06/13 TP30_0.0-0.1_25/06/13 TP26_0.5-0.6_25/06/13	RPD of arcenic (30%) excee RPD of arcenic (30%) excee RPD of zinc (30.7%) exceed RPD of Total Phosphorus as All other LD results from AL:	Analyses Ided LOR base led LOR base s P (27.7%) e S and Envirol	Comment: ed limits (20%). d limits (20%). cceeded LOR based limits (20%). b were within the laboratory control	s limits or below the LOR.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All	Analyte(s) Arsenic Zinc Total Phosphorus as P	Sample ID TP30_0.0-0.1_25/06/13 TP30_0.0-0.1_25/06/13 TP26_0.5-0.6_25/06/13	Aboratory Duplicates (LD) / RPD of arcenic (30%) excee RPD of zinc (30.7%) excee RPD of zinc (30.7%) excee RPD of Total Phosphorus as All other LD results from AL:	Analyses ided LOR base ied LOR base s P (27.7%) e S and Envirol	Comment: ed limits (20%). d limits (20%). cceeded LOR based limits (20%). b were within the laboratory control	s limits or below the LOR.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s)	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID	Sample ID TP30_0.0-0.1_25/06/13 TP30_0.0-0.1_25/06/13 TP26_0.5-0.6_25/06/13 Duplicate ID	Aboratory Duplicates (LD) / RPD of arcenic (30%) excees RPD of zinc (30.7%) excees RPD of Total Phosphorus as All other LD results from AL3 Field Duplicates (FD) Ana	Analyses ided LOR base led LOR base s P (27.7%) e S and Envirol lyses	Comment: ed limits (20%). d limits (20%). ceeded LOR based limits (20%). b were within the laboratory control b more within the laboratory control	s limits or below the LOR.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals /PAH	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0.0.1	Sample ID TP30_0.0-0.1_2506/13 TP30_0.0-0.1_2506/13 TP26_0.5-0.6_2506/13 Duplicate ID QC100	Aboratory Duplicates (LD) / RPD of arcenic (30%) excee RPD of zinc (30.7%) excee RPD of Total Phosphorus at All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%),	Analyses ided LOR base ied LOR base is P (27.7%) e is and Envirol lyses Lead (65%), 2	Comment: ed limits (20%). d limits (20%). ceeded LOR based limits (20%). b were within the laboratory control b were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7%	s limits or below the LOR. s		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals /PAH All	Analyte(s) Arsenic Zinc Total Phosphous as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1	Sample ID TP30_0.0-0.1_2506/13 TP30_0.0-0.1_2506/13 TP26_0.5-0.6_2506/13 Duplicate ID QC100 QC101	aboratory Duplicates (LD) / RPD of arcenic (30%) excee RPD of Zinc (30.7%) excee RPD of Total Phosphorus as All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs were within the LO	Analyses Ided LOR base P (27.7%) e S and Envirol Iyses Lead (65%), 2 R based limit	Comment: ed limits (20%). d limits (20%). ceeded LOR based limits (20%). b were within the laboratory control b were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7% 3.	s limits or below the LOR. s) were outside the acceptable control limits.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals /PAH All Total Metals	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1 TP5_0.5-0.6	Sample ID TP30, 0.0.0.1, 2506/13 TP30, 0.0.0.1, 2506/13 TP26, 0.5.0.6, 2506/13 Duplicate ID QC100 QC101 QC102	Aboratory Buplicates (LD) / exceed RPD of arcenic (30%) exceed RPD of a zinc (30.7%) exceed RPD of tail Prosphorus as All other LD results from AL- Field Duplicates (FD) Ana RPDs for Copper (41.2%). All RPDs were within the LC RPDs for Copper (155.1%),	Analyses aded LOR base led LOR base s P (27.7%) e S and Envirol lyses Lead (65%), 2 R based limit Lead (155%)	Comment: ed limits (20%). d limits (20%). ecceded LOR based limits (20%). ib were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7% s. and Manganese (87%) were outside	s limits or below the LOR. s) were outside the acceptable control limits. e the acceptable control limits.		
Analyte Group Total Metals Total Metals Total Metals All Analyte(s) Total Metals /PAH All Total Metals Analyte(s)	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP5_0.5-0.6 Primary ID	Sample ID TP30, 0.0.0.1, 2506/13 TP30, 0.0.0.1, 2506/13 TP26, 0.5.0.6, 2506/13 Duplicate ID OC100 OC100 OC101 OC102 Triplicate ID	Aboratory Buplicates (LD) // RPD of arcenic (30%) exceed RPD of ianc (30.7%) exceed RPD of Tale Phosphonus at All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs were within the LO RPDs for Copper (155.1%), Field Triplicates (FT) Ana	Analyses ided LOR base ided LOR base ided LOR base is P (27.7%) e S and Envirol lyses Lead (65%), 2 R based limit Lead (155%) lyses	Comment: ed limits (20%). d limits (20%). ecceded LOR based limits (20%). ib were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7% s. and Manganese (87%) were outside Comment:	s imits or below the LOR. s were outside the acceptable control limits. e the acceptable control limits.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals /PAH All Total Metals Analyte(s) Total Metals	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1	Sample ID TP30.0-0.1.2506/13 TP30.0-0.1.2506/13 TP26.0-5-0.6.2506/13 Duplicate ID QC100 QC101 QC102 Triplicate ID QC200	Aboratory Buplicates (LD) / RPD of arcenic (30%) excee RPD of tair (30.7%) excee RPD of tair Poosphorus ar- All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs were within the LC RPDs for Copper (15.1%), Field Triplicates (FT) Ana RPDs for Copper (37.7%),	Analyses ded LOR base led LOR base led LOR base led P (27.7%) ef S and Envirol lyses Lead (65%), 2 Lead (55%) lyses Lead (60.6%)	Comment: ed limits (20%). d limits (20%). eceeded LOR based limits (20%). ib were within the laboratory control comment: inc (95%) and Sum of PAH (67.7% 5. and Manganese (87%) were outside Comment: and Zinc (52.6%) were outside the	s limits or below the LOR. s vere outside the acceptable control limits. e the acceptable control limits. s coeptable control limits.		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals Analyte(s) Total Metals Moisture Content /Total Metals	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1 TP5_0.5-0.6 Primary ID TP26_0.0-0.1 TP26_0.0-0.1	Sample ID TP30, 0.0.1, 2506/13 TP30, 0.0.0, 1, 2506/13 TP26, 0.5.0.6, 2506/13 Duplicate ID QC100 QC101 QC102 Triplicate ID QC201	Aboratory Buplicates (LD) / RPD of arcenic (30%) excee RPD of tair (30.7%) excee RPD of tair Poopshorus a All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs were within the LC RPDs for Copper (155.1%), Field Triplicates (FT) Ana RPDs for Copper (37.7%), RPDs for Copper (37.7%), RPDs for Chromium (51.4%	Analyses ded LOR base ded LOR base ed LOR base s and Envirol lyses Lead (65%), 2 R based limit Lead (155%) lyses Lead (60.6%)), Lead (66.3	Comment: ed limits (20%). d limits (20%). sceeded LOR based limits (20%). b were within the laboratory control Comment: s. and Manganese (87%) were outside and Manganese (87%) were outside the source outside the: (6) and Manganese (9.1%) were outside	s imits or below the LOR. s t text{back} tex		
Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals /PAH All Total Metals Total Metals Moisture Content /Total Metals Total Metals	Analyte(s) Arsenic Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1 TP5_0.5-0.6 TP25_0.0-0.1 TP5_0.5-0.6 TP5_0.5-0.6	Sample ID TP30, 0.0.1, 2506/13 TP30, 0.0.0, 1, 2506/13 TP26, 0.5.0.6, 2506/13 Duplicate ID QC100 QC101 QC102 Triplicate ID QC201 QC201	Aboratory Buplicates (LD) / RPD of arcenic (30%) excee RPD of rarce (30.7%) excee RPD of trait Phosphorus as All other LD results from AL- Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs for Copper (41.2%), Field Triplicates (FT) Ana RPDs for Copper (35.1%), RPDs for Copper (37.7%), RPDs for Copper (37.7%), RPDs for Chromium (51.4%)	Analyses ded LOR base s P (27.7%) e S and Envirol lyses Lead (65%), 2 R based limit Lead (155%) lyses Lead (60.6%)), Lead (66.3	Comment: ed limits (20%). d limits (20%). eceeded LOR based limits (20%). b were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7% s. and Manganese (87%) were outside the outside the s() and Manganese (39.1%) were out Side the Side (39.1%) were outside the s() and Manganese (39.1%) were outside	s imits or below the LOR. s u were outside the acceptable control limits. s the acceptable control limits. s compatible control limits. tistide the acceptable control limits.		
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Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals Total Phosphorus as P All Total Metals Autory TPH(V)/BTEX Surrogates TPH(V)/BTEX Surrogates Stated by ALS: Poor precision As stated by ALS: Poor precision Surrogate recovery for copper, Surrogate recovery for 4-Brondh LD RPDS for Arsenic, Zinc and T batch. High RPD results were observed will bu used for reporting purpose High RPD results were observed not expected to affect the quality This batch has been validated an	Analyte(s) Arsenic Zinc Zinc Zinc Total Phosphous as P Primary ID TP25_0.0-0.1 TP25_0.0-0.1 TP25_0.0-0.1 TP25_0.0-0.1 TP25_0.0-0.1 TP25_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1 TP5_0.5-0.6 Sample ID 4-Bromofluorobenzene to viny tiles should be confirmed by an procedures and methods used for the id Abstrose weight and percemages are no and poor spike recovery was obtained fo vas obtained for Lead on sample TP30_ v NitrikeNOx analysis on various samples precision due to sample heterogeneity. C angarese (10 mg/kg, 12 mg/kg and 8 mg/ iton was just slightly above the LOR and 4, C6 - C9 Fraction, C6 - C10 Fraction, me and poor spike the LOR and 4, C6 - C9 Fraction, C6 - C10 Fraction, me if to total metals and between the primary/ data of this batch. As a conservative mea d is considered suitable for environmental	Sample ID TB30_0-0-01_2506/13 TP30_0-0-01_2506/13 TP20_0-0-06_2506/13 TP20_0-0-06_2506/13 TP20_0-0-06_2506/13 Duplicate ID OC100 OC100 OC101 OC102 Triplicate ID OC200 OC201 O	Aboratory Buplicates (LD) / RPD of arcenic (30%) excee RPD of cal mic (30.7%) excee RPD of tal Prob (2000) and (2000) RPD of tal Prob (2000) and (2000) RPDs for Copper (41.2%), All other LD results from AL- Field Duplicates (FD) Ana RPDs for Copper (41.2%), RPDs for Copper (41.2%), RPDs for Copper (155.1%), RPDs for Copper (37.7%), RPDs for C	Analyses wided LOR base led LOR base a P (27.7%) et S and Envirol lyses Lead (65%), j. R based limit Lead (55%) lyses Lead (55%) lyses Lead (60.6%)), Lead (66.3 Lead (55%) g Analyses a PT3_0.0-0. B64-2004 and percentages nate and show we been confi and reanalysi lowever, as it rrol limits, it is ackground let packground le	Comment: ed limits (20%). d limits (20%). limits (20%). b were within the laboratory control Comment: inc (95%) and Sum of PAH (67.7%) s. and Manganese (87%) were outside and Zinc (52.6%) were outside the (3) and Manganese (87%) were outside the (4) and Manganese (39.1%) were outside and Zinc (52.6%) were outside the (3) and Manganese (39.1%) were outside the requirements of the 2011 NEPI A substitution of the			
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Analyte Group Total Metals Total Metals Total Phosphorus as P All Analyte(s) Total Metals/PAH All Total Metals/PAH All Total Metals/PAH All Total Metals/PAH All Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Total Metals Analyte (s) Total Metals Total Metals Total Metals Total Metals Analyte (s) Total Metals Total Metals Analyte (s) Total Metals Total Metals Total Metals Analyte (s) Total Metals Analyte (s) Total Metals Total Metals Analyte Group TPH(V)/BTEX Surrogates As stated by ALS: Rogative resul As stated by ALS: Poor precisior As state as possible treeovery for 4-Brond ID BreDs for Arsence, Znc an 1 bach. DreD as ut	Analyte(s) Arsenic Zinc Zinc Zinc Total Phosphorus as P Primary ID TP25_0.0-0.1 TP8_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1 TP5_0.5-0.6 Primary ID TP25_0.0-0.1 TP5_0.5-0.6 Primary ID TP5_0.5-0.6 Sample ID 4-Bronofluoroberzene use obtained for Lead on sample states and methods used for the id Abestos weight and percentages are no assed on the NEPM default Abestos conto and poor spike recovery was obtained for use obtained for Lead on sample IPD vas obtained for Lead on sample FP30, r Nitrite/NOX analysis on various samples gradition was just alightly above the LOR and ; C6 - OS Fraction, C8 - C10 Fraction, me luorobenzene in sample TP30, 0-0.1 If ot total metals and sum of PAHs betweek a an analyte in terms of all the data validat han the LOR for both primary and dupicat Olga Bukhteeva	Sample ID TB30_0-0-01_2506/13 TP30_0-0-01_2506/13 TP26_0-5-0.6_2506/13 TP26_0-5-0.6_2506/13 TP26_0-5-0.6_2506/13 DUplicate ID OC100 OC100 OC100 OC100 OC200 OC201 OC200 OC201 OC200 OC201 OC200 OC201 OC200 Surror Surrogate recovery of 4-Bromofluc All other surrogates were within th independent analytical technique. entilication and quantitation of asbe to covered under the Scope of NATT enti In ACM. All numerical results u r some elements on sample TP30_ O-0-1_2506/13. Results have be due to sample matrix. Confirmed by re-extraction and re-an kg/which could be to sight ore-all other OSC (RB, MB, LCS, LD) w ta-8 para-Xylene and otho-Xylene D0/13 was less than the lower data IO-0-1_2506/13 and TP26_0.5-0.1 in the primary/duplicate samples TP triplicates samples TP25_O-0.1/C sure the highest value will be used to I interpretive use. In on variables and only the exceedan extriplicate results, no RPDs are ca	aboratory Buplicates (LD) / RPD of arcenic (30%) excee RPD of ianc (30.7%) excee RPD of ianc (30.7%) excee RPD of Tal Phosphone at All other LD results from AL: Field Duplicates (FD) Ana RPDs for Copper (41.2%), All RPDs were within the LC RPDs for Copper (155.1%), Field Triplicates (FT) Ana RPDs for Copper (155.1%), RPDs for Copper (37.7%), RPDs for Copper (37.7%),	Analyses ded LOR bases ided LOR bases is P (27.7%) e S and Envirol tyses Lead (65%), j. Ke based limits Lead (55%), j. Lead (66.3%) j. Lead (66.3%) j. Lead (66.3%) ig Analyses a TP3_0.0-0. 964-2004 and percentages nate and show ve been confi and reanalysi 40 wever, as It ackground le spected to aff di limits. This primary/duplic in this form. Reviewed	Comment: ed limits (20%). ceeded LOR based limits (20%). b were within the laboratory control Comment: linc (95%) and Sum of PAH (67.7% a. and Manganese (87%) were outsid and Zinc (52.6%) were outsid and Manganese (87%) were outsid and Zinc (52.6%) were outsid and Zinc (52.6%) were outsid and Zinc (52.6%) were outsid and Manganese (87%) were outsid and Manganese (87%) were outsid and Manganese (87%) were outsid and Manganese (87%) were outsid and Xinc (52.6%) were outsid and Manganese (87%) were outsid and Manganese (87%) were outsid (52.6%) were outsid (52.6%) were outsid and Manganese (87%) were outsid (52.6%) were outsi			

PKC - Phase II Primary School Port Kembla Duplicate Analysis RPDs Golder Project No. 137623033 Batches ES1314999 / 93269

Sample ID			TP25_0.0-0.1	QC100	QC200	_	
Sample Type			Primary Sample	Field Duplicate	Field Triplicate		
Date Sampled	11-34		26/06/2013	26/06/2013	26/06/2013	R R	PDs
Analyte	Unit	LOR				Primary vs Duplicate	Primary vs Triplicate
lotal Metals		5	40	7	<u>^</u>	25.20/	F0.0%
Arsenic	mg/kg	5	10	1	6	35.3%	50.0%
Chromium	mg/kg	2	0	6	2.4	40.0%	22.2%
Copper	mg/kg	5	9 701	521	540	40.0%	37.7%
Iron	mg/kg	50	12000	521	-	41.270	51.1 /6
Lead	ma/ka	5	243	124	130	64 9%	60.6%
Manganese	mg/kg	5	296	319	360	7.5%	19.5%
Mercury	mg/kg	0.1	0.2	0.1	0.1	66.7%	66.7%
Nickel	mg/kg	2	12	10	9	18.2%	28.6%
Selenium	ma/ka	5	<5	<5	3	ND	ND
Zinc	ma/ka	5	514	190	300	92.0%	52.6%
Total Petroleum Hydrocarbons	g/.tg	0			000	02.070	021070
C6 - C9 Fraction	ma/ka	10	<10	<10	<25	ND	ND
C10 - C14 Fraction	mg/kg	50	<50	<50	<50	ND	ND
C15 - C28 Fraction	ma/ka	100	360	550	<100	41.8%	ND
C29 - C36 Fraction	mg/kg	100	180	240	<100	28.6%	ND
C10 - C36 Fraction (sum)	mg/kg	50	540	790	-	37.6%	-
Total Recoverable Hydrocarbons - NE	PM 2010 Dr	aft					
C6 - C10 Fraction	mg/kg	10	<10	<10	<25	ND	ND
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	<10	<10	<25	ND	ND
>C10 - C16 Fraction	mg/kg	50	<50	<50	<50	ND	ND
>C16 - C34 Fraction	mg/kg	100	480	700	100	37.3%	131.0%
>C34 - C40 Fraction	mg/kg	100	<100	110	<100	ND	ND
>C10 - C40 Fraction (sum)	mg/kg	50	480	810	-	51.2%	-
BTEXN							
Benzene	mg/kg	0.2	<0.2	<0.2	<0.2	ND	ND
Toluene	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	<1	ND	ND
meta- & para-Xylene	mg/kg	0.5	<0.5	<0.5	<2	ND	ND
ortho-Xylene	mg/kg	0.5	<0.5	<0.5	<1	ND	ND
Total Xylenes	mg/kg	0.5	<0.5	<0.5	-	ND	-
Sum of BTEX	mg/kg	0.2	<0.2	<0.2	-	ND	-
Naphthalene	mg/kg	1	<1	<1	<1	ND	ND
Organochlorine Pesticides (OC)							
alpha-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Hexachlorobenzene (HCB)	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
beta-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
gamma-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
delta-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Heptachlor	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Aldrin	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Total Chlordane (sum)	mg/kg	0.05	<0.05	<0.05	-	ND	-
trans-Chlordane	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
alpha-Endosulfan	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
cis-Chlordane	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Dieldrin	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
4.4`-DDE	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
beta-Endosulfan	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Endosulfan (sum)	mg/kg	0.05	<0.05	<0.05	-	ND	-
4.4`-DDD	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Endosulfan sulfate	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
4.4`-DDT	mg/kg	0.2	<0.2	<0.2	<0.1	ND	ND
Endrin ketone	mg/kg	0.05	<0.05	<0.05	-	ND	-
Methoxychlor	mg/kg	0.2	<0.2	<0.2	<0.1	ND	ND
Sum of Aldrin + Dieldrin	mg/kg	0.05	<0.05	<0.05	-	ND	-
Sum of DDD + DDE + DDT	mg/kg	0.05	<0.05	<0.05	-	ND	-
Organophosphorus Pesticides (OP)		0.05	0.05	0.05		ND	
Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	-		-
Monocrotophos	mg/kg	0.00	~0.00	<0.00 ~0.0	-		
Dimethoate	ma/ka	0.2	<0.2 >0.05	<0.2 <0.05		ND	- ND
Diazinon	ma/ka	0.05	~0.05	<0.00	~0.1	ND	ND
Chlorpyrifos-methyl	ma/ka	0.05	<0.03	<0.05	-0.1 -0.1	ND	ND
Parathion-methyl	ma/ka	0.2	<0.00	<0.00	-	ND	-
Malathion	ma/ka	0.05	<0.05	<0.05	-	ND	-
Fenthion	ma/ka	0.05	<0.05	<0.05	-	ND	
Chlorpyrifos	ma/ka	0.05	<0.05	<0.05	-	ND	-
Parathion	ma/ka	0.2	<0.2	<0.2	-	ND	-
Pirimphos-ethyl	ma/ka	0.05	<0.05	<0.05	-	ND	-
Chlorfenvinphos	ma/ka	0.05	<0.05	< 0.05	-	ND	-
Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Fenamiphos	mg/ka	0.05	<0.05	<0.05	-	ND	-
Prothiofos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Ethion	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Carbophenothion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Azinphos Methyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Phenolic Compounds							
Phenol	mg/kg	0.5	<0.5	<0.5	<5	ND	ND
2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2-Methylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
3- & 4-Methylphenol	mg/kg	1	<1	<1		ND	-
2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
4-Chloro-3-Methylphenol	mg/kg	0.5	<0.5	<0.5		ND	-
2.4.6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-

2.4.5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
Pentachlorophenol	mg/kg	2	<2	<2	-	ND	-
Polynuclear Aromatic Hydrocarbons							
Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluorene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Phenanthrene	mg/kg	0.5	1.8	3.2	0.4	56.0%	127.3%
Anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluoranthene	mg/kg	0.5	0.5	0.9	0.1	57.1%	133.3%
Pyrene	mg/kg	0.5	0.8	1.4	0.1	54.5%	155.6%
Benz(a)anthracene	mg/kg	0.5	<0.5	0.7	0.1	ND	ND
Chrysene	mg/kg	0.5	1.2	2	0.2	50.0%	142.9%
Benzo(b)fluoranthene	mg/kg	0.5	<0.5	0.5	-	ND	-
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	-	ND	-
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	0.05	ND	ND
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Dibenz(a.h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benzo(g.h.i)perylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	4.3	8.7	1	67.7%	124.5%
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ammonia as N	mg/kg	20	<20	<20	-	ND	-

Legend ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR) - = not analysed Acceptable RPDs: RPD <= 30% PDP = 20%

RPD <= 30% RPD > 30%, Analyis result < 10 times LOR RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

PKC - Phase II Primary School Port Kembla Duplicate Analysis RPDs Golder Project No. 137623033 Batches ES1314999 / 93269

Sample ID			TP8_0.0-0.1	QC101	QC201	_	
Sample Type			Primary Sample	Field Duplicate	Field Triplicate		
Date Sampled	11-34	1.00	26/06/2013	26/06/2013	26/06/2013	R	PDs
Analyte	Unit	LOR			-	Primary vs Duplicate	Primary vs Triplicate
lotal Metals		5	44	44	04	7.40/	C4 E0/
Arsenic	mg/kg	5	41	44	21	7.1%	64.5%
Chromium	mg/kg	2	10	14	1.3	33.3%	51.2%
Copper	mg/kg	5	22	1760	1800	25.7%	23.5%
Iron	mg/kg	50	38500	1700	1000	23.170	
Lead	mg/kg	5	677	628	340	7.5%	66.3%
Manganese	mg/kg	5	609	492	410	21.3%	39.1%
Mercury	mg/kg	0.1	0.3	0.4	0.6	28.6%	66.7%
Nickel	mg/kg	2	12	12	12	0.0%	0.0%
Selenium	ma/ka	5	<5	<5	4	ND	ND
Zinc	ma/ka	5	397	529	360	28.5%	9.8%
Total Petroleum Hydrocarbons		-					
C6 - C9 Fraction	ma/ka	10	<10	<10	<25	ND	ND
C10 - C14 Fraction	ma/ka	50	<50	<50	<50	ND	ND
C15 - C28 Fraction	ma/ka	100	<100	<100	<100	ND	ND
C29 - C36 Fraction	mg/kg	100	<100	<100	<100	ND	ND
C10 - C36 Fraction (sum)	mg/kg	50	<50	<50	-	ND	-
Total Recoverable Hydrocarbons - NE	PM 2010 Dr	aft					
C6 - C10 Fraction	mg/kg	10	<10	<10	<25	ND	ND
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	<10	<10	<25	ND	ND
>C10 - C16 Fraction	mg/kg	50	<50	<50	<50	ND	ND
>C16 - C34 Fraction	mg/kg	100	<100	<100	<100	ND	ND
>C34 - C40 Fraction	mg/kg	100	<100	<100	<100	ND	ND
>C10 - C40 Fraction (sum)	mg/kg	50	<50	<50	-	ND	-
BTEXN							
Benzene	mg/kg	0.2	<0.2	<0.2	<0.2	ND	ND
Toluene	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ethylbenzene	mg/kg	0.5	<0.5	<0.5	<1	ND	ND
meta- & para-Xylene	mg/kg	0.5	<0.5	<0.5	<2	ND	ND
ortho-Xylene	mg/ka	0.5	<0.5	<0.5	<1	ND	ND
Total Xylenes	mg/kg	0.5	<0.5	<0.5	-	ND	-
Sum of BTEX	mg/kg	0.2	<0.2	<0.2	-	ND	-
Naphthalene	mg/kg	1	<1	<1	<1	ND	ND
Organochlorine Pesticides (OC)							
alpha-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Hexachlorobenzene (HCB)	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
beta-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
gamma-BHC	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
delta-BHC	mg/kg	0.05	<0.05	< 0.05	<0.1	ND	ND
Heptachlor	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Aldrin	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Total Chlordane (sum)	ma/ka	0.05	<0.05	<0.05	-	ND	-
trans-Chlordane	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
alpha-Endosulfan	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
cis-Chlordane	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
Dieldrin	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
4.4`-DDE	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
beta-Endosulfan	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endosulfan (sum)	ma/ka	0.05	<0.05	<0.05	-	ND	-
4.4`-DDD	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin aldehvde	ma/ka	0.05	< 0.05	<0.05	<0.1	ND	ND
Endosulfan sulfate	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
4.4`-DDT	ma/ka	0.2	<0.2	<0.2	<0.1	ND	ND
Endrin ketone	mg/kg	0.05	<0.05	<0.05	-	ND	-
Methoxychlor	mg/kg	0.2	<0.2	<0.2	<0.1	ND	ND
Sum of Aldrin + Dieldrin	mg/kg	0.05	<0.05	<0.05	-	ND	-
Sum of DDD + DDE + DDT	mg/kg	0.05	<0.05	<0.05	-	ND	-
Organophosphorus Pesticides (OP)							
Dichlorvos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Monocrotophos	mg/kg	0.2	<0.2	<0.2	-	ND	-
Dimethoate	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Diazinon	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Chlorpyrifos-methyl	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Parathion-methyl	mg/kg	0.2	<0.2	<0.2	-	ND	-
Malathion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Fenthion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Chlorpyrifos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Parathion	mg/kg	0.2	<0.2	<0.2	-	ND	-
Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Chlorfenvinphos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Fenamiphos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Prothiofos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Ethion	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Carbophenothion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Azinphos Methyl	mg/kg	0.05	<0.05	<0.05	-	ND	
Phenolic Compounds							
Phenol	mg/kg	0.5	<0.5	<0.5	<5	ND	ND
2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2-Methylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
3- & 4-Methylphenol	mg/kg	1	<1	<1	-	ND	-
2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
4-Chloro-3-Methylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4.6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-

2.4.5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
Pentachlorophenol	mg/kg	2	<2	<2	-	ND	-
Polynuclear Aromatic Hydrocarbons							
Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluorene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Phenanthrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Pyrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Chrysene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benzo(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	-	ND	-
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5	-	ND	-
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	<0.05	ND	ND
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Dibenz(a.h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benzo(g.h.i)perylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	<0.5	<0.5	ND	ND	ND
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ammonia as N	mg/kg	20	<20	<20	-	ND	-

Legend ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR) - = not analysed Acceptable RPDs: RPD <= 30% PDP = 20%

RPD <= 30% RPD > 30%, Analyis result < 10 times LOR RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

PKC - Phase II Primary School Port Kembla Duplicate Analysis RPDs Golder Project No. 137623033 Batches ES1314999 / 93269

Sample ID			TP5_0.5-0.6	QC102	QC202	_	
Sample Type			Primary Sample	Field Duplicate	Field Triplicate		
Date Sampled	11-24		27/06/2013	27/06/2013	27/06/2013	R	PDs
Analyte	Unit	LOR				Primary vs Duplicate	Primary vs Triplicate
Total Metals			00		7	4.47.40/	400.00/
Arsenic	mg/kg	5	33	<5	1	147.4%	130.0%
Cadmium	mg/kg	1	4	4	1.9	0.0%	/1.2%
Copper	mg/kg	5	15	50	130	0.0%	47.0%
Iron	mg/kg	50	407		130	155.176	112.3/0
Lead	mg/kg	5	71	Q	- 17	155.0%	122 7%
Manganese	mg/kg	5	94	37	28	87.0%	108.2%
Manganese	mg/kg	0.1	<01	<0.1	<u></u>	ND	ND
Nickel	mg/kg	2	6	5	3	18.2%	66.7%
Selenium	mg/kg	5	<5	<5		ND	ND
Zinc	mg/kg	5	112	104	40	7.4%	94.7%
Total Petroleum Hydrocarbons	g/.tg	0			10	,0	• ,
C6 - C9 Fraction	ma/ka	10	<10	<10	<25	ND	ND
C10 - C14 Fraction	mg/kg	50	<50	<50	<50	ND	ND
C15 - C28 Fraction	ma/ka	100	<100	<100	<100	ND	ND
C29 - C36 Fraction	ma/ka	100	<100	<100	<100	ND	ND
C10 - C36 Fraction (sum)	ma/ka	50	<50	<50	-	ND	-
Total Recoverable Hydrocarbons - NE	PM 2010 Dr	aft					
C6 - C10 Fraction	mg/kg	10	<10	<10	<25	ND	ND
C6 - C10 Fraction minus BTEX (F1)	mg/kg	10	<10	<10	<25	ND	ND
>C10 - C16 Fraction	mg/kg	50	<50	<50	<50	ND	ND
>C16 - C34 Fraction	mg/kg	100	<100	<100	<100	ND	ND
>C34 - C40 Fraction	mg/ka	100	<100	<100	<100	ND	ND
>C10 - C40 Fraction (sum)	mg/kg	50	<50	<50	-	ND	-
BTEXN							
Benzene	ma/ka	0.2	<0.2	<0.2	<0.2	ND	ND
Toluene	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ethylbenzene	ma/ka	0.5	<0.5	<0.5	<1	ND	ND
meta- & para-Xvlene	ma/ka	0.5	<0.5	<0.5	<2	ND	ND
ortho-Xylene	ma/ka	0.5	<0.5	<0.5	<1	ND	ND
Total Xylenes	ma/ka	0.5	<0.5	<0.5	-	ND	-
Sum of BTEX	ma/ka	0.2	<0.2	<0.2	-	ND	- 1
Naphthalene	ma/ka	1	<1	<1	<1	ND	ND
Organochlorine Pesticides (OC)		-					
alpha-BHC	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Hexachlorobenzene (HCB)	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
beta-BHC	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
gamma-BHC	ma/ka	0.05	< 0.05	<0.05	<0.1	ND	ND
delta-BHC	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
Heptachlor	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
Aldrin	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Heptachlor epoxide	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Total Chlordane (sum)	ma/ka	0.05	<0.05	<0.05	-	ND	-
trans-Chlordane	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
alpha-Endosulfan	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
cis-Chlordane	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Dieldrin	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
4 4`-DDF	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
beta-Endosulfan	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endosulfan (sum)	ma/ka	0.05	<0.05	<0.05	-	ND	-
4.4`-DDD	ma/ka	0.05	<0.05	<0.05	<0.1	ND	ND
Endrin aldehvde	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
Endosulfan sulfate	ma/ka	0.05	<0.05	< 0.05	<0.1	ND	ND
4.4`-DDT	ma/ka	0.2	<0.2	<0.2	<0.1	ND	ND
Endrin ketone	ma/ka	0.05	<0.05	<0.05	_	ND	-
Methoxychlor	mg/kg	0.2	<0.2	<0.2	<0.1	ND	ND
Sum of Aldrin + Dieldrin	mg/kg	0.05	<0.05	<0.05	-	ND	-
Sum of DDD + DDE + DDT	mg/kg	0.05	<0.05	< 0.05	-	ND	-
Organophosphorus Pesticides (OP)							
Dichlorvos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Demeton-S-methyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Monocrotophos	mg/kg	0.2	<0.2	<0.2	-	ND	-
Dimethoate	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Diazinon	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Chlorpyrifos-methyl	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Parathion-methyl	mg/kg	0.2	<0.2	<0.2	-	ND	-
Malathion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Fenthion	mg/kg	0.05	<0.05	<0.05	-	ND	-
Chlorpyrifos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Parathion	mg/kg	0.2	<0.2	<0.2	-	ND	-
Pirimphos-ethyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Chlorfenvinphos	mg/kg	0.05	<0.05	<0.05		ND	-
Bromophos-ethyl	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Fenamiphos	mg/kg	0.05	<0.05	<0.05		ND	-
Prothiofos	mg/kg	0.05	<0.05	<0.05	-	ND	-
Ethion	mg/kg	0.05	<0.05	<0.05	<0.1	ND	ND
Carbophenothion	mg/kg	0.05	<0.05	<0.05		ND	-
Azinphos Methyl	mg/kg	0.05	<0.05	<0.05	-	ND	-
Phenolic Compounds							
Phenol	mg/kg	0.5	<0.5	<0.5	<5	ND	ND
2-Chlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2-Methylphenol	mg/kg	0.5	<0.5	<0.5		ND	-
3- & 4-Methylphenol	mg/kg	1	<1	<1	-	ND	-
2-Nitrophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dimethylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4-Dichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.6-Dichlorophenol	mg/kg	0.5	<0.5	<0.5		ND	-
4-Chloro-3-Methylphenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
2.4.6-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	

2.4.5-Trichlorophenol	mg/kg	0.5	<0.5	<0.5	-	ND	-
Pentachlorophenol	mg/kg	2	<2	<2	-	ND	-
Polynuclear Aromatic Hydrocarbons							
Naphthalene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Acenaphthene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluorene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Phenanthrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Fluoranthene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Pyrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benz(a)anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Chrysene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benzo(b)fluoranthene	mg/kg	0.5	<0.5	<0.5	-	ND	-
Benzo(k)fluoranthene	mg/kg	0.5	<0.5	<0.5		ND	-
Benzo(a)pyrene	mg/kg	0.5	<0.5	<0.5	<0.05	ND	ND
Indeno(1.2.3.cd)pyrene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Dibenz(a.h)anthracene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Benzo(g.h.i)perylene	mg/kg	0.5	<0.5	<0.5	<0.1	ND	ND
Sum of polycyclic aromatic hydrocarbons	mg/kg	0.5	<0.5	<0.5	ND	ND	ND
Benzo(a)pyrene TEQ (WHO)	mg/kg	0.5	<0.5	<0.5	<0.5	ND	ND
Ammonia as N	mg/kg	20	<20	<20	-	ND	-

Legend ND = Not Detected (RPDs not calculated if both primary and duplicate results are below LOR) - = not analysed Acceptable RPDs: RPD <= 30% PDP = 20%

RPD <= 30% RPD > 30%, Analyis result < 10 times LOR RPD <= 50%, Analysis result > 10 times LOR and < 20 times LOR

No.			DA		TION SUMMARY SHEET (Sydney)		
Project Name:		PKC - Phase II Pri	marv School Port Kembla		Project Number:	127622029	
Project Name: FRG - Pridse II Pril					Project Number:	13/623028 ES1222002	
Secondary Laboratory:			NA		Workorder Number:	E31322093	
Date Sampled:		9	/10/2013		Sample Medium:	Soil	
Date Gampied.			Sample Information			001	
Number of Primary Samples:		12	oumpio information	Number of T	riplicate Samples:	0	
Number of Duplicate Samples:		0		Number of C	ther QAQC Samples:	0	
		Docume	ntation and Sample Handli	ing Informati	on		
		Dodano	Y/N	ginoritati	с. С	omments	
COC completed properly?			Y		Signed for field scientist and laboratory persor	nnel. Email correspondence.	
All requested analysis completed	1?		Y				
Samples received intact and chill	led?		Y ALS: 8.6'C - Ice present.				
Samples analysed within approp	iate holding times?		Y		All		
Sample volumes sufficient for Q	C analysis?		Y				
	Check check		v		ALS is not NATA accredited for the analysis of	f Bifenthrin in soils when performed under ALS Method	
Are there non-INATA accredited i	nethods used?		T		EP068D.		
Chromatograms supplied as app	propriate?		N/A				
Laboratory reports signed by aut	horised personnel?		Y				
	Q	AQC Sample Information (Metho	d Blank - MB, Rinsate Blar	nk - RB, Field	Blank - FB, Trip Blank - TB)		
Туре	Sample	ID			Comments		
MB	Method Bl	ank	All results less than LOR.				
		1	Trip Spike Informatio	n			
Analyte	Snike Concentrations	Recovery Conc	entration	% Recovery	c	comments	
, unaryto	opino consona anone			,,			
N/A	N/A	N/A		N/A	No trip spike s	ubmitted for this batch.	
		Lab	oratory Control Spike (LCS	6) Analyses			
Ana	alyte Group				Comments		
	All (ALS)	LCS ALS recoveries were within the	he laboratory recovery control	ol limits.			
			Matrix Spike (MS) Analy	/\$85			
Ana	alvte Group		matrix opino (mo) / mai		Comments		
To	sample BH4-0.4-09/10/13 were greater than upper data guality objective (130%).						
Total P	hosphorus as P	MS recovery of Total Phosphorus	as P (59.9%) in sample BH	4-0.4-09/10/13	were less than lower data quality objective (7)	0%).	
	All	All other MS recoveries from ALS	were within the laboratory of	ontrol limits.			
		Laboratory Duplicates (LD) Analyses					
Analyte Group	Analyte(s)	Sample ID	555 / //F 64/		Comments		
Total Metals	Manganese	BH5-1.0-09/10/13	אין provide the second contract of the secon				
All			All other LD results from AL	S were within	the laboratory control limits or below the LOR.		
·			Field Duplicates (FD) Ana	alyses			
Analyte(s)	Primary ID	Duplicate ID			Comments		
			No field duplicates were tak	en for this bat	ch.		
			Field Triplicates (FT) Ana	lyses			
Analyte(s)	Brimary ID	Triplicate ID			Comments		
Analyte(s)	Filliary ID	Triplicate ib	No field triplicates were take	n for this hat	Comments		
			no neio triplicates were take	en lor unis dau	я.		
		0					
Analysis Onesis	O-mula ID	Surro	ogate Compound Monitorii	ng Analyses	0		
Analyte Group	Sample ID	All surrogate recoveries were with	in the acceptance control lin	ait	Comments		
		Air surrogate recoveries were with					
			Overall Commente				
			Overall Comments				
As stated by ALS: Poor matrix sr	pike recovery was obtained for Copper or	sample BH4-0.4-09/10/13. Result	s have been confirmed by re	-extraction an	d reanalysis.		
As stated by ALS: Poor precision	n was obtained for Manganese on sampl	e BH5-1.0-09/10/13 due to sample	heterogeneity. Results have	been confirm	ed by re-extraction and reanalysis.		
e cause y new receip process are examine to management of the receiption in our or cample intercogeneity. Results have been cultimitied by refexitation and realizions.							
AS SIGIED BY ALS. LOR IGISED IC		ious samples que lo sample main					
As stated by ALS: Spike failed for	or Total P analysis due to matrix interfere	ences (Confirmed by re-digestion a	nd re-analysis).				
LD RPD for Manganese in samp	le BH5-1.0-09/10/13 exceed LOR based	limits. This is likely due to sample I	heterogeneity in soil samples	s. This is not	expected to affect the validity of this batch.		
This batch has been velideted	nd is considered suitchis for environment	al interpretivo uno					
mis patch has been validated an	iu is considered suitable for environment	ai merpretive use.					
Note: Data validation assesses e	ach analyte in terms of all the data valida	ation variables and only the exceed	lances and outliers are repor	ted in this forr	n.		
when concentrations are less th	nan the LOR for both primary and duplica	ate/triplicate results, no RPDs are c	aculated				
Performed By:	Olga Bukhteeva			Reviewed P	v: Carolina Olmos		
Date:	31/10/2013			Date:	2/11/2013		







PID Calibration Certificate

Instrument PhoCheck Tiger Serial No. T-105869



Air-Met Scientific Pty Ltd 1300 137 067

Item	Test	Pass			Comment	S
Battery	Charge Condition	1				
	Fuses	1				
	Capacity	1				
	Recharge OK?	1				
Switch/keypad	Operation	1				
Display	Intensity	1				
	Operation (segments)	1				
Grill Filter	Condition	1				
	Seal	1				
Pump	Operation	1				
	Filter	1				
	Flow	1				
N-31	Valves, Diaphragm	1				
PCB	Condition	1				
Connectors	Condition	1				
Sensor	PID	1	10.6 ev			
Alarms	Beeper	1	Low	High	TWA	STEL
	Settings	1	50ppm	100ppm		
Software	Version	1				
Data logger	Operation	1				
Download	Operation	1				
Other tests:						

Certificate of Calibration

This is to certify that the above instrument has been calibrated to the following specifications:

Sensor	Serial no	Calibration gas and concentration	Certified	Gas bottle No	Instrument Reading
PID Lamp		100ppm Isobutylene	NIST	SY21	100.4ppm
Calibrated by:		SB	_Sophie Bol	er	
Calibration date	e:	8/10/2013			

Next calibration due:

7/11/2013



APPENDIX G Limitations





LIMITATIONS

This Document has been provided by Golder Associates Pty Ltd ("Golder") subject to the following limitations:

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Africa Asia Australasia Europe North America South America + 27 11 254 4800 + 86 21 6258 5522 + 61 3 8862 3500 + 356 21 42 30 20 + 1 800 275 3281 + 55 21 3095 9500

solutions@golder.com www.golder.com

Golder Associates Pty Ltd 124 Pacific Highway St. Leonards New South Wales 2065 Australia T: +61 2 9478 3900

