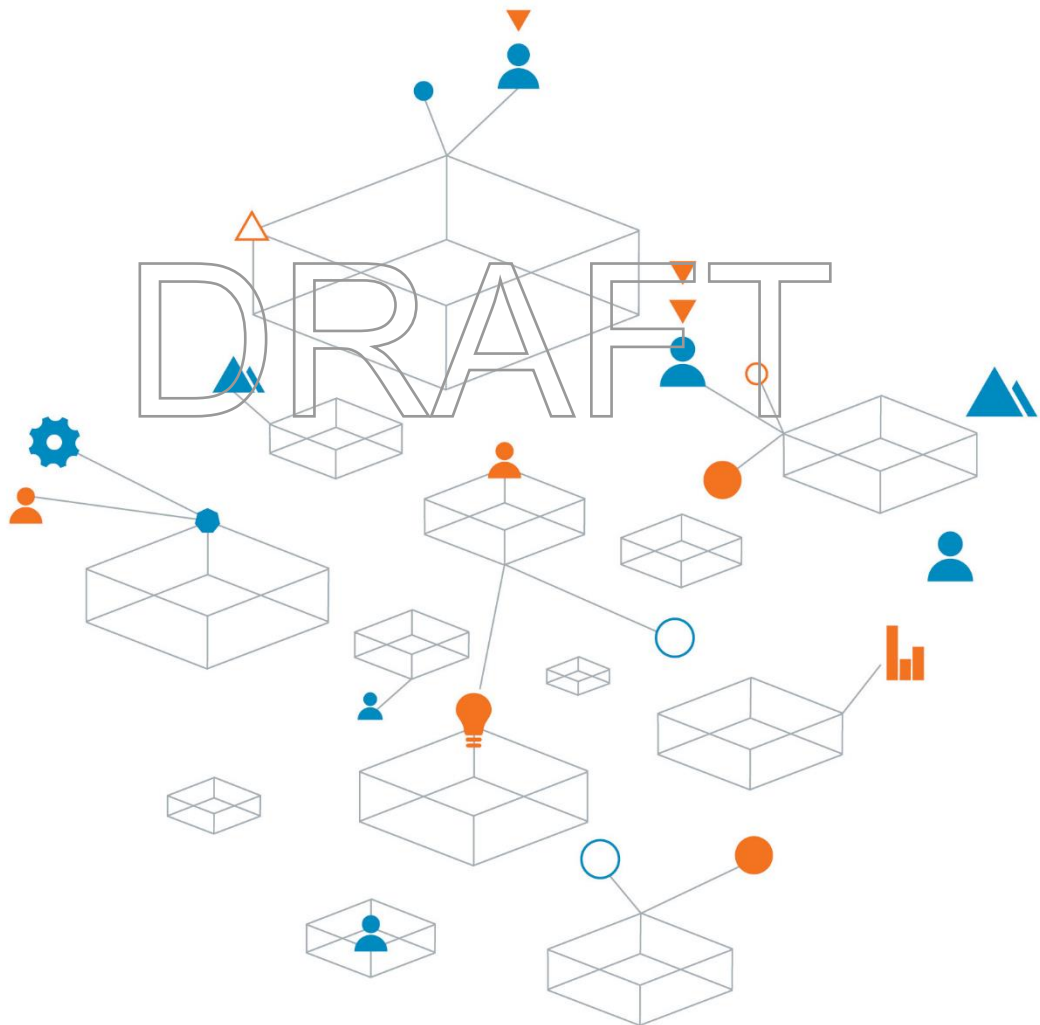


**The Council of the City of Sydney  
Sydney Park Mitigation Works, Preliminary Environment Site  
Assessment  
754-SYDEN282211-R01**

14 April 2021



Trust is the  
cornerstone  
of all our  
projects

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# Executive Summary

City of Sydney (CoS) engaged Coffey Services Australia Pty Ltd (Coffey) to carry out a Preliminary Environmental Site Assessment (PESA) at five proposed mitigation work areas (Areas 1 to 5) in the eastern portion of Sydney Park, St Peters, NSW (the site).

Transport for NSW (TfNSW) recently acquired portions of Sydney Park as part of the WestConnex project, to accommodate for the recently completed road widening of Euston (to the east), Campbell (to the south) and Sydney Park Roads (to the north of the site). To mitigate the impact of the road widening works to Sydney Park, CoS is planning to undertake civil works within the eastern portion of the park (in Areas 1 to 5) to reconfigure pathways, install retaining walls and steps, regrade levels to implement new footpaths and upgrade existing carparks. Replacement tree and landscape planting will also be required. CoS is also planning the reconstruction and relocation of demolished buildings and utilities, including public amenities buildings which were impacted by the widening.

The PESA identified the following:

- The site was formerly occupied by a brickworks and quarry facility between 1860 and 1948, with the quarried areas later used for landfilling. The landfill areas were gradually capped and converted to recreational park space forming Sydney Park in the early 1990s.
- The proposed work areas (Areas 1 to 5) appear to be located outside the footprints of the landfilled quarries based on aerial photography records.
- The soil materials encountered in the boreholes within Areas 1 to 5 were mixtures of topsoil/fill, generally comprising predominantly silty SAND (potentially topsoil fill) or gravelly SAND (potentially crushed sandstone fill). Putrescible garbage waste was not encountered with the exception of minor plastic pieces and clothes at BH110.
- Hydrocarbons odours were noted in subsurface soils in three boreholes in Area 1 and Area 4.
- Various soil samples across the proposed work areas exceeded the ecological criteria for heavy metals, benzo(a)pyrene and TRH F3 (C<sub>16</sub>-C<sub>34</sub>). Some of the EIL criteria for metals (chromium, copper, lead, nickel and zinc) were derived based on conservative assumptions. Further assessment of geochemical data at the site may enable the EIL criteria to be adjusted accordingly.
- A number of samples exceeded the human health criteria (HIL-C). These include lead in Area 1 (MW01 and MW02), nickel in Area 4 (BH105), carcinogenic PAH in Area 3 (BH118). These exceedances were generally minor/marginal. Further characterisation is recommended to allow assessment of remediation/management options.
- One sample exceeded the petroleum hydrocarbon management limit in Area 4 (BH108). Based on site observations and the site settings, the likelihood of effects on buried infrastructure, fire and explosive hazards or formation of NAPL is considered to be low.

Based on the findings, Coffey recommends a Remedial Action Plan (RAP) to be prepared to address to above contamination issues identified. The RAP should also incorporate additional testing to further characterise the identified impacts.

This report does not address risks associated with landfill gas (LFG).

# Sydney Park Mitigation Works, Preliminary Environment Site Assessment

Prepared for  
The Council of the City of Sydney

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Appendix D – Bore Logs

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# 1. Introduction

City of Sydney (CoS) engaged Coffey Services Australia Pty Ltd (Coffey) to carry out a Preliminary Environmental Site Assessment (PESA) at five proposed mitigation work areas (Areas 1 to 5) in the eastern portion of Sydney Park, St Peters, NSW (the site).

A site locality plan and a site layout plan are presented in Figures 1 and 2, respectively.

## 1.1. Project Background

Sydney Park was formerly a brickworks site between 1860 and 1948, with a number of shale quarries located across the 44ha site. These quarries were subsequently used for landfilling once quarrying activities ceased during the 1960s and 1970s. Remnants of the brickwork's infrastructure (e.g. chimneys) were retained for historical significance within the north western parts of the wider site. The landfill areas were subsequently converted to recreational open space.

Numerous contamination assessments have been undertaken within the broader Sydney Park site. Recent testing has shown elevated concentrations of methane at the park's perimeter. The site is currently subject to a Voluntary Management Proposal (VMP) approved by NSW EPA in January 2020, outlining how the park will be managed in the future with respect to landfill gas.

Transport for NSW (TfNSW) recently acquired portions of Sydney Park as part of the WestConnex project, to accommodate for the recently completed road widening of Euston (to the east), Campbell (to the south) and Sydney Park Roads (to the north of the site).

To mitigate the impact of the road widening works to Sydney Park, CoS is planning to undertake civil works within the park to reconfigure pathways, install retaining walls and steps, regrade levels to implement new footpaths and upgrade existing carparks. Replacement tree and landscape planting will also be required.

CoS is also planning the reconstruction and relocation of demolished buildings and utilities, including public amenities buildings which were impacted by the widening.

To support the above works, Coffey was engaged to carry out this PESA to assess the contamination status of shallow soils at the proposed work areas (also known as the mitigation areas).

## 1.2. Objectives

To provide contamination information for the proposed works, the objectives of this PESA were to:

- Characterise potential shallow soil contamination at the proposed work areas
- Assess suitability of the proposed work areas with respect to shallow soil contamination
- Recommend remediation and management approach, if required

## 1.3. Scope of Works

To achieve the above objectives, Coffey undertook the following general scope of works:

- Project planning and creation of a site-specific safety plan
- Desktop review of geological and environmental maps, historical and other publicly available information
- Engagement of a service locator to identify and clear proposed investigation locations for underground services
- Field investigations across the proposed work areas, comprising:
  - Drilling 18 soil bores to depths up to 1.5m below ground level (bgl) using push tube methods, for environmental sampling.
  - Drilling two (2) deeper soil bores to depths ranging from 2.9m to 3.2m using auger methods, for environmental sampling, and subsequent conversion to gas monitoring wells (with results of gas monitoring to be reported separately).
- Logging of subsurface conditions and collection of representative soil samples from each borehole for a range of contamination analyses
- Preparation of this PESA Report, comprising factual information from the field investigation, laboratory test results (for soil samples), and provision of recommendations.

## 1.4. Regulatory framework and guidelines

This PESA was carried out in accordance with the relevant sections of the following:

- National Environment Protection Council, National Environment Protection (Assessment of Site Contamination) Measure, 1999 (April 2013) (ASC NEPM 2013).
- NSW Office of Environment and Heritage (OEH), Guidelines for Consultants Reporting on Contaminated Sites, 2011 (OEH 2011).
- NSW Environment Protection Authority (EPA) State Environmental Planning Policy 55 – Remediation of Land (SEPP55), 1998.
- CRC Care Technical Report No. 10, Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, 2011 (CRCCARE 2011)
- Australian Standard (AS) 4482.1, Guide to Investigation and Sampling of Sites with Potentially Contaminated Soil, Part 1: Non-volatile and Semi-volatile Compounds, 2005 (AS 4482.1)
- AS 4482.2, Guide to the Sampling and Investigation of Potentially Contaminated Soil, Part 2: Volatile Substances, 1999 (AS 4482.2)



## 2. Site information

### 2.1. Site definition

Site identification and surrounding land uses are summarised in Table 2.1, below. A site location plan is shown in Figure 1, with a site layout and borehole location plan shown in Figure 2, Appendix A.

Table 2-1 - Site definition summary

Item	Description
Street Address	167-203 Euston Road, Alexandria
Site boundary	Refer Figure 2, Appendix A
District/Division Name	ALEXANDRIA
Total Investigation Area	Approximately 3.5ha (proposed work areas) – in the eastern portion of Sydney Park.
Local Environment Plan	Sydney Local Environmental Plan 2012
Current Zoning	RE1 – Public Recreation
Current Site Use	Sydney Park (Urban Open Space / sports grounds)
Proposed Site Use (overall)	Continued operation of Sydney Park – urban open space / parkland with reconfigured pathways, retaining walls and steps, carparks and new public amenities buildings as outlined above.
Surrounding Land Use	North: Sydney Park Road, residential (medium to high-density)
	East: Euston Road, concrete batch plant (adjoining Areas 3 and 4), commercial and industrial developments
	South: Campbell Road, WestConnex development site.

The proposed work areas are generally located along the eastern boundary of the site, identified as:

- Area 1: Proposed amenities facilities, path and upgrades (approx. 2.1ha)
- Area 2: Proposed stairs, path and retaining wall upgrades (approx. 0.36ha)
- Area 3: Proposed playground and picnic facilities developments (approx. 0.3ha)
- Area 4: Existing carpark area and surrounding verges to be upgraded (approx. 0.06ha)
- Area 5: Proposed revegetation / landscaping area (approx. 0.7ha)

## 2.2. Environmental setting

### 2.2.1. Topography and hydrology

The *Botany Bay 1:25,000 topographical map* (Central Mapping Authority, 1987) indicates that the site lies at an elevation less than 10m above Australian Height Datum (AHD).

An artificial wetland area is located on the in the central-southern portion of Sydney Park, adjacent to the west of Area 1. Surface water is likely to drain across the site, via local depressions and drainages, into this waterway. The topographic map indicates that at its closest point, the site is situated approximately 450m west of Alexandria Canal, which discharges into Botany Bay.

## 2.2.2. Geology and soils

Reference to the 1:100,000 Sydney Geological Map 9130-1 (Chapman et al, 2009) indicates that the site is underlain by silty to peaty quartz sand, silt and clay from marine and estuarine/alluvial origins. The central and western portions of Sydney Park are also mapped as the Ashfield Shale formation, comprising Triassic black to dark grey shale and laminate. It is likely that the majority of the sands and some of the underlying shales were removed during the historical use of the site as a quarry.

The 1:100,000 Sydney Soil Landscape Map (9130, Second Edition) produced by the Soil Conservation Service of NSW (2002) indicates that the site lies within disturbed landscapes where the original soil has been removed.

Previous investigations (outlined in section 3, below) indicated that soil types encountered in the landfill capping during previous investigations varied, and generally comprised sandy and clayey sandy soils across the Sydney Park area.

## 2.2.3. Regional hydrology and groundwater usage

The site is partially underlain by the Botany Sands aquifer, which is vulnerable to contamination due to the permeability of the sands and the generally shallow water table. The Botany Sands aquifer has numerous legacy contamination issues from over 100 years of industrial use.

A search of the Australian Government Bureau of Meteorology (BOM) publicly available groundwater bore records was carried out on 7 April 2021. The search revealed six registered groundwater bores within 500m of the site, typically registered for use as monitoring bores. The depth to groundwater in the wells was not shown, however the records indicate that the wells were installed to depths ranging from 5m to 35m bgl. One well in the south-east corner of Sydney Park (adjacent to Area 2) had been installed to 7m bgl.

Based on the above, groundwater is expected to occur at shallow depths, generally corresponding with surface water levels in the wetlands and waterways within Sydney Park.

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# 3. Site History Review

## 3.1. Data sources

A limited site history review was undertaken as part of this PESA, which was based on the following information sources:

- Select historical aerial photography (spanning from 1954 to 2004).
- New South Wales Environment Protection Authority (NSW EPA) register for listings of the site and nearby sites (including contaminated sites, former gasworks and licensed activities under the Protection of the Environment Operations (POEO) Act 1997).
- Australian (Federal) government databases including searches of Geoscience Australia (GA) National Waste Management Site Database (NWMSD).
- Previous reports for the Sydney Park area, as outlined in Section 3.4 below.

## 3.2. Historical aerial photography

Four (4) historical aerial photographs of the site and surrounding area were reviewed as part of the site history review, covering a period between 1955 and 2004. Table 3.1, below, presents a summary of observations made following a review of the historical aerial photographs. Historical aerial photographs are presented in Appendix D.

Table 3-1 - Summary of historical aerial photographs and site observations

Date	Site observations	General observations – surrounding areas
1955	<ul style="list-style-type: none"> <li>• Large industrial buildings and two large circular buildings (inferred to be tanks or silos) visible throughout the brickworks facility (the area now known as Sydney Park), including Areas 1, 3 and 4 along the eastern boundary.</li> <li>• Excavated quarries visible in central, western and northern portions of the brickworks facility.</li> <li>• Small commercial/industrial buildings visible in the vicinity of Area 5 (north-east corner of the brickworks site).</li> <li>• Minimal vegetation visible across the site.</li> </ul>	<ul style="list-style-type: none"> <li>• Low density commercial / industrial developments to the south and east.</li> <li>• Inferred low density residential development to the west.</li> <li>• Alexandria Canal and various existing industrial / commercial properties visible in the area.</li> <li>• Large excavated quarry / pit visible to the south west of the site.</li> </ul>
1986	<ul style="list-style-type: none"> <li>• Visible filling of excavated quarries throughout the brickworks site and removal of associated structures in the western portion.</li> <li>• Extension / redevelopment of an existing industrial building in Area 1 (central-eastern portion of the brickworks site)</li> <li>• Revegetation of the north-eastern portion of the brickworks site (including Area 5).</li> <li>• Addition of a small dam in the south east corner near Area 2.</li> <li>• Construction of a small industrial facility inferred to be the existing concrete batch plant between Areas 3 and 4.</li> <li>• Addition of small buildings / shipping containers in the south western portion of the brickworks site</li> </ul>	<ul style="list-style-type: none"> <li>• General increase in commercial / industrial development to the east and residential development to the north.</li> <li>• Access track / road visible along the north east boundary and removal of adjacent structures.</li> </ul>
1991	<ul style="list-style-type: none"> <li>• Removal of all structures onsite, except for two large warehouse buildings in the eastern and southern portions of the site. The concrete batch plant along the eastern boundary is also still visible.</li> <li>• Revegetation of select areas in the north-western, north-eastern and south-eastern corners of the brickworks site, including Areas 2, 4 and 5.</li> <li>• Extensive bare ground / unvegetated land in the former quarry areas indicating potential capping / earthworks undertaken recently.</li> </ul>	<ul style="list-style-type: none"> <li>• Extension of Sydney Park Road to resemble the current layout.</li> <li>• Filling of the quarry / excavated pit to the south west.</li> </ul>
2004	<ul style="list-style-type: none"> <li>• Removal of industrial warehouse buildings in eastern and southern portions of Sydney Park grounds.</li> <li>• General increase in visible tree cover and vegetation, including playing fields.</li> <li>• Extension of the existing dam in the south east corner to form wetlands to the current extent.</li> </ul>	<ul style="list-style-type: none"> <li>• Increase in medium-density residential apartments to the north.</li> <li>• Continued filling of the quarry / excavated pit to the south west.</li> </ul>

Based on the review of historical aerial photographs, the proposed work areas appear to locate generally outside the footprints of the landfilled quarries.

### **3.3. NSW Government database searches**

#### **3.3.1. NSW EPA Search Records**

According to the List of NSW Contaminated Sites Notified to NSW EPA, the site has been notified to the NSW EPA for contamination and is regulated under Section 60 of the CLM Act 1997.

A search of the NSW EPA Contaminated Land Public Record was carried out on 1 April 2021 for declaration notices, orders made by the EPA under the CLM Act 1997, voluntary management proposals approved under the CLM Act 1997, and site audit statements relating to significantly contaminated land. The search of the database revealed four (4) notices relating to the site:

- Declaration of significantly contaminated land (ref: 20181108, dated 25 February 2019)
- Notice of approval of voluntary management proposal (ref:20191729, dated 16 January 2020)
- Notice to amend voluntary management proposal (ref: 20204455, dated 2 November 2020)
- Notice to amend approved Voluntary Management Proposal (ref: 20214419, dated 6 April 2021)

#### **3.3.2. Protection of the Environment Operation Public Registers**

A search of the NSW EPA Protection of the Environment (POEO) Public Registers was undertaken on 7 April 2021 for:

- Activities licensed by the NSW EPA under Schedule 1 of the POEO Act 1997.
- Unlicensed premises regulated by the EPA.

The search of POEO Public Registers did not indicate any licenced activities or unlicensed premises within Sydney Park or the development sites. However, a POEO Licence was listed for the concrete batch plant adjacent to the site located at 169 Euston Road (between Areas 3 and 4), and listed to be no longer in force. A total of 33 additional records were also noted offsite in the suburb of Alexandria, including current and surrendered or revoked licences still regulated by EPA for various commercial / industrial activities. Two clean-up notices were also recorded, including one record at an industrial building located at 202-212 Euston Road (on the eastern side of Euston road – opposite to Sydney Park and development Area 2). This record was dated back to 2003, while historical aerial imagery indicates that a large commercial / industrial building at the premises was removed sometime after 2004.

#### **3.3.3. Former gasworks**

A search of the NSW EPA List of Former Gasworks was undertaken on 7 April 2021. The search indicated that there are no known gasworks at or within 1000m of the site.

#### **3.3.4. Liquid fuel facilities**

A search of the National Liquid Fuel Facilities Dataset for liquid fuel facilities (liquid fuel depots, refineries, terminals and petrol stations) in proximity to the site. The search indicates that there are no liquid fuel depots within 1000m of the site. However, a petrol station (BP St Peters) was recorded approximately 400m west of the site (adjacent to the western boundary of Sydney Park).

### 3.3.5. Waste management facilities

A search of the National Waste Reporting Mapping Tool<sup>1</sup> on 16 November 2020 indicates there are no operational landfills, waste transfer stations or waste reprocessing facilities at, or within 1000m of the site.

### 3.3.6. NSW Government PFAS Investigation Program

The NSW EPA is leading an investigation program to assess the legacy of Per- and poly-fluoroalkyl substances (PFAS) use across NSW. Current investigations are focused on sites where it is likely that large quantities of PFAS have been used. Investigations are currently being carried out at 41 properties within NSW. A search of the NSW EPA website on 16 November 2020 did not identify properties within 1000m of the site which are being investigated for PFAS use under the NSW Government PFAS Investigation Program. The site history review did not indicate any evidence of historical fires onsite or the usage of AFFF or other PFAS-containing materials at the site.

## 3.4. Previous reports

Historical information presented in this report has also been obtained from the following previous investigations:

- Consulting Earth Scientists (2007) - Contamination Management Plan: Concept design area, Sydney Park, St Peters. August 2007 Report id CES060904-MA-03-F2, Rev 2.
- Consulting Earth Scientists (CES, 2012) - Phase 1 Desk Study, Sydney Park, St Peters. October 2012. Report id CES120603-COS-AB.
- Golders Associates (2014) Landfill Gas Risk Assessment, Golders. Report number 147625003-010-R-Rev 0. October 2014.

Additional reports have been prepared by Coffey, GHD, AES and CES other portions of the Sydney Park site, predominantly focussed around the Sydney Park City Farm to the west of the site. A detailed review of these reports was outside the scope of this investigation.

#### **CES 2007**

A contamination management plan prepared by CES (2007) references an early CES draft environmental site assessment (ESA) report (not provided to Coffey). The area of investigation within Sydney Park covered in the ESA is not known, however it was noted that, based on CES's review of previous reports, landfill capping ranged between 1.3m and 3.7m bgl (presumably across the entire park). Heavy metals, hydrocarbons and asbestos fibres were detected within the capping layer.

#### **CES 2012**

The CES (2012) Phase 1 report incorporated a site history study review for the whole Sydney Park area, which assessed historical data from the following sources:

- Dangerous Goods license database with WorkCover NSW (now Safework NSW).
- Search with the Ministry of energy and utilities for cathode protected underground storage tanks (USTs).
- Review of historical aerial photography.
- Review of CoS Section 149 planning certificates.
- Summary of previous reports.

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<sup>1</sup> Commonwealth of Australia (Geoscience Australia) 2017 licenced under Creative Commons CC-BY (<https://creativecommons.org/licenses/by/4.0/deed.en>)

The site history search concluded that Sydney Park was a former quarry and was backfilled from the mid-20<sup>th</sup> century.

The quality, thickness and extent of material used to backfill the quarry was reported to be uncertain, however the report noted that Master Plans for the site indicate that Sydney Park was formed in the 1980's. These Master Plans (reported in CES, 2012) also indicate that a layer of 100-250mm of sandy topsoil was placed across the whole park on top of a compacted landfill cover.

#### **Golders 2014**

A Landfill Gas Risk Assessment undertaken by Golders (2014) indicated that cover materials observed in previous investigations across the whole Sydney Park area generally ranged in 1m to 3m in thickness. The soils were reported to comprise sands with varying fines contents, and sandy clays. Layers of crushed sandstone and shale were also observed as cover materials.

### **3.5. Data gaps**

The sources of historical data relied upon for this site history review are listed in Section 3.1. The observations made during the walkover (discussed in Section 6.1) were generally consistent with the historical information and publicly available information reviewed by Coffey. Some gaps are noted in the site history information and are as follows:

- Limited information was available on the origin, quality and quantities of fill material encountered at the site, in particularly the landfill capping.
- Site interviews with persons familiar with the history of the site may provide useful information on filling operations during the late 20th century.

In summary, the site history information appears to be a reasonable reflection of historical site activities, noting the uncertainties listed above. Therefore, Coffey considers the historical data assessed was generally adequate, reliable and suitable with regard to the assessment objectives.

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## 4. Method of investigation

### 4.1. Site walkover and service location

Prior to the commencement of drilling works, a site walkover was undertaken on 11 March 2021 to select borehole locations and identify site safety concerns. Selected site photographs taken during the site walkover and drilling works are presented in Appendix B.

An accredited underground service locator was engaged to attend the site during the site walkover, to scan and check borehole locations for underground utilities prior to the commencement of drilling works. Service location was carried out with reference to DBYD search documents and client site plans.

### 4.2. Intrusive investigations

#### 4.2.1. Borehole drilling

A drilling subcontractor was engaged to attend the site on 11-12 March 2021, to drill a total of 20 shallow soil boreholes using a track mounted Geoprobe 7822DT drilling rig. Boreholes were advanced as follows:

- 19 boreholes (designated BH101 to BH118, and BH111a<sup>2</sup>) were advanced using push tube methods, to depths ranging between 0.5m and 1.5m bgl for soil sampling
- Two (2) deeper boreholes (designated MW01 and MW02) were drilled using solid-flight auger to depths of 2.9m to 3.2m bgl, for soil sampling and subsequent installation of gas monitoring wells.

Soils were logged in general accordance with the Unified Soil Classification System (USCS), including environmental observations (staining, odour, and discolouration) to assist with evaluation of site contamination conditions. Borehole logs are provided in Appendix D.

The location of each borehole is presented in Figure 2, Appendix A.

Soil samples were collected from the boreholes at regular intervals for laboratory testing, with samples collected from the push tubes (for shallow soil bores) and auger attachment (for boreholes MW01 and MW02). Soil sampling works included the following:

- Soil samples were collected from each borehole at selected depth intervals.
- An asbestos sample bag was collected at each sample interval for asbestos analysis.
- Soil from each sample depth interval was also placed in a zip lock bag and field screened using a calibrated Photoionisation Detector (PID) to detect the presence of ionisable volatile organic compounds (VOCs). A field calibration certificate for the PID is included in Appendix G.

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<sup>2</sup> BH111 encountered shallow refusal, and was redrilled (offset) as BH111a

### 4.3. Laboratory testing

Soil samples were transported to Eurofins laboratories under chain of custody control who hold NATA-accredited analytical methods for the range of Contaminants of Potential Concern (CoPC). One primary sample from each borehole was selected from shallow soils or selected fill material and analysed for CoPC. The remaining soil samples were placed on hold at the analytical laboratory. Table 4.1, below, summarises the environmental analysis undertaken.

Table 4-1 – Summary of environmental laboratory testing undertaken

Item	No. of primary soil samples
Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc)	20
Polycyclic aromatic hydrocarbons (PAHs)	20
Total recoverable hydrocarbons (TRH)	20
Benzene, toluene, ethylbenzene and xylenes (BTEX)	20
Organochlorine pesticides (OCP)	5
Polychlorinated biphenyl (PCB)	5
Asbestos	20

Environmental laboratory results are summarised in Appendix E, with chain of custody documentation and laboratory reports provided in Appendix F.

### 4.4. Environmental quality assurance and quality control

A data validation assessment was undertaken to assess Data Quality Indicators (DQIs) for field and laboratory data collected for this project. As part of this assessment the following tables relating to Quality Assurance / Quality Control (QA/QC) are included in Appendix E:

- Comparison between field duplicates – Table 2 (field duplicate sample results)
- Results of trip blank and rinsate samples – Table 3 (field QA/QC results).

Analytical laboratory reports for soil samples are included in Appendix F.

We consider the works undertaken have been completed in accordance with Coffey Standard Operating Procedures (SOPs) and where deviations have occurred, they are justified through the sampling conducted in accordance with the National Environment Protection (Assessment of Site Contamination) Measure 1999 (the 'NEPM') (NEPC, 2013).

The following sections discuss and summarise the key results of this assessment along with non-conformances identified. The material effect of non-conformances on the conclusions of this report was also assessed.



#### 4.4.1. Field quality control procedures

Field quality control measures were consistent with the quality control plan presented in Coffey SOPs, and included the following:

- Sampling was performed by qualified Coffey environmental professionals in accordance with the procedures outlined in Coffey's SOPs, which are based on industry accepted protocols for environmental sampling and are consistent with Schedule B(2) of the NEPM (NEPC 2013).
- Calibration of field instruments in accordance with manufacturer's instructions. Equipment calibration certificates are included in Appendix G.
- Samples were placed in appropriate sample containers (glass jars with Teflon seals, and snap-lock asbestos sample bags), supplied by the contract laboratories, and labelled with a unique identifying number.
- Samples were transferred to and stored in an ice-filled cooler and transported to NATA-accredited laboratories under chain of custody control (shown in Appendix F).
- Carrying into the field one trip blank and one trip spike sample, including dispatch to the laboratory for analysis of volatile compounds to assess the potential for loss of, or cross contamination by, volatile contaminants during transport and sample preparation at the laboratory (Table 2 in Appendix E).
- Collection of duplicate soil samples being:
  - Soil samples split by taking small representative amounts and placing an amount in each jar/bottle until the jar/bottle had been filled with minimal headspace.
  - Collection and analysis of two (2) intra-laboratory blind coded soil duplicate samples. Relative Percentage Differences (RPDs) calculated between primary and intra-laboratory duplicate soil samples are provided in Table 3 in Appendix E.
- Use of disposable sampling equipment to reduce potential for cross-contamination of samples during fieldworks.

#### 4.4.2. Data quality assessment

The field and laboratory quality control (QC) data was assessed against criteria described in the relevant sampling and analysis quality assurance / quality control plans. The data quality assessment is summarised as follows:

##### Sample Handling

The laboratory did not advise of handling issues for the project. Samples were reported to have been received by the laboratory in good condition and suitable for analysis (stored in appropriate sample containers with zero headspace).

##### Precision/Accuracy

Field PID screening measurements were generally low (<5.0 ppm) and consistent with reported laboratory concentrations. An elevated PID measurement (114ppm) was recorded in sample BH108 08-1.0, with subsequent laboratory analysis recording elevated concentrations of volatile hydrocarbons (C6-C10 at 110mg/kg) and semi-volatile hydrocarbons (C10-C16 at 1,800mg/kg). Similarly, a high PID measurement (19ppm) in sample BH101 0.1-0.3 also corresponded with detectable concentrations of volatile hydrocarbons (C6-C10 reported at 62mg/kg). In summary, field PID measurements are assessed to be reasonably accurate and consistent with laboratory analytical results.

##### Field QA/QC (duplicates, rinsate samples, trip blanks)

RPDs exceeding the upper control limits were recorded in the soil duplicate pairs as follows:

- Duplicate sample DUP01 exceeded RPD control limits for lead (43%) and total PAH (54%), with individual PAH compounds reported in DUP01 than the parent sample (BH102 0.1-0.3).

- Duplicate sample DUP02 exceeded RPD control limits for lead (100%) and zinc (110%), with concentrations of metals reported in higher concentrations in the parent sample (BH115 0.6-0.8).

These elevated RPDs are considered likely due to heterogeneous distribution of metals and potential PAH contaminants throughout the sample matrix. While these elevated RPDs indicate variability in the samples, the analytes exceeding RPDs were all below the adopted screening criteria. As such the variances are not expected to affect the outcome of the assessment. As a conservative measure, analytical results for duplicate samples have also been compared to the assessment criteria, as outlined in Section 5 below and shown in table 1, Appendix D.

Trip blank and trip spike samples recorded analytes below the LOR and within acceptable recovery limits respectively, indicating a low potential for loss or cross-contamination of volatile compounds in samples during transport to the laboratory.

### **Laboratory QA/QC**

The laboratory did not report any QA/QC issues for the project. No storage bank was included with the sample batch, however the samples were analysed within the recommended holding times and the trip spike results were within acceptable limits.

For all the batches, the laboratory quality control samples (spikes, duplicates, blanks, etc.) met the predetermined control limits established by the laboratories, or (in the case of duplicates) met with Coffey's acceptable limits.

Considering the above discussion, Coffey concludes that the analytical results are representative of the characteristics of the soil at the sample locations at the time of sampling.

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## 5. Environmental assessment criteria

### 5.1. Soil assessment criteria

In accordance with industry guidance and legislative requirements, environmental assessment criteria for this assessment have been derived from the following guidelines:

- Schedule B(1) 'Guideline on the Investigation Levels for Soil and Groundwater' of the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (the NEPM) as amended (NEPC, 2013).
- CRC Care Technical Report No. 10, Health Screening Levels for Petroleum Hydrocarbons in Soil and Groundwater, 2011 (CRC CARE 2011)

Environmental criteria have been adopted for this assessment based on the proposed developments and ongoing use of the site as Sydney Park, including open space areas, playgrounds and an amenities / toilet block building.

The assessment criteria are outlined in Table 5.1, below, and presented in Table 1 Appendix E.

Table 5-1 – Summary of environmental soil assessment criteria adopted

Criteria	Source	Criteria relevant to	Applicable pathway
<b>Human Health Based</b>			
Soil HILs	ASC NEPM 2013	Public open space land use (HIL C) All soil depths and types	Direct contact (dermal contact and incidental ingestion and inhalation of soil/dust particles)
Soil HSLs	CRCCARE 2011	Recreational/open space land use (HSL-C) Sandy soil type and depth of 0-<2 m	Direct contact (dermal contact and incidental ingestion and inhalation of soil/dust particles)
<b>Ecological Based</b>			
Generic EILs for lead, arsenic, dichlorodiphenyltrichloroethane (DDT) and naphthalene	ASC NEPM 2013	Urban residential and public open space land use <2m depth	Terrestrial biota
Conservative EILs for zinc, lead, copper, nickel and chromium. See Table 8.	ASC NEPM 2013 and Olszowy et al. 1995	Urban residential and public open space land use <2m depth	Terrestrial biota
ESLs for TRH, BTEX and benzo(a)pyrene	ASC NEPM 2013	Urban residential and public open space land use <2m depth	Terrestrial biota
<b>Petroleum Hydrocarbon Management Limits</b>			
Management Limits for TPH fractions F1-F4 in soil	ASC NEPM 2013	Residential, parkland and public open space land use Coarse soil texture	Formation of LNAPL, fire and explosion, and property damage

In the absence of site-specific physicochemical soil properties, conservative EILs were calculated for zinc, copper, nickel and chromium by adding conservative aged contaminant limits (ACLs) for urban residential/public open space land use presented in ASC NEPM 2013 with trace concentrations (25 percentile, old suburb, NSW, high traffic values) presented in Olszowy et al. 1995. This approach is consistent with Schedule B5b of ASC NEPM 2013. The background concentrations and ACLs used to calculate EILs for these metals are outlined in Table 5.2, below.

Table 5-2 – Adopted conservative EILs for Cu, Ni, Cr, Zn and Pb

Analyte	Background Concentration (Olszowy et al. 1995) (A)	ACL (ASC NEPM 2013) (B)	EIL (A + B)
Units	mg/kg		
Copper (Cu)	28	60	88
Nickel (Ni)	5	30	35
Chromium (Cr)	13	190	203
Zinc (Zn)	122	70	192
Lead (Pb)	163	1,100	1,263

## 5.2. Asbestos

For asbestos in soil, a screening level of 0.1g/kg (0.01 % w/w equivalent) was adopted based on the laboratory detection limit for analysis of asbestos in non-homogenous samples using the methodology outlined in *Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples* (AS4964-2004). Furthermore, an assessment criterion of 'no respirable fibres' was adopted; a detection of respirable fibres would indicate an exceedance of the assessment criteria.

## 5.3. Aesthetic issues

The presence of inert foreign material in soil, can present aesthetic concerns for public open space areas. Foreign materials, stained or malodourous soils are to be considered as part of this assessment.

## 6. Results of investigation

### 6.1. Site walkover

A Coffey representative made observations of the site on 11 March 2021 during a site walkover. In general, visual evidence of suspected contamination (e.g. dead vegetation) was not observed at the ground surface. Observations from the site walkover are summarised as follows:

- Land use throughout Sydney Park comprises public open space, including sporting fields, a community garden and various playgrounds and amenities. Access to the park is provided by various paved footpaths (concrete and asphalt construction), with paved asphalt carparks present at various points along the eastern boundary and north east corner of the site.
- Groundcover generally comprises short grass and landscaped garden beds, with no significant vegetation dieback observed.
- Area 1 comprises open space with moderate tree cover and sealed access paths, located adjacent to an existing office building. The area is bound to the west by artificial wetlands.
- Area 2 in the south-east corner of Sydney Park comprises open space with existing asphalt and gravel pathways, with low-level concrete retaining walls and steps. The area is bound to the north east by artificial wetlands.
- Area 3 comprises open space with low grass and moderate tree cover. An operational concrete batch plant is located adjacent to the north, and a demolished Council works depot is located adjacent to the west of Area 3, both delineated from the Park using safety fencing.
- Area 4 comprises open space with paved access paths and an exercise station / fitness area in the southern portion of the area. The development area is located adjacent to the north of the operational concrete batch plant.
- Area 5 in the north-eastern corner of Sydney Park comprises an asphalt carpark and surrounding open space (including unpaved and landscaped areas) with moderate tree cover. An electrical substation building is present to the north west of Area 5.

### 6.2. Summary of subsurface conditions

The soil materials encountered in the boreholes were mixtures of topsoil/fill, generally comprising predominantly silty SAND (potentially topsoil fill) or gravelly SAND (potentially crushed sandstone fill). Putrescible garbage waste was not encountered with the exception of minor plastic pieces and clothes encountered at BH110.

Suspected asbestos-containing material (ACM) or soil staining were not visually apparent in the boreholes during sampling.

Hydrocarbon odours were observed in three boreholes, including BH111a and MW01 in Area 1 near the wetlands, and BH108 in Area 4 in the eastern portion of the site.

Groundwater ingress was not encountered in the boreholes during drilling.

### 6.3. Gas monitoring well installation

Gas monitoring wells were installed into boreholes MW01 and MW02, to depths of 3.2m and 2.9m bgl respectively. Well installation details are summarised in Table 6.2, with the results of gas monitoring works to be reported separately.

Table 6-1 – Summary of gas monitoring well construction details

Well	Total drilled depth (m bgl)	Approximate screen interval (m bgl)	Bentonite seal interval (m bgl)
MW01	3.20	1.0 – 3.2	0.1 – 0.8
MW02	2.90	1.0 – 2.75	0.2 – 0.8

Gas monitoring results are provided in a separate report.

### 6.4. Laboratory results

Soil analytical results were compared to the relevant assessment criteria for residential / open space land use, as shown Appendix E, Table 1. Copies of NATA-endorsed laboratory reports are provided in Appendix F.

#### Organic compounds

Soil analytical results indicated detectable concentrations of TRH in 12 primary samples and one duplicate sample (DUP01), including the following exceedances of assessment criteria:

- Sample BH108 0.8-1.0 reported TRH (C<sub>10</sub>-C<sub>16</sub>) concentrations (1,800mg/kg) exceeding petroleum management limits
- Samples BH118 0.3-0.5 and MW01 0.8-0.9 reported TRH F3 (C<sub>16</sub>-C<sub>34</sub>) concentrations exceeded ESL

Six primary samples and duplicate sample DUP01 reported benzo(a)pyrene concentrations (ranging from 0.8 to 3.3mg/kg) exceeding the ESL. Sample BH118 0.3-0.5 also exceeded the HIL-C for carcinogenic PAH, based on benzo(a)pyrene TEQ.

BTEX concentrations were reported below assessment criteria for all samples analysed, and generally below the LOR. All samples reported OCP and PCB concentrations below the laboratory limit of reporting (LOR).

#### Inorganics

Detectable concentrations of heavy metals were reported in all samples analysed, including the following exceedances:

- Zinc concentrations exceeded the EIL in five samples across a number of proposed work areas.
- Nickel concentrations exceeded the EIL in two samples BH105 1.2-1.4 and BH106 0.7-0.9. Elevated nickel concentrations (1,600mg/kg) in sample BH105 1.2-1.4 also exceeded HIL-C.
- Lead concentrations exceeded HIL-C in sample MW01 0.8-0.9 (1,400mg/kg) and MW02 0.2-0.3 (630mg/kg). Lead concentrations in MW01 0.8-0.9 also exceeded the EIL.
- Copper concentrations exceeded the EIL in three samples (ranging from 95mg/kg to 260mg/kg)

Additionally, asbestos was not detected (below reporting limit of 0.01% w/w) in any samples analysed.

## 7. Conceptual site model

A conceptual site model (CSM) was developed based on the above findings. A CSM is a representation of site-related information regarding potential sources of contamination, receptors and exposure pathways.

Contamination, if not managed appropriately could pose a potential risk to human health or the environment. For an unacceptable risk to exist, there must be a plausible pollutant linkage between the source and a receptor by means of a transport mechanism (pathway).

The soil testing program identified the following contamination in the shallow soil, as summarised in Table 7.1.

Table 7-1 - Conceptual site model outlining plausible pollutant

Area	Contamination Exceedance	Exposure Pathways	Receptors
Area 1	Ecological – Benzo(a)pyrene, TRH (C16-C34), Lead, Zinc	Ecological uptake	Terrestrial biota
	Human Health – Lead	Ingestion, dermal/direct contact	Park and recreational users
Area 2	Nil reported	-	-
Area 3	Ecological – Benzo(a)pyrene, Copper, Nickel, Zinc	Ecological uptake	Terrestrial biota
	Human Health – Carcinogenic PAH	Ingestion, dermal/direct contact	Park and recreational users
Area 4	Ecological – Benzo(a)pyrene, TRH (C16-C34), Lead, Zinc	Ecological uptake	Terrestrial biota
	Human Health – Nickel	Ingestion, dermal/direct contact	Park and recreational users
	Petroleum Management – TRH C10-C16	Formation of LNAPL, fire and explosion, and property damage	Park and recreational users
Area 5	Ecological – Benzo(a)pyrene	Ecological uptake	Terrestrial biota

Assessment of landfill gas is outside the scope of this report.

## 8. Conclusions and recommendations

Based a review of available data, observations made during fieldwork and an assessment of laboratory analytical data, Coffey concludes that:

- The site was formerly occupied by a brickworks and quarry facility between 1860 and 1948, with the quarried areas later used for landfilling. The landfill areas were gradually capped and converted to recreational park space forming Sydney Park in the early 1990s.
- The proposed work areas (Areas 1 to 5) appear to be located outside the footprints of the landfilled quarries based on aerial photography records.
- The soil materials encountered in the boreholes within Areas 1 to 5 were mixtures of topsoil/fill, generally comprising predominantly silty SAND (potentially topsoil fill) or gravelly SAND (potentially crushed sandstone fill). Putrescible garbage waste was not encountered with the exception of minor plastic pieces and clothes at BH110.
- Hydrocarbons odours were noted in subsurface soils in three boreholes in Area 1 and Area 4.
- Various soil samples across the proposed work areas exceeded the ecological criteria for heavy metals, benzo(a)pyrene and TRH F3 (C<sub>16</sub>-C<sub>34</sub>). Some of the EIL criteria for metals (chromium, copper, lead, nickel and zinc) were derived based on conservative assumptions. Further assessment of geochemical data at the site may enable the EIL criteria to be adjusted accordingly.
- A number of samples exceeded the human health criteria (HIL-C). These include lead in Area 1 (MW01 and MW02), nickel in Area 4 (BH105), carcinogenic PAH in Area 3 (BH118). These exceedances were generally minor/marginal. Further characterisation is recommended to allow assessment of remediation/management options.
- One sample exceeded the petroleum hydrocarbon management limit in Area 4 (BH108). Based on site observations and the site settings, the likelihood of effects on buried infrastructure, fire and explosive hazards or formation of NAPL is considered to be low.

Based on the findings, Coffey recommends a Remedial Action Plan (RAP) to be prepared to address to above contamination issues identified. The RAP should also incorporate additional testing to further characterise the identified impacts.

This report does not address risks associated with landfill gas (LFG).



## 9. Limitations

The findings contained in this report are the result of discrete/specific methodologies used in accordance with normal practices and standards. To the best of our knowledge, they represent a reasonable interpretation of the general condition of the boreholes at the time the investigations were carried out. It is the nature of contaminated land investigations that the degree of variability in site conditions cannot be known completely and no sampling and analysis program can eliminate all uncertainty concerning the condition of the site. Professional judgement must be exercised in the collection and interpretation of the data. Due to the limited scope and the sampling density, the potential presence of other contamination yet to be identified cannot be precluded.

This report should be read in conjunction with the attached "Important information about your Coffey Environmental Report".

## 10. References

Chapman G.A., Murphy, C.L., Tille P.J., Atkinson G. and Morse R.J., 2009 Ed. 4, Soil Landscapes of the Sydney 1:100,000 Sheet map, Department of Environment, Climate Change and Water, Sydney

Olszowy, H, Torr, P, Imray, P, Smith, P, Hegarty, J & Hastie, G 1995, *Trace element concentrations in soils from rural and urban areas of Australia*, Contaminated Sites monograph no. 4, South Australian Health Commission, Adelaide, Australia.

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# Important information about your **Coffey** Environmental Report

## **Introduction**

This report has been prepared by Coffey for you, as Coffey's client, in accordance with our agreed purpose, scope, schedule and budget.

The report has been prepared using accepted procedures and practices of the consulting profession at the time it was prepared, and the opinions, recommendations and conclusions set out in the report are made in accordance with generally accepted principles and practices of that profession.

The report is based on information gained from environmental conditions (including assessment of some or all of soil, groundwater, vapour and surface water) and supplemented by reported data of the local area and professional experience. Assessment has been scoped with consideration to industry standards, regulations, guidelines and your specific requirements, including budget and timing. The characterisation of site conditions is an interpretation of information collected during assessment, in accordance with industry practice.

This interpretation is not a complete description of all material on or in the vicinity of the site, due to the inherent variation in spatial and temporal patterns of contaminant presence and impact in the natural environment. Coffey may have also relied on data and other information provided by you and other qualified individuals in preparing this report. Coffey has not verified the accuracy or completeness of such data or information except as otherwise stated in the report. For these reasons the report must be regarded as interpretative, in accordance with industry standards and practice, rather than being a definitive record.

## **Your report has been written for a specific purpose**

Your report has been developed for a specific purpose as agreed by us and applies only to the site or area investigated. Unless otherwise stated in the report, this report cannot be applied to an adjacent site or area, nor can it be used when the nature of the specific purpose changes from that which we agreed.

For each purpose, a tailored approach to the assessment of potential soil and groundwater contamination is required. In most cases, a key objective is to identify, and if possible quantify, risks that both recognised and potential contamination pose in the context of the agreed purpose. Such risks may be financial (for example, clean up costs or constraints on site use) and/or physical (for example, potential health risks to users of the site or the general public).

## **Limitations of the Report**

The work was conducted, and the report has been prepared, in response to an agreed purpose and scope, within time and budgetary constraints, and in reliance on certain data and information made available to Coffey.

The analyses, evaluations, opinions and conclusions presented in this report are based on that purpose and scope, requirements, data or information, and they could change if such requirements or data are inaccurate or incomplete.

This report is valid as of the date of preparation. The condition of the site (including subsurface conditions) and extent or nature of contamination or other environmental hazards can change over time, as a result of either natural processes or human influence. Coffey should be kept apprised of any such events and should be consulted for further investigations if any changes are noted, particularly during construction activities where excavations often reveal subsurface conditions.

In addition, advancements in professional practice regarding contaminated land and changes in applicable statutes and/or guidelines may affect the validity of this report. Consequently, the currency of conclusions and recommendations in this report should be verified if you propose to use this report more than 6 months after its date of issue.

The report does not include the evaluation or assessment of potential geotechnical engineering constraints of the site.

## **Interpretation of factual data**

Environmental site assessments identify actual conditions only at those points where samples are taken and on the date collected. Data derived from indirect field measurements, and sometimes other reports on the site, are interpreted by geologists, engineers or scientists to provide an opinion about overall site conditions, their likely impact with respect to the report purpose and recommended actions.

Variations in soil and groundwater conditions may occur between test or sample locations and actual conditions may differ from those inferred to exist. No environmental assessment program, no matter how comprehensive, can reveal all subsurface details and anomalies. Similarly, no professional, no matter how well qualified, can reveal what is hidden by earth, rock or changed through time.

The actual interface between different materials may be far more gradual or abrupt than assumed based on the facts obtained. Nothing can be done to change the actual site conditions which exist, but steps can be taken to reduce the impact of unexpected conditions.

For this reason, parties involved with land acquisition, management and/or redevelopment should retain the services of a suitably qualified and experienced environmental consultant through the development and use of the site to identify variances, conduct additional tests if required, and recommend solutions to unexpected conditions or other unrecognised features encountered on site. Coffey would be pleased to assist with any investigation or advice in such circumstances.

### **Recommendations in this report**

This report assumes, in accordance with industry practice, that the site conditions recognised through discrete sampling are representative of actual conditions throughout the investigation area. Recommendations are based on the resulting interpretation.

Should further data be obtained that differs from the data on which the report recommendations are based (such as through excavation or other additional assessment), then the recommendations would need to be reviewed and may need to be revised.

### **Report for benefit of client**

Unless otherwise agreed between us, the report has been prepared for your benefit and no other party. Other parties should not rely upon the report or the accuracy or completeness of any recommendation and should make their own enquiries and obtain independent advice in relation to such matters.

Coffey assumes no responsibility and will not be liable to any other person or organisation for, or in relation to, any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report.

To avoid misuse of the information presented in your report, we recommend that Coffey be consulted before the report is provided to another party who may not be familiar with the background and the purpose of the report. In particular, an environmental disclosure report for a property vendor may not be suitable for satisfying the needs of that property's purchaser. This report should not be applied for any purpose other than that stated in the report.

### **Interpretation by other professionals**

Costly problems can occur when other professionals develop their plans based on misinterpretations of a report. To help avoid misinterpretations, a suitably qualified and experienced environmental consultant should be retained to explain the implications of the report to other professionals referring to the report and then review plans and specifications produced to see

how other professionals have incorporated the report findings.

Given Coffey prepared the report and has familiarity with the site, Coffey is well placed to provide such assistance. If another party is engaged to interpret the recommendations of the report, there is a risk that the contents of the report may be misinterpreted and Coffey disowns any responsibility for such misinterpretation.

### **Data should not be separated from the report**

The report as a whole presents the findings of the site assessment and the report should not be copied in part or altered in any way. Logs, figures, laboratory data, drawings, etc. are customarily included in our reports and are developed by scientists or engineers based on their interpretation of field logs, field testing and laboratory evaluation of samples. This information should not under any circumstances be redrawn for inclusion in other documents or separated from the report in any way.

This report should be reproduced in full. No responsibility is accepted for use of any part of this report in any other context or for any other purpose or by third parties.

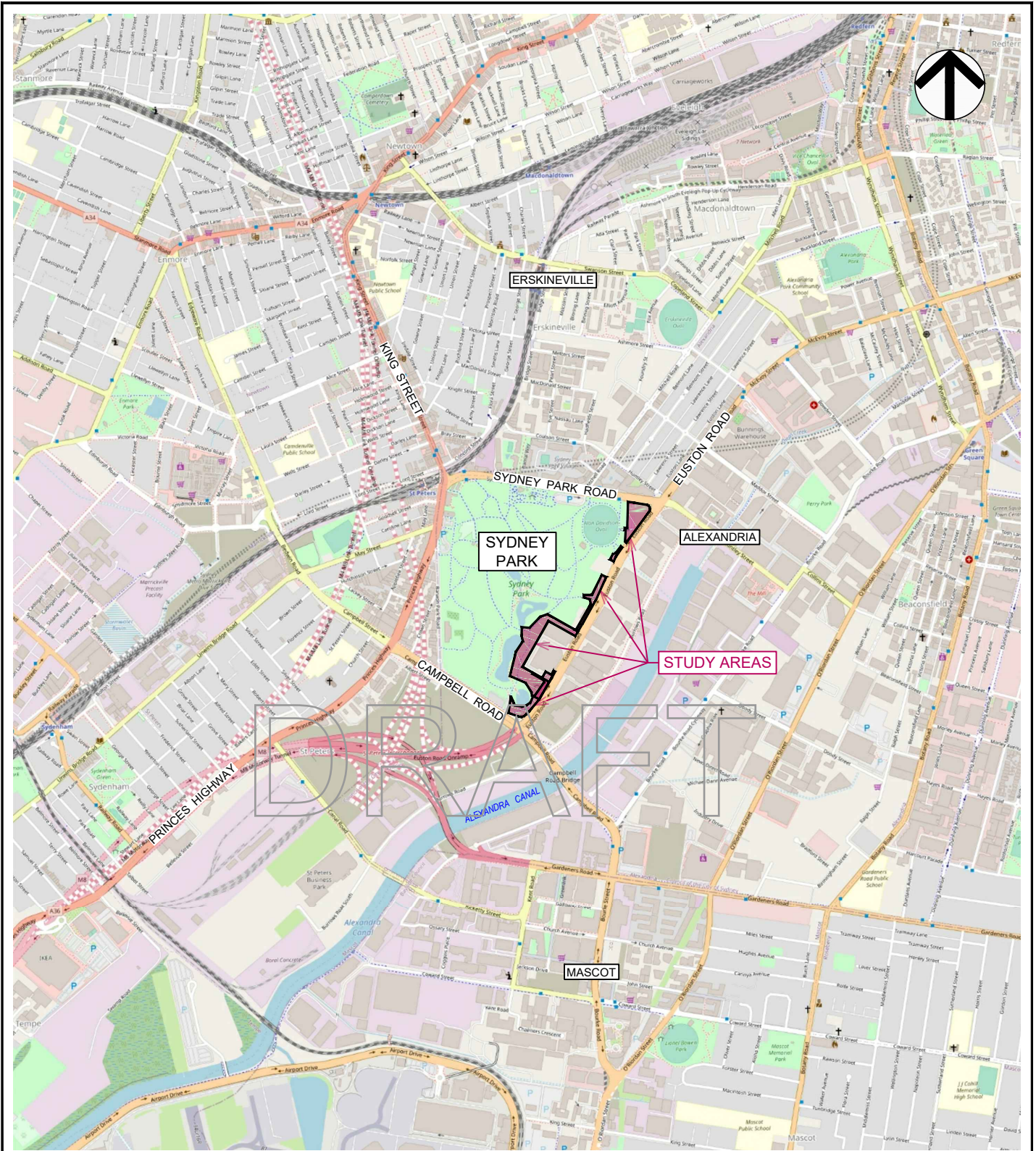
### **Responsibility**

Environmental reporting relies on interpretation of factual information using professional judgement and opinion and has a level of uncertainty attached to it, which is much less exact than other design disciplines. This has often resulted in claims being lodged against consultants, which are unfounded. As noted earlier, the recommendations and findings set out in this report should only be regarded as interpretive and should not be taken as accurate and complete information about all environmental media at all depths and locations across the site.

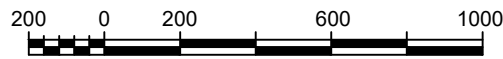
**DRAFT** Appendix A – Figures

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MAP PROJECTION: GDA2020 MGA ZONE 56



Scale (metres) 1:20000

AERIAL IMAGERY COPYRIGHT: OPEN STREET MAP - ESRI  
 SOURCED FROM WEBSITE: <http://www.OpenStreetMap.org>  
 LICENSED UNDER CC BY 3.0 AU ([https://creativecommons.org/Share Alike License \(CC-BY-SA\)](https://creativecommons.org/Share Alike License (CC-BY-SA)))

**DRAFT**

drawn	PP / AW
approved	-
date	23-03-2021
scale	AS SHOWN
original size	A4



client:	COUNCIL OF THE CITY OF SYDNEY		
project:	PRELIMINARY SITE INVESTIGATION SYDNEY PARK MITIGATION WORKS 416 SYDNEY PARK RD, ALEXANDRIA, NSW		
title:	SITE LOCATION PLAN		
project no:	754-SYDEN282211-R01	figure no:	FIGURE 1
		rev:	A

PLOT DATE: 23/03/2021 2:47:58 PM - DWG FILE: F:\1-PROJECTS\1\_Sydney\2020\754-SYDEN282211-PESA SYDNEY PARK\10\_CAD\754-SYDEN282211-R01.DWG

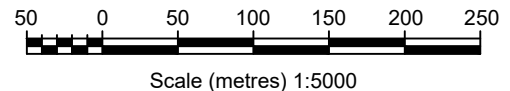


**LEGEND**

- SITE BOUNDARY
- + BOREHOLE LOCATION
- + MONITORING WELL LOCATION
- STUDY AREAS

DRAFT

no.	description	drawn	approved	date
A	ORIGINAL ISSUE			



SOURCE: NEARMAP MAGE - 24/01/2021

drawn	PP / AW
approved	-
date	24-03-2021
scale	AS SHOWN
original size	A3



client:	COUNCIL OF THE CITY OF SYDNEY		
project:	PRELIMINARY SITE INVESTIGATION SYDNEY PARK MITIGATION WORKS 416 SYDNEY PARK RD, ALEXANDRIA, NSW		
title:	BOREHOLE LOCATION PLAN		
project no:	754-SYDEN282211-R01	figure no:	FIGURE 2
rev:	A		

PLOT DATE 24/03/2021 11:02:38 AM DWG FILE F:\PROJECTS\SYDNEY\2020\754-SYDEN282211-PESA SYDNEY PARK\10 CAD\754-SYDEN282211-R01.DWG

**Appendix B – Selected Site Photographs**

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Selected site photographs

<p>Area 1</p>		
<p>Area 2</p>		
<p>Area 3</p>		

Selected site photographs

<p>Area 4</p>		
<p>Area 5</p>		





**Appendix C – Historical Aerial Imagery**

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# Historical Aerial Photography Review

2004	 <p>This 2004 aerial photograph shows a city area with a river winding through it. A large green field is visible in the upper left, and several industrial buildings are scattered throughout the scene. The Esri logo is in the bottom right corner.</p>
1991	 <p>This 1991 aerial photograph shows a city area with a river winding through it. A large brown field is visible in the upper left, and several industrial buildings are scattered throughout the scene. The Esri logo is in the bottom right corner.</p>
1986	 <p>This 1986 aerial photograph shows a city area with a river winding through it. A large brown field is visible in the upper left, and several industrial buildings are scattered throughout the scene. The Esri logo is in the bottom right corner.</p>
1955	 <p>This 1955 aerial photograph shows a city area with a river winding through it. A large brown field is visible in the upper left, and several industrial buildings are scattered throughout the scene. The Esri logo is in the bottom right corner.</p>

**DRAFT** Appendix D – Bore Logs

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# Environmental Log - Borehole

Hole ID: **BH101**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

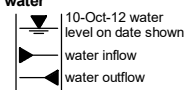
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter :

drilling information				material substance			
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	material description	structure and additional observations
HA PT		E	19		0.5	<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to coarse grained sub-rounded to sub-angular, with organics (sticks).	<b>FILL</b>
		E	0.6		0.6 m: transi ion to slab sand		
					1.0	Borehole BH101 terminated at 0.70 m Refusal	
					1.5		
					2.0		
					2.5		
					3.0		
					3.5		

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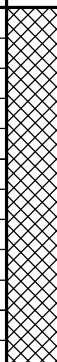
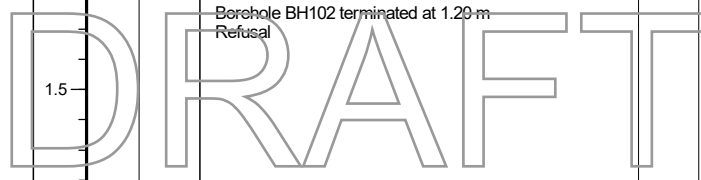
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

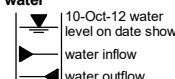
Hole ID: **BH102**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA		E	5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, dark grey, with sub-angular to sub-rounded aggregates with organics (wood, sticks).	M		<b>FILL</b> DUP01
					1.0			<b>FILL: Gravelly SAND:</b> fine to medium grained, dark grey, sub-angular to sub-rounded aggregates with organics (rootles).			
PT		E	0.8		1.5			Borehole BH102 terminated at 1.20 m Refusal			
											

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

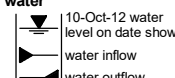
Hole ID: **BH103**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.2		0.0 - 0.5		FILL: <b>SILTY SAND</b> : fine to coarse grained, pale brown, grey, with sub-angular to sub-rounded aggregates with organics (clothes, sticks).	D		FILL
					0.5 - 0.8		FILL: <b>Gravelly SAND</b> : fine to coarse grained, pale brown, yellow.	M		
					0.8 - 1.5		FILL: <b>Gravelly SAND</b> : fine to coarse grained, dark brown, black, with sub-rounded to sub-angular gravels with charcoal.			
					1.5		FILL: <b>Gravelly CLAY</b> : fine to medium grained, pale brown-grey, yellow.			
Borehole BH103 terminated at 1.50 m										

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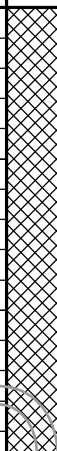
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **BH104**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

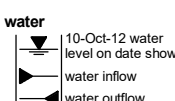
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (woods, sticks).	D		<b>FILL</b>
					1.0			<b>FILL: Sandy CLAY:</b> fine to coarse grained, medium plasticity, pale grey.			
PT					1.5			<b>FILL: CLAY:</b> fine to coarse grained, pale brown-grey, sandstone.			
					1.5			<b>FILL: SAND:</b> fine to medium grained, pale brown-grey.			
Borehole BH104 terminated at 1.50 m											
					2.0						
					2.5						
					3.0						
					3.5						

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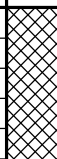
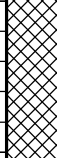

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **BH105**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA					0.5			FILL: Gravelly SAND: fine to coarse grained, pale brown.	D		FILL
								FILL: Sandy GRAVEL: fine to coarse grained, pale grey, sub-angular to sub-rounded aggregates.			
PT		E	0.2		1.0			FILL: Gravelly SAND: fine to medium grained, dark grey, black, with sub-angular to sub-rounded gravels with charcoal.	M		
					1.5			Borehole BH105 terminated at 1.50 m			
					2.0						
					2.5						
					3.0						
					3.5						

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown  water inflow  water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH106**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **11 Mar 2021**

date completed: **11 Mar 2021**

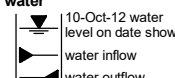
logged by: **FA**

checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 80 mm

drilling information				material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.6		0.5		<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (sticks).	D		<b>FILL</b>
					1.0			M		
PT					1.5		<b>FILL: Sandy CLAY:</b> low plasticity, dark brown, fine to coarse grained.			Borehole BH106 terminated at 1.50 m Target depth
					2.0					
					2.5					
					3.0					
					3.5					

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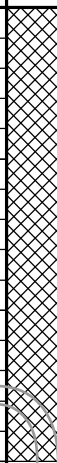
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **BH107**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

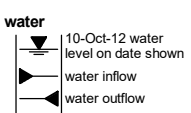
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD/T PT		E	0.2		0.2			FILL: SILTY SAND: fine to coarse grained, pale brown.	D		FILL
					0.5			FILL: CONCRETE AND COBBLES.			
		E	0.3		1.5			Borehole BH107 terminated at 1.50 m Refusal			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH108**

sheet: 1 of 1

project no. **754-SYDEN282211**

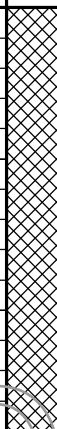
date started: **11 Mar 2021**

date completed: **11 Mar 2021**

logged by: **FA**

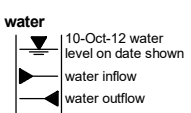
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT			114		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with organics (wood, sticks).	M		strong hydrocarbon odour
		E			1.0		<b>FILL: Sandy GRAVEL:</b> dark grey.				
					1.5		<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale to dark grey, black, with hydrocarbon with aggregates, sub-angular to sub-rounded.				
					1.5			Borehole BH108 terminated at 1.40 m Refusal			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

Hole ID: **BH109**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**


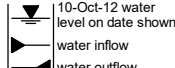
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information			well details		material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA PT	1 2 3		E		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (wood, sticks).	D		<b>FILL</b>  PID: 0.4 ppm
								<b>FILL: CRUSHED SANDSTONE:</b> fine to coarse grained, pale brown, yellow.			
					1.0			Borehole BH109 terminated at 1.00 m Refusal			

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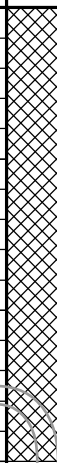
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger	<b>support</b> M mud N nil C casing	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>penetration</b>  no resistance ranging to refusal	<b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	

# Environmental Log - Borehole

Hole ID: **BH110**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

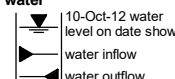
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD PT		E	0.2		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, dark brown, with sub-angular to sub-rounded aggregates with organics (plastic, pieces, clothes).	M		<b>FILL</b>
					1.0						
					1.5			Borehole BH110 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH111**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

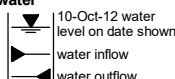
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA AD/T		E	4.5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Sandy GRAVEL:</b> fine to medium grained, grey, sub-angular to sub-rounded, sand is fine to coarse grained, with fines. <b>FILL: SAND:</b> fine to coarse grained, pale brown, with fine to coarse grained sub-angular gravel, and fines.	M		No noticeable odours or discolouration detected
					1.0			Borehole BH111 terminated at 0.80 m Refusal Re-drilled as BH111a			
					1.5						
					2.0						
					2.5						
					3.0						
					3.5						

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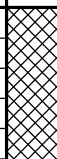
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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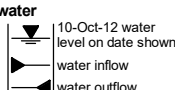
# Environmental Log - Borehole

Hole ID: **BH111a**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **TBM**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 60 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	3.8		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Sandy GRAVEL:</b> fine to medium grained, grey, sub-angular to sub-rounded, sand is fine to coarse grained, with fines. <b>FILL: SAND:</b> fine to coarse grained, pale brown, with fine to coarse grained sub-angular gravel, and fines. 0.5 m: cobbles appearing (inferred)	M		<b>FILL</b>  faint hydrocarbon odour detected
		E						4.6			
					1.5			Borehole BH111a terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

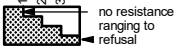
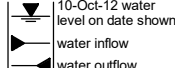
Hole ID: **BH112**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information			well details		material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1		E		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates.  0.7 m: colour changes to dark brown, dark grey	W		<b>FILL</b>  PID: 0.4 ppm
					1.5			<b>FILL: CRUSHED SANDSTONE:</b> fine to coarse grained, pale brown, yellow.  Borehole BH112 terminated at 1.50 m Target depth			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger  * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud N nil C casing  <b>penetration</b>  no resistance ranging to refusal  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

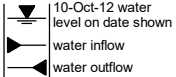
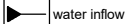
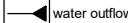
Hole ID: **BH113**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA PT		E	0.5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-rounded aggregates.	D		<b>FILL</b>
					1.0			Borehole BH113 terminated at 1.00 m Refusal			
											

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown  water inflow  water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH114**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **FA**

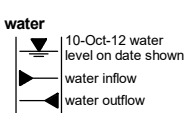
checked by: **EW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
PT		E			0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, dark brown, with aggregates.	M		<b>FILL</b>
								<b>FILL: Gravelly SAND:</b> fine to coarse grained, low plasticity, dark brown, with aggregates, with some chunks of pale grey clay, fine to coarse grained gravel. Borehole BH114 terminated at 0.50 m Refusal			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH115**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **FA**

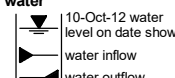
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA								<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown-grey, sub-angular to sub-rounded, aggregates.			<b>FILL</b>
		E	1		0.5			<b>FILL: SANDSTONE:</b> pale brown, yellow-orange.			Dup 2
					1.0			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown-grey, sub-angular to sub-rounded, aggregates.  0.9 m: becoming pale brown, brown-red, clay			
					1.5			<b>FILL: Sandy CLAY:</b> fine to coarse grained, medium plasticity, dark brown, pale grey, brown-red.			
					1.5			Borehole BH115 terminated at 1.50 m Target depth			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migrations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH116**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **FA**

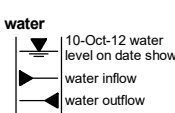
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD PT			0.3		0.5			FILL: Gravelly SAND: fine to coarse grained, dark brown, with sub-angular to sub-rounded, aggregates.	M		FILL
		E			1.0		FILL: Gravelly SAND: fine to coarse grained, dark brown, with sub-angular to sub-rounded, aggregates, with clay chunks, pale grey. FILL: Gravelly SAND: coarse grained, dark grey.				
					1.5		Borehole BH116 terminated at 1.50 m Target depth				
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH117**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **11 Mar 2021**

date completed: **11 Mar 2021**

logged by: **FA**

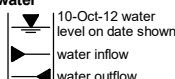
checked by: **EW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT			0.3		0.5			FILL: SAND: fine to medium grained, pale brown.	M		FILL
		E			1.0			FILL: SAND: fine to medium grained, dark brown, yellow.			
					1.5			FILL: SAND: fine to medium grained, pale grey, pale brown.	W		
					1.5			Borehole BH117 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

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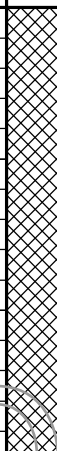
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

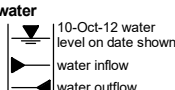
Hole ID: **BH118**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT		E	1		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, dark brown, black, with sub-rounded aggregates.	M		<b>FILL</b>
		E	0.4		1.5			<b>FILL: SILTY SAND:</b> fine to medium grained, pale brown / yellow.			
					1.5			Borehole BH118 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

CDF\_0\_9\_07\_LIBRARY\GLB revvAU Log COF BOREHOLE: ENVIRONMENTAL\_754-SYDEN282211.GPJ <<DrawingFile>> 14/04/2021 08:51

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **MW01**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

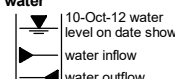
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information				material substance			
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	material description	structure and additional observations
						<b>SOIL NAME:</b> plasticity or particle characteristic, colour, secondary and minor components moisture condition consistency / relative density	
HA		E	3.3		0.5	<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).  <b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.	<b>FILL</b>  faint hydrocarbon odour detected
		E	5.3		1.0	0.8 to 1.0 m: red-brown, high plasticity, clay pockets appearing	
		E	6.2		1.5	1.6 m: sandstone cobbles appearing (inferred)	
					2.5	<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, gravel is fine to coarse grained, sub-rounded, with clay.	
					3.0		
					3.5	Borehole MW01 terminated at 3.20 m Target depth	

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **MW01**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information			well details		material substance							
method & support	penetration	water	samples & field tests	MW01	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1		E			0.0			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).	M		<b>FILL</b> PID: 3.3 ppm
	2					0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.			
	3		E			0.8			0.8 to 1.0 m: red-brown, high plasticity, clay pockets appearing			faint hydrocarbon odour detected PID: 5.3 ppm
			E			1.5			1.6 m: sandstone cobbles appearing (inferred)			PID: 6.2 ppm
						2.0						
						2.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, gravel is fine to coarse grained, sub-rounded, with clay.			likely crushed sandstone
						3.0						
						3.5			Borehole MW01 terminated at 3.20 m Target depth			<b>backfill details:</b> 0.0-0.1m: 0.1-0.8m: Bentonite 0.8-3.2m: Sand <b>standpipe piezo. MW01 details:</b> 1.0-3.2m: screen

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger  * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud      N nil C casing  <b>penetration</b>  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **MW02**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **TBM**  
 checked by: **EW**

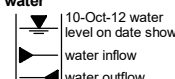
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 115 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	4.3		0.5	[Cross-hatched pattern]		FILL: <b>SILTY SAND</b> : fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).	M		FILL
					1.0		FILL: <b>Gravelly SAND</b> : fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.				
					1.5			0.6 m: sandstone cobbles appearing (inferred)			
SS		E	4.5		2.0	[Cross-hatched pattern]					
					2.5						
					3.0			2.8 m: concrete cobbles/boulder/slab (inferred)			
					3.5			Borehole MW02 terminated at 2.90 m Refusal			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Mitigations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **MW02**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

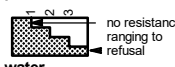
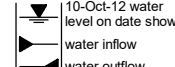
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information			well details		material substance						
method & support	penetration	samples & field tests	MW02	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1				0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.  0.6 m: sandstone cobbles appearing (inferred)	M		<b>FILL</b>  PID: 4.3 ppm
					1.0						
					1.5						PID: 4.5 ppm
					2.0						
					2.5						
					3.0			2.8 m: concrete cobbles/boulder/slab (inferred)			
					3.0			Borehole MW02 terminated at 2.90 m Refusal			<b>backfill details:</b> 0.0-0.2m: 0.2-0.8m: Bentonite 0.8-2.75m: Sand <b>standpipe piezo. MW02 details:</b> 1.0-2.75m: screen

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger  * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud      N nil C casing  <b>penetration</b>  no resistance ranging to refusal  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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**Appendix E – Laboratory Results**



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Asbestos		BTEX						Inorganics	Metals																						
Sample mass	Asbestos detected result	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Moisture Content (dried @ 103°C)	Arsenic	Cadmium	Chromium (total)	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD					
g	comment	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg					
EQL	1	-	0.1	0.1	0.1	0.2	0.1	0.3	1	2	0.4	5	5	5	0.1	5	5	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05				
CRC CARE HSL-C - Recreational / Open Space Direct Contact		120	5300	18000			15000																								
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)											203	88	1263		35	192															
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil		50	70	85			105																								
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)									100				1100												180						
NEPM 2013 HIL-C Recreational Soil									300	90		17000	600	80	1200	30000				10		70				400					
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																															
Field_ID	LocCode	Sample Depth	Sample Date	Sample mass	Asbestos detected result	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Moisture Content (dried @ 103°C)	Arsenic	Cadmium	Chromium (total)	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD	
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	136	ND	<0.1	3.2	<0.1	19	7.3	26	7.1	4.5	0.5	11	45	110	0.2	8.4	140	-	-	-	-	-	-	-	-	-	-	-
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	100	ND	<0.1	0.4	<0.1	2.2	0.9	3.1	7.6	7.7	0.8	14	54	280	0.3	10	180	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	63	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	20	5.1	<0.4	10	11	32	<0.1	7.5	150	-	-	-	-	-	-	-	-	-	-	-
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	59	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	3.5	2.2	<0.4	<5	<5	9.3	0.1	<5	13	-	-	-	-	-	-	-	-	-	-	-
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	37	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	16	21	2.4	53	260	250	0.5	1600	570	-	-	-	-	-	-	-	-	-	-	-
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	73	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	5.5	4.5	<0.4	47	23	56	0.2	43	140	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	149	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	24	5.5	0.4	33	32	130	0.2	8.8	200	-	-	-	-	-	-	-	-	-	-	-
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	61	ND	<0.1	14	0.6	1.2	<0.1	1.3	7.5	9.7	1	160	110	440	2.9	14	400	-	-	-	-	-	-	-	-	-	-	-
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	24	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	5.1	2	<0.4	11	9.7	15	<0.1	<5	50	-	-	-	-	-	-	-	-	-	-	-
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	114	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	4.9	<0.4	18	46	90	0.2	14	130	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	122	ND	-	-	-	-	-	-	18	4.2	<0.4	8.5	<5	9.1	<0.1	<5	12	-	-	-	-	-	-	-	-	-	-	-
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	-	-	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	89	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	8.2	<0.4	11	23	130	0.1	6.2	57	-	-	-	-	-	-	-	-	-	-	-
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	46	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7.2	15	<0.4	30	26	200	1.8	11	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	57	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	11	<0.4	10	7.1	35	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	52	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7.3	17	<0.4	21	19	54	<0.1	9.3	96	-	-	-	-	-	-	-	-	-	-	-
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	22	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	6.1	68	0.5	20	67	150	<0.1	22	160	-	-	-	-	-	-	-	-	-	-	-
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	90	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	13	<2	<0.4	5	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	64	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	14	25	0.7	14	95	89	0.1	27	270	-	-	-	-	-	-	-	-	-	-	-
DUP01	BH102	0.1-0.3	11/03/2021	-	-	<0.1	0.3	<0.1	1.5	0.6	2.1	5.4	6	0.7	12	40	180	0.2	9.2	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05
DUP02	BH115	0.6-0.8	12/03/2021	-	-	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	12	2.5	<0.4	6.1	5.6	18	<0.1	<5	28	-	-	-	-	-	-	-	-	-	-	-
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	113	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	18	8	0.8	58	45	1400	0.3	17	250	-	-	-	-	-	-	-	-	-	-	-
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	136	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7	7.2	0.6	13	34	630	0.1	8.9	150	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05

	OCP														PAH													
	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	$\gamma$ -BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Vic EPA IWRG 621 OCP (Total)*	Vic EPA IWRG 621 Other OCP (Total)*	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound) *	Benzo(a)pyrene TEQ (medium bound) *	Benzo(a)pyrene TEQ (upper bound) *	Benzo(b,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo[b]fluoranthene	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	MG/KG	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE HSL-C - Recreational / Open Space Direct Contact																												
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)																												
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil																				0.7								
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)																												
NEPM 2013 HIL-C Recreational Soil					20				10		10	400	30								4	4	4					
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																												

Field_ID	LocCode	Sample Depth	Sample Date	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	$\gamma$ -BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Vic EPA IWRG 621 OCP (Total)*	Vic EPA IWRG 621 Other OCP (Total)*	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound) *	Benzo(a)pyrene TEQ (medium bound) *	Benzo(a)pyrene TEQ (upper bound) *	Benzo(b,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo[b]fluoranthene	
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	0.6	1.2	0.7	1.3	1.5	1.8	0.6	1.9	1	1.7	
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	0.7	0.8	1.1	1.4	1.7	0.6	1.3	0.7	1.2	
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.2	1.2	1.6	1.8	2.1	0.7	1	1.1	0.7	
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.1	1.4	1.8	2.1	2.3	1	1.2	1.1	1	
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	0.7	0.9	1.2	1.5	0.6	0.6	<0.5	1.1	
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	0.5	0.5	0.9	1.2	<0.5	<0.5	<0.5	<0.5	
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	2.1	3.3	4.9	4.9	4.9	2.2	2.6	2.2	2.2	
DUP01	BH102	0.1-0.3	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.3	1.4	1.8	2.1	2.3	0.7	1.1	1.2	0.9	
DUP02	BH115	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	0.9	1.1	1.4	1.7	1.9	0.6	0.9	0.8	0.8	
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	0.8	1.1	1.4	1.6	1.9	0.7	0.8	0.8	0.6	

	Polychlorinated Biphenyls								TRH (NEPM 1999 Fractions)						TRH (NEPM 2013 Fractions)														
	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAHs	Arochlor 1221	Arochlor 1016	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (Sum of total)	C6 - C10	C10-C16	TRH F1 (TRH C6-C10 less BTEX)	TRH F2 (TRH C10-C16 minus naphthalene)	TRH F3 (C16-34)	TRH F4 (C34-C40)	C10 - C40 (Sum of total)	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	
EQL	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	20	20	50	50	50	20	50	20	50	100	100	100	
CRC CARE HSL-C - Recreational / Open Space Direct Contact					1900																	3800	5100			5300	7400		
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)																													
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil																						180	120			300	2800		
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)					170																								
NEPM 2013 HIL-C Recreational Soil								300							1														
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																						700	1000			2500	10000		
Field_ID	LocCode	Sample Depth	Sample Date	<0.5	2.5	<0.5	0.6	<0.5	2.5	2.3	15.6	-	-	-	-	-	-	47	<20	100	<50	100	62	<50	33	<50	150	<100	150
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	1.2	7.6	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<20	25	130	<50	155	<20	<50	<20	<50	230	<100	230
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	30	120	<50	150	<20	<50	<20	<50	190	<100	190
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	<0.5	1.6	<0.5	0.6	<0.5	0.8	1.9	10.8	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	73	<50	73	<20	<50	<20	<50	100	<100	100
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	<0.5	<0.5	2.1	<0.5	13 - 16	1.9	<0.5	<0.5	-	-	-	-	-	-	60	1100	<50	<50	1100	110	1800	94	1787	<100	1900	3700
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	60	60	<20	<50	<20	<50	<100	<100	<100
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	<0.5	1.8	<0.5	0.7	<0.5	0.8	2.1	12.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	130	160	290	<20	<50	<20	<50	250	140	390
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	4.4	-	-	-	-	-	-	<20	<20	110	110	220	<20	<50	<20	<50	190	<100	190
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.1	-	-	-	-	-	-	<20	26	82	<50	108	<20	<50	<20	<50	140	<100	140
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<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	<20	25	130	77	232	<20	<50	<20	<50	280	150	430
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	23	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	23	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	59	<50	59	<20	<50	<20	<50	<100	<100	<100
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	0.7	3	<0.5	2	<0.5	1.2	3.4	24.9	-	-	-	-	-	-	<20	<20	160	85	245	<20	<50	<20	<50	330	<100	330
DUP01	BH102	0.1-0.3	11/03/2021	<0.5	2.4	<0.5	0.8	<0.5	1	2.4	13.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<20	37	120	<50	157	<20	<50	<20	<50	190	110	300
DUP02	BH115	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	<20	28	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	<0.5	1.5	<0.5	0.6	<0.5	0.8	1.6	9.6	-	-	-	-	-	-	<20	96	500	110	706	<20	120	<20	120	650	210	980
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	<0.5	1.3	<0.5	0.6	<0.5	0.6	1.4	8.7	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	86	<50	86	<20	<50	<20	<50	190	<100	190

Table 2 - Duplicate Summary and RPDs

SDG	18-Mar-21	18-Mar-21	RPD	18-Mar-21	18-Mar-21	RPD
Field ID	BH102 0.1-0.3	DUP01		BH115 0.6-0.8	DUP02	
Sample Date	11/03/2021	11/03/2021	(%)	12/03/2021	12/03/2021	(%)

Chemical Group	Chemical Name	Units	EQL	Primary sample	Duplicate of BH102 0.1-0.3		Primary Sample	Duplicate of BH115 0.6-0.8	
BTEX	Benzene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
BTEX	Ethylbenzene	mg/kg	0.1	0.4	0.3	29	<0.1	<0.1	0
BTEX	Toluene	mg/kg	0.1	<0.1	<0.1	0	<0.1	<0.1	0
BTEX	Xylene (m & p)	mg/kg	0.2	2.2	1.5	38	<0.2	<0.2	0
BTEX	Xylene (o)	mg/kg	0.1	0.9	0.6	40	<0.1	<0.1	0
BTEX	Xylene Total	mg/kg	0.3	3.1	2.1	38	<0.3	<0.3	0
Inorganics	Moisture Content (dried @ 103°C)	%	1	7.6	5.4	34	7.3	12.0	49
Metals	Area 5	mg/kg	2	7.7	6.0	25	17.0	2.5	149
Metals	Area 5	mg/kg	0.4	0.8	0.7	13	<0.4	<0.4	0
Metals	Area 5	mg/kg	5	14.0	12.0	15	21.0	6.1	110
Metals	Area 5	mg/kg	5	54.0	40.0	30	19.0	5.6	109
Metals	Area 4	mg/kg	5	<b>280.0</b>	<b>180.0</b>	<b>43</b>	<b>54.0</b>	<b>18.0</b>	<b>100</b>
Metals	Area 4	mg/kg	0.1	0.3	0.2	40	<0.1	<0.1	0
Metals	Area 4	mg/kg	5	10.0	9.2	8	9.3	<5.0	60
Metals	Area 4	mg/kg	5	180.0	170.0	6	<b>96.0</b>	<b>28.0</b>	<b>110</b>
OCP	Area 3	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 3	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 1	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 1	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 1	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 2	mg/kg	0.1	<0.1	<0.1	0	-	-	-
OCP	Area 2	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 2	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 2	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 3	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 3	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Endosulfan I	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Endosulfan II	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 1	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Area 1	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Endrin aldehyde	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Endrin ketone	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	g-BHC (Lindane)	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Heptachlor	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Heptachlor epoxide	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Hexachlorobenzene	mg/kg	0.05	<0.05	<0.05	0	-	-	-
OCP	Methoxychlor	mg/kg	0.2	<0.2	<0.2	0	-	-	-
OCP	Toxaphene	mg/kg	0.1	<0.1	<0.1	0	-	-	-
OCP	Vic EPA IWRG 621 OCP (Total)*	mg/kg	0.1	<0.2	<0.2	0	-	-	-
OCP	Vic EPA IWRG 621 Other OCP (Total)*	mg/kg	0.1	<0.2	<0.2	0	-	-	-
PAH	Acenaphthene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Acenaphthylene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Benzo(a)anthracene	mg/kg	0.5	0.7	1.3	60	<0.5	<0.5	0
PAH	Benzo(a)pyrene	mg/kg	0.5	0.8	1.4	55	<0.5	<0.5	0
PAH	Benzo(a)pyrene TEQ (lower bound) *	mg/kg	0.5	1.1	1.8	48	<0.5	<0.5	0
PAH	Benzo(a)pyrene TEQ (medium bound) *	mg/kg	0.5	1.4	2.1	40	0.6	0.6	0
PAH	Benzo(a)pyrene TEQ (upper bound) *	mg/kg	0.5	1.7	2.3	30	1.2	1.2	0
PAH	Benzo(g,h,i)perylene	mg/kg	0.5	0.6	0.7	15	<0.5	<0.5	0
PAH	Benzo(k)fluoranthene	mg/kg	0.5	1.3	1.1	17	<0.5	<0.5	0
PAH	Chrysene	mg/kg	0.5	0.7	1.2	53	<0.5	<0.5	0
PAH	Benzo[b+g]fluoranthene	mg/kg	0.5	1.2	0.9	29	<0.5	<0.5	0
PAH	Dibenz(a,h)anthracene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Fluoranthene	mg/kg	0.5	1.1	2.4	74	<0.5	<0.5	0
PAH	Fluorene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Indeno(1,2,3-c,d)pyrene	mg/kg	0.5	<0.5	0.8	46	<0.5	<0.5	0
PAH	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Naphthalene	mg/kg	0.5	<0.5	<0.5	0	<0.5	<0.5	0
PAH	Phenanthrene	mg/kg	0.5	<0.5	1.0	67	<0.5	<0.5	0
PAH	Pyrene	mg/kg	0.5	1.2	2.4	67	<0.5	<0.5	0
PAH	Total PAHs	mg/kg	0.5	<b>7.6</b>	<b>13.2</b>	<b>54</b>	<0.5	<0.5	0
Polychlorinated Biphenyls	Aroclor 1221	mg/kg	0.1	<0.1	<0.1	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1016	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1232	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1242	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1248	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1254	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	Aroclor 1260	mg/kg	0.5	<0.5	<0.5	0	-	-	-
Polychlorinated Biphenyls	PCBs (Sum of total)	mg/kg	0.5	<0.5	<0.5	0	-	-	-
TRH (NEPM 1999 Fractions)	C6 - C9	mg/kg	20	<20.0	<20.0	0	<20.0	<20.0	0
TRH (NEPM 1999 Fractions)	C10 - C14	mg/kg	20	25.0	37.0	39	23.0	28.0	20
TRH (NEPM 1999 Fractions)	C15 - C28	mg/kg	50	130.0	120.0	8	<50.0	<50.0	0
TRH (NEPM 1999 Fractions)	C29 - C36	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
TRH (NEPM 1999 Fractions)	C10 - C36 (Sum of total)	mg/kg	50	155.0	157.0	1	<50.0	<50.0	0
TRH (NEPM 2013 Fractions)	C6 - C10	mg/kg	20	<20.0	<20.0	0	<20.0	<20.0	0
TRH (NEPM 2013 Fractions)	F1 (C6-C10 less BTEX)	mg/kg	20	<20.0	<20.0	0	<20.0	<20.0	0
TRH (NEPM 2013 Fractions)	C10-C16	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
TRH (NEPM 2013 Fractions)	F2 (C10-C16 less naphthalene)	mg/kg	50	<50.0	<50.0	0	<50.0	<50.0	0
TRH (NEPM 2013 Fractions)	F3 (C16-C34)	mg/kg	100	230.0	190.0	19	<100.0	<100.0	0
TRH (NEPM 2013 Fractions)	F4 (C34-C40)	mg/kg	100	<100.0	110.0	10	<100.0	<100.0	0
TRH (NEPM 2013 Fractions)	C10 - C40 (Sum of total)	mg/kg	100	230.0	300.0	26	<100.0	<100.0	0

\*RPDs have only been considered where a concentration is greater than 10 times the EQL.

\*\*High RPDs are in bold (Acceptable RPDs for each EQL multiplier range are: 50% (10-20 x EQL); 30% (> 20 x EQL) )

				Field_ID	TRIP SPIKE	TRIP BLANK
				Sample Date	12/03/2021	11/03/2021
Chemical Group	Chemical Name	Units*	EQL			
BTEX	Benzene	mg/kg	0.1	110	<0.1	
	Ethylbenzene	mg/kg	0.1	100	<0.1	
	Toluene	mg/kg	0.1	110	<0.1	
	Xylene (m & p)	mg/kg	0.2	100	<0.2	
	Xylene (o)	mg/kg	0.1	100	<0.1	
	Xylene Total	mg/kg	0.3	100	<0.3	

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**Appendix F – Laboratory Reports**

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## Grace Tuckwell

**From:** Wu, Edward <Edward.Wu@coffey.com>  
**Sent:** Thursday, 18 March 2021 6:51 PM  
**To:** #AU04\_Enviro\_Sample\_NSW  
**Cc:** Hay, Simon; Pfitzner, Peter; Ursula Long  
**Subject:** RE: Eurofins Sample Receipt Advice - Report 780950 : Site 754-SYDEN282211

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Hi

Here's our required analysis schedule. Please kindly proceed ASAP. Would a 4 day turnaround be possible? Please also redate TRIP BLANK, TRIP SPIKE & SPIKE LAB to reflect the fieldwork date of 11 March 2021. Thanks.

Borehole ID	Depth (m)	Date	Asbestos (yes/no)	B7= TRH BTEX PAH M8	B13= OCP PCB	B4= TRH BTEX PAH	M8	BTEX	HOLD
BH101	0.1-0.3	11/03/2021	1	1					
BH101	0.6-0.7	11/03/2021	1	1					1
BH102	0.1-0.3	11/03/2021	1	1	1				
BH102	0.9-1.2	11/03/2021	1	1					1
BH103	1.3-1.5	11/03/2021	1	1					
BH104	1.1-1.3	11/03/2021	1	1					
BH105	1.2-1.4	11/03/2021	1	1					
BH106	0.7-0.9	11/03/2021	1	1	1				
BH107	0.2-0.4	11/03/2021	1	1					
BH107	1.2-1.4	11/03/2021							1
BH108	0.8-1.0	11/03/2021	1	1					
BH109	0.7-0.9	11/03/2021	1	1					
BH110	0.5-0.7	11/03/2021	1	1	1				
BH111	0.3-0.4	12/03/2021							1
BH111A	0.3-0.4	12/03/2021	1				1		
BH111A	1.3-1.5	12/03/2021				1			
BH112	0.3-0.5	12/03/2021	1	1					
BH113	0.6-0.8	12/03/2021	1	1	1				
BH114	0.3-0.2	12/03/2021	1	1					
BH115	0.6-0.8	12/03/2021	1	1					
BH116	0.6-0.8	12/03/2021	1	1					
BH117	0.6-0.9	11/03/2021	1	1					
BH118	0.3-0.5	11/03/2021	1	1					
BH118	1.2-1.4	11/03/2021							1
MW01	0.8-0.9	12/03/2021	1	1					
MW01	1.4-1.5	12/03/2021							1
MW02	0.2-0.3	12/03/2021	1	1	1				
MW02	1.3-1.5	12/03/2021							1
DUP01		11/03/2021		1	1				
DUP02		12/03/2021		1					

TRIP BLANK		11/03/2021							1
TRIP SPIKE		11/03/2021							1
SPIKE LAB		11/03/2021							1

Regards

Edward Wu

Principal Environmental Engineer

Certified Site Contamination Specialist (EIANZ CEnvP Registration 40017)

Part time: Tue/Wed/Thu (available on mobile on other days)

Level 19, Tower B,  
799 Pacific Highway, Chatswood, NSW 2067

t: +61 2 94061000 (ext 1199)

m: +61 4 13276891

Coffey is transitioning to Tetra Tech Coffey in April 2021



DRAFT

**From:** EnviroSampleNSW@eurofins.com <EnviroSampleNSW@eurofins.com>

**Sent:** Wednesday, 17 March 2021 12:14 PM

**To:** Wu, Edward <Edward.Wu@coffey.com>

**Cc:** fadir.sabir@coffey.com; Hay, Simon <Simon.Hay@coffey.com>

**Subject:** Eurofins Sample Receipt Advice - Report 780950 : Site 754-SYDEN282211

**⚠ CAUTION:** This email originated from an external sender. Verify the source before opening links or attachments.



Dear Valued Client,

Please provide a COC, samples logged on hold.

Jar and Asbestos bag (low volume on bags) received for all samples except DUP1 and DUP2.

Please find attached a Sample Receipt Advice (SRA), a Summary Sheet and a scanned copy of your Chain-of-Custody (COC). It is important that you check this documentation to ensure that the details are correct such as the Client Job Number, Turn Around Time, any comments in the Notes section and sample numbers as well as the requested analysis. If there are any irregularities then please contact your Eurofins | Environment Testing Analytical Services Manager as soon as possible to make certain that they get changed.

Regards

Luca Dominici

**Sample Receipt**

**Eurofins | Environmental Testing**

Unit F3, Parkview Building

16 Mars Road

LANE COVE WEST NSW 2066

AUSTRALIA

Phone: +61 02 9900 8421

Email: [EnviroSampleNSW@eurofins.com](mailto:EnviroSampleNSW@eurofins.com)

Website: [environment.eurofins.com.au](http://environment.eurofins.com.au)

[EnviroNote 1108 - Emissions from Stationary Sources](#)

[EnviroNote 1103 - NATA Accreditation for Dioxins](#)

Click [here](#) to report this email as spam.

ScannedByWebsenseForEurofins

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Site # 1254 & 14271

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**Brisbane**

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**Perth**

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Site # 23736

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Penrose, Auckland 1061  
Phone : +64 9 526 45 51  
IANZ # 1327

**Christchurch**

43 Detroit Drive  
Rolleston, Christchurch 7675  
Phone : 0800 856 450  
IANZ # 1290

## Sample Receipt Advice

**Company name:** Coffey Environments Pty Ltd NSW  
**Contact name:** Edward Wu  
**Project name:** 754-SYDEN282211  
**Project ID:** Not provided  
**Turnaround time:** 4 Day  
**Date/Time received:** Mar 18, 2021 6:51 PM  
**Eurofins reference:** 780950

## Sample Information

- ✓ A detailed list of analytes logged into our LIMS, is included in the attached summary table.
- ✓ Sample Temperature of a random sample selected from the batch as recorded by Eurofins Sample Receipt : 10.3 degrees Celsius.
- ✓ All samples have been received as described on the above COC.
- ✓ COC has been completed correctly.
- ✓ Attempt to chill was evident.
- ✓ Appropriately preserved sample containers have been used.
- ✓ All samples were received in good condition.
- ✓ Samples have been provided with adequate time to commence analysis in accordance with the relevant holding times.
- ✓ Appropriate sample containers have been used.
- ✓ Sample containers for volatile analysis received with zero headspace.
- ✗ Split sample sent to requested external lab.
- ✗ Some samples have been subcontracted.
- N/A Custody Seals intact (if used).

## Notes

Samples received by the laboratory after 5.30pm are deemed to have been received the following working day.

## Contact

If you have any questions with respect to these samples, please contact your Analytical Services Manager:

**Ursula Long on phone : or by email: [UrsulaLong@eurofins.com](mailto:UrsulaLong@eurofins.com)**

Results will be delivered electronically via email to Edward Wu - [edward\\_wu@coffey.com](mailto:edward_wu@coffey.com).

*Note: A copy of these results will also be delivered to the general Coffey Environments Pty Ltd NSW email address.*

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 Phone : 0800 856 450  
 IANZ # 1290

<b>Company Name:</b>	Coffey Environments Pty Ltd NSW	<b>Order No.:</b>		<b>Received:</b>	Mar 18, 2021 6:51 PM
<b>Address:</b>	Level 20, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067	<b>Report #:</b>	780950	<b>Due:</b>	Mar 24, 2021
<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	BH101 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31037	X				X	X			
2	BH101 0.6-0.7	Mar 11, 2021		Soil	S21-Ma31038		X							
3	BH102 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31039	X			X	X	X			
4	BH102 0.9-1.2	Mar 11, 2021		Soil	S21-Ma31040		X							
5	BH103 1.3-1.5	Mar 11, 2021		Soil	S21-Ma31041	X				X	X			
6	BH104 1.1-1.3	Mar 11, 2021		Soil	S21-Ma31042	X				X	X			
7	BH105 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31043	X				X	X			
8	BH106 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31044	X			X	X	X			
9	BH107 0.2-0.4	Mar 11, 2021		Soil	S21-Ma31045	X				X	X			
10	BH107 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31046		X							

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<b>Address:</b>	Level 20, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067	<b>Report #:</b>	780950	<b>Due:</b>	Mar 24, 2021
<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
11	BH108 0.8-1.0	Mar 11, 2021		Soil	S21-Ma31047	X				X	X			
12	BH109 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31048	X				X	X			
13	BH110 0.5-0.7	Mar 11, 2021		Soil	S21-Ma31049	X			X	X	X			
14	BH111 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31050		X							
15	BH111A 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31051	X		X		X				
16	BH111A 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31052					X		X		
17	BH112 0.3-0.5	Mar 12, 2021		Soil	S21-Ma31053	X				X	X			
18	BH113 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31054	X			X	X	X			
19	BH114 0.3-0.2	Mar 12, 2021		Soil	S21-Ma31055	X				X	X			
20	BH115 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31056	X				X	X			

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<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
21	BH116 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31057	X					X	X		
22	BH117 0.6-0.9	Mar 11, 2021		Soil	S21-Ma31058	X					X	X		
23	BH118 0.3-0.5	Mar 11, 2021		Soil	S21-Ma31059	X					X	X		
24	BH118 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31060		X							
25	MW01 0.8-0.9	Mar 12, 2021		Soil	S21-Ma31061	X					X	X		
26	MW01 1.4-1.5	Mar 12, 2021		Soil	S21-Ma31062		X							
27	MW02 0.2-0.3	Mar 12, 2021		Soil	S21-Ma31063	X				X	X	X		
28	MW02 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31064		X							
29	DUP01	Mar 11, 2021		Soil	S21-Ma31065					X	X	X		
30	DUP02	Mar 12, 2021		Soil	S21-Ma31066						X	X		
31	TRIP BLANK	Mar 11, 2021		Soil	S21-Ma31067					X				

DRAFT

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<b>Company Name:</b>	Coffey Environments Pty Ltd NSW	<b>Order No.:</b>		<b>Received:</b>	Mar 18, 2021 6:51 PM
<b>Address:</b>	Level 20, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067	<b>Report #:</b>	780950	<b>Due:</b>	Mar 24, 2021
<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
32	TRIP SPIKE	Mar 11, 2021		Soil	S21-Ma31068									X
33	SPIKE LAB	Mar 04, 2021		Soil	S21-Ma31069									X
<b>Test Counts</b>						20	7	1	1	6	23	21	1	2

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**Coffey Environments Pty Ltd NSW**  
**Level 20, Tower B, Citadel Tower 799 Pacific Highway**  
**Chatswood**  
**NSW 2067**



**NATA Accredited**  
**Accreditation Number 1261**  
**Site Number 18217**

Accredited for compliance with ISO/IEC 17025—Testing  
 NATA is a signatory to the LAC Mutual Recognition  
 Arrangement for the mutual recognition of the  
 equivalence of testing, medical testing, calibration,  
 inspection and proficiency testing scheme providers  
 reports.

**Attention:** Edward Wu  
**Report** 780950-AID  
**Project Name** 754-SYDEN282211  
**Received Date** Mar 17, 2021  
**Date Reported** Mar 24, 2021

**Methodology:**

Asbestos Fibre  
 Identification

Conducted in accordance with the Australian Standard AS 4964 – 2004: Method for the Qualitative Identification of Asbestos in Bulk Samples and in-house Method LTM-ASB-8020 by polarised light microscopy (PLM) and dispersion staining (DS) techniques.  
 NOTE: Positive Trace Analysis results indicate the sample contains detectable respirable fibres.

Unknown Mineral  
 Fibres

Mineral fibres of unknown type, as determined by PLM with DS, may require another analytical technique, such as Electron Microscopy, to confirm unequivocal identity.  
 NOTE: While Actinolite, Anthophyllite and Tremolite asbestos may be detected by PLM with DS, due to variability in the optical properties of these materials, AS4964 requires that these are reported as UMF unless confirmed by an independent technique.

Subsampling Soil  
 Samples

The whole sample submitted is first dried and then passed through a 10mm sieve followed by a 2mm sieve. All fibrous matter greater than 10mm, greater than 2mm as well as the material passing through the 2mm sieve are retained and analysed for the presence of asbestos. If the sub 2mm fraction is greater than approximately 30 to 60g then a sub-sampling routine based on ISO 3082:2009(E) is employed.  
 NOTE: Depending on the nature and size of the soil sample, the sub-2 mm residue material may need to be sub-sampled for trace analysis, in accordance with AS 4964-2004.

Bonded asbestos-  
 containing material  
 (ACM)

The material is first examined and any fibres isolated for identification by PLM and DS. Where required, interfering matrices may be removed by disintegration using a range of heat, chemical or physical treatments, possibly in combination. The resultant material is then further examined in accordance with AS 4964 - 2004.  
 NOTE: Even after disintegration it may be difficult to detect the presence of asbestos in some asbestos-containing bulk materials using PLM and DS. This is due to the low grade or small length or diameter of the asbestos fibres present in the material, or to the fact that very fine fibres have been distributed intimately throughout the materials. Vinyl/asbestos floor tiles, some asbestos-containing sealants and mastics, asbestos-containing epoxy resins and some ore samples are examples of these types of material, which are difficult to analyse.

Limit of Reporting

The performance limitation of the AS 4964 (2004) method for non-homogeneous samples is around 0.1 g/kg (equivalent to 0.01% (w/w)). Where no asbestos is found by PLM and DS, including Trace Analysis, this is considered to be at the nominal reporting limit of 0.01% (w/w).  
 The NEPM screening level of 0.001% (w/w) is intended as an on-site determination, not a laboratory Limit of Reporting (LOR), per se. Examination of a large sample size (e.g. 500 mL) may improve the likelihood of detecting asbestos, particularly AF, to aid assessment against the NEPM criteria. Gravimetric determinations to this level of accuracy are outside of AS 4964 and hence NATA Accreditation does not cover the performance of this service (non-NATA results shown with an asterisk).  
 NOTE: NATA News March 2014, p.7, states in relation to AS 4964: "This is a qualitative method with a nominal reporting limit of 0.01 % " and that currently in Australia "there is no validated method available for the quantification of asbestos". This report is consistent with the analytical procedures and reporting recommendations in the NEPM and the WA DoH.

**Project Name** 754-SYDEN282211  
**Project ID**  
**Date Sampled** Mar 11, 2021 to Mar 12, 2021  
**Report** 780950-AID

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH101 0.1-0.3	21-Ma31037	Mar 11, 2021	Approximate Sample 136g Sample consisted of: Brown coarse-grained sandy soil, sand stone, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH102 0.1-0.3	21-Ma31039	Mar 11, 2021	Approximate Sample 100g Sample consisted of: Brown coarse-grained sandy soil, sand stone, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH103 1.3-1.5	21-Ma31041	Mar 11, 2021	Approximate Sample 43g Sample consisted of: Brown fine-grained soil and ash-like material	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH104 1.1-1.3	21-Ma31042	Mar 11, 2021	Approximate Sample 59g Sample consisted of: Brown coarse-grained clayey-sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH105 1.2-1.4	21-Ma31043	Mar 11, 2021	Approximate Sample 37g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH106 0.7-0.9	21-Ma31044	Mar 11, 2021	Approximate Sample 73g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH107 0.2-0.4	21-Ma31045	Mar 11, 2021	Approximate Sample 149g Sample consisted of: Brown coarse-grained sandy soil, rocks and organic debris	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH108 0.8-1.0	21-Ma31047	Mar 11, 2021	Approximate Sample 61g Sample consisted of: Brown coarse-grained sandy soil, bitumen and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

Client Sample ID	Eurofins Sample No.	Date Sampled	Sample Description	Result
BH109 0.7-0.9	21-Ma31048	Mar 11, 2021	Approximate Sample 24g Sample consisted of: Brown coarse-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH110 0.5-0.7	21-Ma31049	Mar 11, 2021	Approximate Sample 114g Sample consisted of: Brown coarse-grained sandy soil, bitumen and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH111A 0.3-0.4	21-Ma31051	Mar 12, 2021	Approximate Sample 122g Sample consisted of: Brown coarse-grained sandy soil, brick fragments and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH112 0.3-0.5	21-Ma31053	Mar 12, 2021	Approximate Sample 89g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH113 0.6-0.8	21-Ma31054	Mar 12, 2021	Approximate Sample 46g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH114 0.3-0.2	21-Ma31055	Mar 12, 2021	Approximate Sample 57g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH115 0.6-0.8	21-Ma31056	Mar 12, 2021	Approximate Sample 52g Sample consisted of: Brown coarse-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH116 0.6-0.8	21-Ma31057	Mar 12, 2021	Approximate Sample 22g Sample consisted of: Brown fine-grained soil and ash-like material	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH117 0.6-0.9	21-Ma31058	Mar 11, 2021	Approximate Sample 90g Sample consisted of: Brown fine-grained sandy soil	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
BH118 0.3-0.5	21-Ma31059	Mar 11, 2021	Approximate Sample 64g Sample consisted of: Grey fine-grained sandy soil and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
MW01 0.8-0.9	21-Ma31061	Mar 12, 2021	Approximate Sample 113g Sample consisted of: Brown coarse-grained sandy soil, sand stone and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.
MW02 0.2-0.3	21-Ma31063	Mar 12, 2021	Approximate Sample 136g Sample consisted of: Brown coarse-grained sandy soil, sand stone and rocks	No asbestos detected at the reporting limit of 0.01% w/w. Organic fibre detected. No trace asbestos detected.

**Sample History**

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

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

<b>Description</b>	<b>Testing Site</b>	<b>Extracted</b>	<b>Holding Time</b>
Asbestos - LTM-ASB-8020	Sydney	Mar 18, 2021	Indefinite

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<b>Address:</b>	Level 20, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067	<b>Report #:</b>	780950	<b>Due:</b>	Mar 24, 2021
<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	BH101 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31037	X				X	X			
2	BH101 0.6-0.7	Mar 11, 2021		Soil	S21-Ma31038		X							
3	BH102 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31039	X			X	X	X			
4	BH102 0.9-1.2	Mar 11, 2021		Soil	S21-Ma31040		X							
5	BH103 1.3-1.5	Mar 11, 2021		Soil	S21-Ma31041	X				X	X			
6	BH104 1.1-1.3	Mar 11, 2021		Soil	S21-Ma31042	X				X	X			
7	BH105 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31043	X				X	X			
8	BH106 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31044	X			X	X	X			
9	BH107 0.2-0.4	Mar 11, 2021		Soil	S21-Ma31045	X				X	X			
10	BH107 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31046		X							

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<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
11	BH108 0.8-1.0	Mar 11, 2021		Soil	S21-Ma31047	X				X	X			
12	BH109 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31048	X				X	X			
13	BH110 0.5-0.7	Mar 11, 2021		Soil	S21-Ma31049	X			X	X	X			
14	BH111 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31050		X							
15	BH111A 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31051	X		X		X				
16	BH111A 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31052					X		X		
17	BH112 0.3-0.5	Mar 12, 2021		Soil	S21-Ma31053	X				X	X			
18	BH113 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31054	X			X	X	X			
19	BH114 0.3-0.2	Mar 12, 2021		Soil	S21-Ma31055	X				X	X			
20	BH115 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31056	X				X	X			

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<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
21	BH116 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31057	X				X	X			
22	BH117 0.6-0.9	Mar 11, 2021		Soil	S21-Ma31058	X				X	X			
23	BH118 0.3-0.5	Mar 11, 2021		Soil	S21-Ma31059	X				X	X			
24	BH118 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31060		X							
25	MW01 0.8-0.9	Mar 12, 2021		Soil	S21-Ma31061	X				X	X			
26	MW01 1.4-1.5	Mar 12, 2021		Soil	S21-Ma31062		X							
27	MW02 0.2-0.3	Mar 12, 2021		Soil	S21-Ma31063	X			X	X	X			
28	MW02 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31064		X							
29	DUP01	Mar 11, 2021		Soil	S21-Ma31065				X	X	X			
30	DUP02	Mar 12, 2021		Soil	S21-Ma31066					X	X			
31	TRIP BLANK	Mar 11, 2021		Soil	S21-Ma31067				X					

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**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail				Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>												
<b>Sydney Laboratory - NATA Site # 18217</b>				X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>												
<b>Perth Laboratory - NATA Site # 23736</b>												
<b>Mayfield Laboratory</b>												
<b>External Laboratory</b>												
32	TRIP SPIKE	Mar 11, 2021	Soil	S21-Ma31068								X
<b>Test Counts</b>				20	7	1	1	6	23	21	1	1



**Internal Quality Control Review and Glossary**
**General**

1. QC data may be available on request.
2. All soil results are reported on a dry basis, unless otherwise stated.
3. Samples were analysed on an 'as received' basis.
4. Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
5. This report replaces any interim results previously issued.

**Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample Receipt Advice.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

**Units**

% w/w	weight for weight basis	grams per kilogram
Filter loading:		fibres/100 graticule areas
Reported Concentration:		fibres/mL
Flowrate:		L/min

**Terms**

<b>Dry</b>	Sample is dried by heating prior to analysis
<b>LOR</b>	Limit of Reporting
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>ISO</b>	International Standards Organisation
<b>AS</b>	Australian Standards
<b>WA DOH</b>	Reference document for the NEPM. Government of Western Australia, Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009), including supporting document Recommended Procedures for Laboratory Analysis of Asbestos in Soil (2011)
<b>NEPM</b>	National Environment Protection (Assessment of Site Contamination) Measure, 2013 (as amended)
<b>ACM</b>	Asbestos Containing Materials. Asbestos contained within a non-asbestos matrix, typically presented in bonded and/or sound condition. For the purposes of the NEPM, ACM is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
<b>AF</b>	Asbestos Fines. Asbestos containing materials, including friable, weathered and bonded materials, able to pass a 7mm x 7mm sieve. Considered under the NEPM as equivalent to "non-bonded / friable".
<b>FA</b>	Fibrous Asbestos. Asbestos containing materials in a friable and/or severely weathered condition. For the purposes of the NEPM, FA is generally restricted to those materials that do not pass a 7mm x 7mm sieve.
<b>Friable</b>	Asbestos-containing materials of any size that may be broken or crumbled by hand pressure. For the purposes of the NEPM, this includes both AF and FA. It is outside of the laboratory's remit to assess degree of friability.
<b>Trace Analysis</b>	Analytical procedure used to detect the presence of respirable fibres in the matrix.

**Comments**
**Sample Integrity**

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

**Qualifier Codes/Comments**

Code	Description
N/A	Not applicable

**Asbestos Counter/Identifier:**

Sayeed Abu                                  Senior Analyst-Asbestos (NSW)

**Authorised by:**

Chamath JHM Annakkage                  Senior Analyst-Asbestos (NSW)



**Glenn Jackson**  
**General Manager**

**DRAFT**

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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Coffey Environments Pty Ltd NSW  
 Level 20, Tower B, Citadel Tower 799 Pacific Highway  
 Chatswood  
 NSW 2067



NATA Accredited  
 Accreditation Number 1261  
 Site Number 18217

Accredited for compliance with ISO/IEC 17025 – Testing  
 NATA is a signatory to the ILAC Mutual Recognition  
 Arrangement for the mutual recognition of the  
 equivalence of testing, medical testing, calibration,  
 inspection and proficiency testing scheme providers  
 reports.

Attention: **Edward Wu**

Report **780950-S**  
 Project name **754-SYDEN282211**  
 Received Date **Mar 17, 2021**

Client Sample ID			BH101 0.1-0.3	BH102 0.1-0.3	BH103 1.3-1.5	BH104 1.1-1.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31037	S21-Ma31039	S21-Ma31041	S21-Ma31042
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	47	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	25	< 20	< 20
TRH C15-C28	50	mg/kg	100	130	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	100	155	< 50	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	3.2	0.4	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	19	2.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	7.3	0.9	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	26	3.1	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	91	97	81	98
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	62	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	33	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	150	230	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	150	230	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.3	1.1	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.5	1.4	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.8	1.7	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	1.2	0.7	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.7	0.8	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	1.7	1.2	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	0.6	0.6	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	1.9	1.3	< 0.5	< 0.5
Chrysene	0.5	mg/kg	1.0	0.7	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5

Client Sample ID			BH101 0.1-0.3	BH102 0.1-0.3	BH103 1.3-1.5	BH104 1.1-1.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31037	S21-Ma31039	S21-Ma31041	S21-Ma31042
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Fluoranthene	0.5	mg/kg	2.5	1.1	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	2.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	2.3	1.2	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	15.6	7.6	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	90	100	93	108
p-Terphenyl-d14 (surr.)	1	%	87	88	91	102
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	4.5	7.7	5.1	2.2
Cadmium	0.4	mg/kg	0.5	0.8	< 0.4	< 0.4
Chromium	5	mg/kg	11	14	10	< 5
Copper	5	mg/kg	45	54	11	< 5
Lead	5	mg/kg	110	280	32	9.3
Mercury	0.1	mg/kg	0.2	0.3	< 0.1	0.1
Nickel	5	mg/kg	8.4	10	7.5	< 5
Zinc	5	mg/kg	140	180	150	13
% Moisture	1	%	7.1	7.6	20	3.5
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	0.1	mg/kg	-	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Dibutylchloroendate (surr.)	1	%	-	119	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	90	-	-

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Client Sample ID			BH101 0.1-0.3	BH102 0.1-0.3	BH103 1.3-1.5	BH104 1.1-1.3
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31037	S21-Ma31039	S21-Ma31041	S21-Ma31042
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchloroendate (surr.)	1	%	-	119	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	90	-	-

Client Sample ID			BH105 1.2-1.4	BH106 0.7-0.9	BH107 0.2-0.4	BH108 0.8-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31043	S21-Ma31044	S21-Ma31045	S21-Ma31047
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	60
TRH C10-C14	20	mg/kg	30	< 20	< 20	1100
TRH C15-C28	50	mg/kg	120	73	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	150	73	< 50	1100
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	0.6
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	14
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	1.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	1.3
4-Bromofluorobenzene (surr.)	1	%	68	84	84	97
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	13
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	110
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	94
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	1800
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	1787
TRH >C16-C34	100	mg/kg	190	100	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	1900
TRH >C10-C40 (total)*	100	mg/kg	190	100	< 100	3700
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	1.6	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	1.8	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	2.1	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	1.2	< 0.5	< 0.5

Client Sample ID			BH105 1.2-1.4	BH106 0.7-0.9	BH107 0.2-0.4	BH108 0.8-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31043	S21-Ma31044	S21-Ma31045	S21-Ma31047
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	0.7	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	1.0	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	1.1	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.6	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	2.1
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	0.6	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	16
Phenanthrene	0.5	mg/kg	< 0.5	0.8	< 0.5	1.9
Pyrene	0.5	mg/kg	< 0.5	1.9	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	< 0.5	10.8	< 0.5	20
2-Fluorobiphenyl (surr.)	1	%	90	106	77	101
p-Terphenyl-d14 (surr.)	1	%	85	98	78	85
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	21	4.6	5.6	9.7
Cadmium	0.4	mg/kg	2.4	< 0.4	0.4	1.0
Chromium	5	mg/kg	53	47	33	160
Copper	5	mg/kg	260	23	32	110
Lead	5	mg/kg	250	56	130	440
Mercury	0.1	mg/kg	0.5	0.2	0.2	2.9
Nickel	5	mg/kg	1600	43	8.8	14
Zinc	5	mg/kg	570	140	200	400
% Moisture	1	%	16	5.5	24	7.5
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4,4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	0.1	mg/kg	-	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-

Client Sample ID			BH105 1.2-1.4	BH106 0.7-0.9	BH107 0.2-0.4	BH108 0.8-1.0
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31043	S21-Ma31044	S21-Ma31045	S21-Ma31047
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 11, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Organochlorine Pesticides</b>						
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Dibutylchlorendate (surr.)	1	%	-	99	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	102	-	-
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchlorendate (surr.)	1	%	-	99	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	102	-	-

Client Sample ID			BH109 0.7-0.9	BH110 0.5-0.7	BH111A 0.3-0.4	BH111A 1.3-1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31048	S21-Ma31049	S21-Ma31051	S21-Ma31052
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	-	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	-	< 20
TRH C15-C28	50	mg/kg	< 50	130	-	110
TRH C29-C36	50	mg/kg	60	160	-	110
TRH C10-C36 (Total)	50	mg/kg	60	290	-	220
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	-	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	-	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	-	< 0.3
4-Bromofluorobenzene (surr.)	1	%	105	95	-	73
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	-	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	-	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	-	< 50
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	-	< 50
TRH >C16-C34	100	mg/kg	< 100	250	-	190
TRH >C34-C40	100	mg/kg	< 100	140	-	< 100
TRH >C10-C40 (total)*	100	mg/kg	< 100	390	-	190

Client Sample ID			BH109 0.7-0.9	BH110 0.5-0.7	BH111A 0.3-0.4	BH111A 1.3-1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31048	S21-Ma31049	S21-Ma31051	S21-Ma31052
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	1.8	-	0.9
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	2.1	-	1.2
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	2.3	-	1.5
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	1.1	-	< 0.5
Benzo(a)pyrene	0.5	mg/kg	< 0.5	1.4	-	0.7
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	1.0	-	1.1
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	1.0	-	0.6
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	1.2	-	0.6
Chrysene	0.5	mg/kg	< 0.5	1.1	-	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	1.8	-	0.6
Fluorene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	0.7	-	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	-	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	0.8	-	< 0.5
Pyrene	0.5	mg/kg	< 0.5	2.1	-	0.8
Total PAH*	0.5	mg/kg	< 0.5	12.2	-	4.4
2-Fluorobiphenyl (surr.)	1	%	92	97	-	110
p-Terphenyl-d14 (surr.)	1	%	80	89	-	105
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	< 2	4.9	4.2	-
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	-
Chromium	5	mg/kg	11	18	8.5	-
Copper	5	mg/kg	9.7	46	< 5	-
Lead	5	mg/kg	15	90	9.1	-
Mercury	0.1	mg/kg	< 0.1	0.2	< 0.1	-
Nickel	5	mg/kg	< 5	14	< 5	-
Zinc	5	mg/kg	50	130	12	-
% Moisture	1	%	5.1	11	18	13
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-



Client Sample ID			BH109 0.7-0.9	BH110 0.5-0.7	BH111A 0.3-0.4	BH111A 1.3-1.5
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31048	S21-Ma31049	S21-Ma31051	S21-Ma31052
Date Sampled			Mar 11, 2021	Mar 11, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Organochlorine Pesticides</b>						
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	0.1	mg/kg	-	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Dibutylchlorodate (surr.)	1	%	-	109	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	95	-	-
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchlorodate (surr.)	1	%	-	109	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	95	-	-

Client Sample ID			BH112 0.3-0.5	BH113 0.6-0.8	BH114 0.3-0.2	BH115 0.6-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31053	S21-Ma31054	S21-Ma31055	S21-Ma31056
Date Sampled			Mar 12, 2021	Mar 12, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	26	25	23	23
TRH C15-C28	50	mg/kg	82	130	< 50	< 50
TRH C29-C36	50	mg/kg	< 50	77	< 50	< 50
TRH C10-C36 (Total)	50	mg/kg	108	232	< 50	< 50
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	101	84	101	99
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	< 50

Client Sample ID			BH112 0.3-0.5	BH113 0.6-0.8	BH114 0.3-0.2	BH115 0.6-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31053	S21-Ma31054	S21-Ma31055	S21-Ma31056
Date Sampled			Mar 12, 2021	Mar 12, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	< 50
TRH >C16-C34	100	mg/kg	140	280	< 100	< 100
TRH >C34-C40	100	mg/kg	< 100	150	< 100	< 100
TRH >C10-C40 (total)*	100	mg/kg	140	430	< 100	< 100
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.9	0.6	0.6	0.6
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	1.2	1.2
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(a)pyrene	0.5	mg/kg	0.5	< 0.5	< 0.5	< 0.5
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Chrysene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1.2.3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Pyrene	0.5	mg/kg	0.6	< 0.5	< 0.5	< 0.5
Total PAH*	0.5	mg/kg	1.1	< 0.5	< 0.5	< 0.5
2-Fluorobiphenyl (surr.)	1	%	97	101	88	95
p-Terphenyl-d14 (surr.)	1	%	93	93	95	93
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	8.2	15	11	17
Cadmium	0.4	mg/kg	< 0.4	< 0.4	< 0.4	< 0.4
Chromium	5	mg/kg	11	30	10	21
Copper	5	mg/kg	23	26	7.1	19
Lead	5	mg/kg	130	200	35	54
Mercury	0.1	mg/kg	0.1	1.8	< 0.1	< 0.1
Nickel	5	mg/kg	6.2	11	< 5	9.3
Zinc	5	mg/kg	57	170	< 5	96
% Moisture	1	%	11	7.2	11	7.3
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	-	< 0.1	-	-
4,4'-DDD	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDE	0.05	mg/kg	-	< 0.05	-	-
4,4'-DDT	0.05	mg/kg	-	< 0.05	-	-
a-BHC	0.05	mg/kg	-	< 0.05	-	-
Aldrin	0.05	mg/kg	-	< 0.05	-	-
b-BHC	0.05	mg/kg	-	< 0.05	-	-
d-BHC	0.05	mg/kg	-	< 0.05	-	-
Dieldrin	0.05	mg/kg	-	< 0.05	-	-
Endosulfan I	0.05	mg/kg	-	< 0.05	-	-

Client Sample ID			BH112 0.3-0.5	BH113 0.6-0.8	BH114 0.3-0.2	BH115 0.6-0.8
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31053	S21-Ma31054	S21-Ma31055	S21-Ma31056
Date Sampled			Mar 12, 2021	Mar 12, 2021	Mar 12, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Organochlorine Pesticides</b>						
Endosulfan II	0.05	mg/kg	-	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	-	< 0.05	-	-
Endrin	0.05	mg/kg	-	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	-	< 0.05	-	-
Endrin ketone	0.05	mg/kg	-	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	-	< 0.05	-	-
Heptachlor	0.05	mg/kg	-	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	-	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	-	< 0.05	-	-
Methoxychlor	0.2	mg/kg	-	< 0.2	-	-
Toxaphene	0.1	mg/kg	-	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	-	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	-	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	-	< 0.2	-	-
Dibutylchlorodate (surr.)	1	%	-	88	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	89	-	-
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	-	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	-	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	-	< 0.5	-	-
Total PCB*	0.5	mg/kg	-	< 0.5	-	-
Dibutylchlorodate (surr.)	1	%	-	88	-	-
Tetrachloro-m-xylene (surr.)	1	%	-	89	-	-

Client Sample ID			BH116 0.6-0.8	BH117 0.6-0.9	BH118 0.3-0.5	MW01 0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31057	S21-Ma31058	S21-Ma31059	S21-Ma31061
Date Sampled			Mar 12, 2021	Mar 11, 2021	Mar 11, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	< 20
TRH C10-C14	20	mg/kg	< 20	< 20	< 20	96
TRH C15-C28	50	mg/kg	59	< 50	160	500
TRH C29-C36	50	mg/kg	< 50	< 50	85	110
TRH C10-C36 (Total)	50	mg/kg	59	< 50	245	706
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	< 0.2	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	< 0.3	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	55	81	89	84

Client Sample ID			BH116 0.6-0.8	BH117 0.6-0.9	BH118 0.3-0.5	MW01 0.8-0.9
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31057	S21-Ma31058	S21-Ma31059	S21-Ma31061
Date Sampled			Mar 12, 2021	Mar 11, 2021	Mar 11, 2021	Mar 12, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	< 20
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	< 20
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	120
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	120
TRH >C16-C34	100	mg/kg	< 100	< 100	330	650
TRH >C34-C40	100	mg/kg	< 100	< 100	< 100	210
TRH >C10-C40 (total)*	100	mg/kg	< 100	< 100	330	980
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	< 0.5	< 0.5	4.9	1.4
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	0.6	0.6	4.9	1.7
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.2	1.2	4.9	1.9
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Benz(a)anthracene	0.5	mg/kg	< 0.5	< 0.5	2.1	0.9
Benzo(a)pyrene	0.5	mg/kg	< 0.5	< 0.5	3.3	1.1
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	< 0.5	< 0.5	2.2	0.8
Benzo(g,h,i)perylene	0.5	mg/kg	< 0.5	< 0.5	2.2	0.6
Benzo(k)fluoranthene	0.5	mg/kg	< 0.5	< 0.5	2.6	0.9
Chrysene	0.5	mg/kg	< 0.5	< 0.5	2.2	0.8
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	0.7	< 0.5
Fluoranthene	0.5	mg/kg	< 0.5	< 0.5	3.0	1.5
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	< 0.5	< 0.5	2.0	0.6
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	< 0.5
Phenanthrene	0.5	mg/kg	< 0.5	< 0.5	1.2	0.8
Pyrene	0.5	mg/kg	< 0.5	< 0.5	3.4	1.6
Total PAH*	0.5	mg/kg	< 0.5	< 0.5	24.9	9.6
2-Fluorobiphenyl (surr.)	1	%	97	86	102	99
p-Terphenyl-d14 (surr.)	1	%	76	91	101	98
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	68	< 2	25	8.0
Cadmium	0.4	mg/kg	0.5	< 0.4	0.7	0.8
Chromium	5	mg/kg	20	5.0	14	58
Copper	5	mg/kg	67	< 5	95	45
Lead	5	mg/kg	150	< 5	89	1400
Mercury	0.1	mg/kg	< 0.1	< 0.1	0.1	0.3
Nickel	5	mg/kg	22	< 5	27	17
Zinc	5	mg/kg	160	< 5	270	250
% Moisture	1	%	6.1	13	14	18

Client Sample ID			MW02 0.2-0.3	DUP01	DUP02	TRIP BLANK
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31063	S21-Ma31065	S21-Ma31066	S21-Ma31067
Date Sampled			Mar 12, 2021	Mar 11, 2021	Mar 12, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>						
TRH C6-C9	20	mg/kg	< 20	< 20	< 20	-
TRH C10-C14	20	mg/kg	< 20	37	28	-
TRH C15-C28	50	mg/kg	86	120	< 50	-
TRH C29-C36	50	mg/kg	< 50	< 50	< 50	-
TRH C10-C36 (Total)	50	mg/kg	86	157	< 50	-
<b>BTEX</b>						
Benzene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Toluene	0.1	mg/kg	< 0.1	< 0.1	< 0.1	< 0.1
Ethylbenzene	0.1	mg/kg	< 0.1	0.3	< 0.1	< 0.1
m&p-Xylenes	0.2	mg/kg	< 0.2	1.5	< 0.2	< 0.2
o-Xylene	0.1	mg/kg	< 0.1	0.6	< 0.1	< 0.1
Xylenes - Total*	0.3	mg/kg	< 0.3	2.1	< 0.3	< 0.3
4-Bromofluorobenzene (surr.)	1	%	90	98	78	115
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>						
Naphthalene <sup>N02</sup>	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
TRH C6-C10	20	mg/kg	< 20	< 20	< 20	-
TRH C6-C10 less BTEX (F1) <sup>N04</sup>	20	mg/kg	< 20	< 20	< 20	-
TRH >C10-C16	50	mg/kg	< 50	< 50	< 50	-
TRH >C10-C16 less Naphthalene (F2) <sup>N01</sup>	50	mg/kg	< 50	< 50	< 50	-
TRH >C16-C34	100	mg/kg	190	190	< 100	-
TRH >C34-C40	100	mg/kg	< 100	110	< 100	-
TRH >C10-C40 (total)*	100	mg/kg	190	300	< 100	-
<b>Polycyclic Aromatic Hydrocarbons</b>						
Benzo(a)pyrene TEQ (lower bound) *	0.5	mg/kg	1.4	1.8	< 0.5	-
Benzo(a)pyrene TEQ (medium bound) *	0.5	mg/kg	1.6	2.1	0.6	-
Benzo(a)pyrene TEQ (upper bound) *	0.5	mg/kg	1.9	2.3	1.2	-
Acenaphthene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Acenaphthylene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Benz(a)anthracene	0.5	mg/kg	0.8	1.3	< 0.5	-
Benzo(a)pyrene	0.5	mg/kg	1.1	1.4	< 0.5	-
Benzo(b&j)fluoranthene <sup>N07</sup>	0.5	mg/kg	0.6	0.9	< 0.5	-
Benzo(g,h,i)perylene	0.5	mg/kg	0.7	0.7	< 0.5	-
Benzo(k)fluoranthene	0.5	mg/kg	0.8	1.1	< 0.5	-
Chrysene	0.5	mg/kg	0.8	1.2	< 0.5	-
Dibenz(a,h)anthracene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Fluoranthene	0.5	mg/kg	1.3	2.4	< 0.5	-
Fluorene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Indeno(1,2,3-cd)pyrene	0.5	mg/kg	0.6	0.8	< 0.5	-
Naphthalene	0.5	mg/kg	< 0.5	< 0.5	< 0.5	-
Phenanthrene	0.5	mg/kg	0.6	1.0	< 0.5	-
Pyrene	0.5	mg/kg	1.4	2.4	< 0.5	-
Total PAH*	0.5	mg/kg	8.7	13.2	< 0.5	-
2-Fluorobiphenyl (surr.)	1	%	92	100	85	-
p-Terphenyl-d14 (surr.)	1	%	94	97	92	-

Client Sample ID			MW02 0.2-0.3	DUP01	DUP02	TRIP BLANK
Sample Matrix			Soil	Soil	Soil	Soil
Eurofins Sample No.			S21-Ma31063	S21-Ma31065	S21-Ma31066	S21-Ma31067
Date Sampled			Mar 12, 2021	Mar 11, 2021	Mar 12, 2021	Mar 11, 2021
Test/Reference	LOR	Unit				
<b>Heavy Metals</b>						
Arsenic	2	mg/kg	7.2	6.0	2.5	-
Cadmium	0.4	mg/kg	0.6	0.7	< 0.4	-
Chromium	5	mg/kg	13	12	6.1	-
Copper	5	mg/kg	34	40	5.6	-
Lead	5	mg/kg	630	180	18	-
Mercury	0.1	mg/kg	0.1	0.2	< 0.1	-
Nickel	5	mg/kg	8.9	9.2	< 5	-
Zinc	5	mg/kg	150	170	28	-
<b>% Moisture</b>						
	1	%	7.0	5.4	12	-
<b>Organochlorine Pesticides</b>						
Chlordanes - Total	0.1	mg/kg	< 0.1	< 0.1	-	-
4.4'-DDD	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDE	0.05	mg/kg	< 0.05	< 0.05	-	-
4.4'-DDT	0.05	mg/kg	< 0.05	< 0.05	-	-
a-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Aldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
b-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
d-BHC	0.05	mg/kg	< 0.05	< 0.05	-	-
Dieldrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan I	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan II	0.05	mg/kg	< 0.05	< 0.05	-	-
Endosulfan sulphate	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin aldehyde	0.05	mg/kg	< 0.05	< 0.05	-	-
Endrin ketone	0.05	mg/kg	< 0.05	< 0.05	-	-
g-BHC (Lindane)	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor	0.05	mg/kg	< 0.05	< 0.05	-	-
Heptachlor epoxide	0.05	mg/kg	< 0.05	< 0.05	-	-
Hexachlorobenzene	0.05	mg/kg	< 0.05	< 0.05	-	-
Methoxychlor	0.2	mg/kg	< 0.2	< 0.2	-	-
Toxaphene	0.1	mg/kg	< 0.1	< 0.1	-	-
Aldrin and Dieldrin (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
DDT + DDE + DDD (Total)*	0.05	mg/kg	< 0.05	< 0.05	-	-
Vic EPA IWRG 621 OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Vic EPA IWRG 621 Other OCP (Total)*	0.1	mg/kg	< 0.2	< 0.2	-	-
Dibutylchloroendate (surr.)	1	%	98	109	-	-
Tetrachloro-m-xylene (surr.)	1	%	75	87	-	-
<b>Polychlorinated Biphenyls</b>						
Aroclor-1016	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1221	0.1	mg/kg	< 0.1	< 0.1	-	-
Aroclor-1232	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1242	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1248	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1254	0.5	mg/kg	< 0.5	< 0.5	-	-
Aroclor-1260	0.5	mg/kg	< 0.5	< 0.5	-	-
Total PCB*	0.5	mg/kg	< 0.5	< 0.5	-	-
Dibutylchloroendate (surr.)	1	%	98	109	-	-
Tetrachloro-m-xylene (surr.)	1	%	75	87	-	-

<b>Client Sample ID</b>			<b>TRIP SPIKE</b>
<b>Sample Matrix</b>			<b>Soil</b>
<b>Eurofins Sample No.</b>			<b>S21-Ma31068</b>
<b>Date Sampled</b>			<b>Mar 11, 2021</b>
Test/Reference	LOR	Unit	
<b>BTEX</b>			
Benzene	1	%	110
Ethylbenzene	1	%	100
m&p-Xylenes	1	%	100
o-Xylene	1	%	100
Toluene	1	%	110
Xylenes - Total	1	%	100
4-Bromofluorobenzene (surr.)	1	%	85

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**Sample History**

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

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

Description	Testing Site	Extracted	Holding Time
<b>Eurofins Suite B4</b>			
Total Recoverable Hydrocarbons - 1999 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Mar 19, 2021	14 Days
BTEX - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Mar 19, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Mar 19, 2021	14 Days
Total Recoverable Hydrocarbons - 2013 NEPM Fractions - Method: LTM-ORG-2010 TRH C6-C40	Sydney	Mar 19, 2021	14 Days
Polycyclic Aromatic Hydrocarbons - Method: LTM-ORG-2130 PAH and Phenols in Soil and Water	Sydney	Mar 19, 2021	14 Days
<b>Metals M8</b> - Method: LTM-MET-3040 Metals in Waters, Soils & Sediments by ICP-MS	Sydney	Mar 19, 2021	180 Days
<b>% Moisture</b> - Method: LTM-GEN-7080 Moisture	Sydney	Mar 18, 2021	14 Days
<b>Organochlorine Pesticides</b> - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Mar 19, 2021	14 Days
<b>Polychlorinated Biphenyls</b> - Method: LTM-ORG-2220 OCP & PCB in Soil and Water	Sydney	Mar 19, 2021	28 Days

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<b>Company Name:</b>	Coffey Environments Pty Ltd NSW	<b>Order No.:</b>		<b>Received:</b>	Mar 18, 2021 6:51 PM
<b>Address:</b>	Level 20, Tower B, Citadel Tower 799 Pacific Highway Chatswood NSW 2067	<b>Report #:</b>	780950	<b>Due:</b>	Mar 24, 2021
<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
No	Sample ID	Sample Date	Sampling Time	Matrix	LAB ID									
1	BH101 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31037	X				X	X			
2	BH101 0.6-0.7	Mar 11, 2021		Soil	S21-Ma31038		X							
3	BH102 0.1-0.3	Mar 11, 2021		Soil	S21-Ma31039	X			X	X	X			
4	BH102 0.9-1.2	Mar 11, 2021		Soil	S21-Ma31040		X							
5	BH103 1.3-1.5	Mar 11, 2021		Soil	S21-Ma31041	X				X	X			
6	BH104 1.1-1.3	Mar 11, 2021		Soil	S21-Ma31042	X				X	X			
7	BH105 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31043	X				X	X			
8	BH106 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31044	X			X	X	X			
9	BH107 0.2-0.4	Mar 11, 2021		Soil	S21-Ma31045	X				X	X			
10	BH107 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31046		X							

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		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
11	BH108 0.8-1.0	Mar 11, 2021		Soil	S21-Ma31047	X				X	X			
12	BH109 0.7-0.9	Mar 11, 2021		Soil	S21-Ma31048	X				X	X			
13	BH110 0.5-0.7	Mar 11, 2021		Soil	S21-Ma31049	X			X	X	X			
14	BH111 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31050		X							
15	BH111A 0.3-0.4	Mar 12, 2021		Soil	S21-Ma31051	X		X		X				
16	BH111A 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31052					X		X		
17	BH112 0.3-0.5	Mar 12, 2021		Soil	S21-Ma31053	X				X	X			
18	BH113 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31054	X			X	X	X			
19	BH114 0.3-0.2	Mar 12, 2021		Soil	S21-Ma31055	X				X	X			
20	BH115 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31056	X				X	X			

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<b>Project Name:</b>	754-SYDEN282211	<b>Phone:</b>	+61 2 9406 1000	<b>Priority:</b>	4 Day
		<b>Fax:</b>	+61 2 9406 1004	<b>Contact Name:</b>	Edward Wu

**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
21	BH116 0.6-0.8	Mar 12, 2021		Soil	S21-Ma31057	X					X	X		
22	BH117 0.6-0.9	Mar 11, 2021		Soil	S21-Ma31058	X					X	X		
23	BH118 0.3-0.5	Mar 11, 2021		Soil	S21-Ma31059	X					X	X		
24	BH118 1.2-1.4	Mar 11, 2021		Soil	S21-Ma31060		X							
25	MW01 0.8-0.9	Mar 12, 2021		Soil	S21-Ma31061	X					X	X		
26	MW01 1.4-1.5	Mar 12, 2021		Soil	S21-Ma31062		X							
27	MW02 0.2-0.3	Mar 12, 2021		Soil	S21-Ma31063	X				X	X	X		
28	MW02 1.3-1.5	Mar 12, 2021		Soil	S21-Ma31064		X							
29	DUP01	Mar 11, 2021		Soil	S21-Ma31065					X	X	X		
30	DUP02	Mar 12, 2021		Soil	S21-Ma31066						X	X		
31	TRIP BLANK	Mar 11, 2021		Soil	S21-Ma31067					X				

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**Eurofins Analytical Services Manager : Ursula Long**

Sample Detail						Asbestos - AS4964	HOLD	Metals M8	BTEX	Suite B13: OCP/PCB	Moisture Set	Eurofins Suite B7	Eurofins Suite B4	BTEX
<b>Melbourne Laboratory - NATA Site # 1254 &amp; 14271</b>														
<b>Sydney Laboratory - NATA Site # 18217</b>						X	X	X	X	X	X	X	X	X
<b>Brisbane Laboratory - NATA Site # 20794</b>														
<b>Perth Laboratory - NATA Site # 23736</b>														
<b>Mayfield Laboratory</b>														
<b>External Laboratory</b>														
32	TRIP SPIKE	Mar 11, 2021		Soil	S21-Ma31068									X
33	SPIKE LAB	Mar 04, 2021		Soil	S21-Ma31069									X
<b>Test Counts</b>						20	7	1	1	6	23	21	1	2

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**Internal Quality Control Review and Glossary**
**General**

- Laboratory QC results for Method Blanks, Duplicates, Matrix Spikes, and Laboratory Control Samples follows guidelines delineated in the National Environment Protection (Assessment of Site Contamination) Measure 1999, as amended May 2013 and are included in this QC report where applicable. Additional QC data may be available on request.
- All soil/sediment/solid results are reported on a dry basis, unless otherwise stated.
- All biota/food results are reported on a wet weight basis on the edible portion, unless otherwise stated.
- Actual LORs are matrix dependant. Quoted LORs may be raised where sample extracts are diluted due to interferences.
- Results are uncorrected for matrix spikes or surrogate recoveries except for PFAS compounds.
- SVOC analysis on waters are performed on homogenised, unfiltered samples, unless noted otherwise.
- Samples were analysed on an 'as received' basis.
- Information identified on this report with blue colour, indicates data provided by customer, that may have an impact on the results.
- This report replaces any interim results previously issued.

**Holding Times**

Please refer to 'Sample Preservation and Container Guide' for holding times (QS3001).

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the SRA.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

For VOCs containing vinyl chloride, styrene and 2-chloroethyl vinyl ether the holding time is 7 days however for all other VOCs such as BTEX or C6-10 TRH then the holding time is 14 days.

**\*\*NOTE** pH duplicates are reported as a range NOT as RPD

**Units**

<b>mg/kg</b> milligrams per kilogram	<b>mg/L</b> milligrams per litre	<b>ug/L</b> micrograms per litre
<b>ppm</b> Parts per million	<b>ppb</b> Parts per billion	<b>%</b> Percentage
<b>org/100mL</b> Organisms per 100 millilitres	<b>NTU</b> Nephelometric Turbidity Units	<b>MPN/100mL</b> Most Probable Number of organisms per 100 millilitres

**Terms**

<b>Dry</b>	Where a moisture has been determined on a solid sample the result is expressed on a dry basis.
<b>LOR</b>	Limit of Reporting.
<b>SPIKE</b>	Addition of the analyte to the sample and reported as percentage recovery.
<b>RPD</b>	Relative Percent Difference between two Duplicate pieces of analysis.
<b>LCS</b>	Laboratory Control Sample - reported as percent recovery.
<b>CRM</b>	Certified Reference Material - reported as percent recovery.
<b>Method Blank</b>	In the case of solid samples these are performed on laboratory certified clean sands and in the case of water samples these are performed on de-ionised water.
<b>Surr - Surrogate</b>	The addition of a like compound to the analyte target and reported as percentage recovery.
<b>Duplicate</b>	A second piece of analysis from the same sample and reported in the same units as the result to show comparison.
<b>USEPA</b>	United States Environmental Protection Agency
<b>APHA</b>	American Public Health Association
<b>TCLP</b>	Toxicity Characteristic Leaching Procedure
<b>COC</b>	Chain of Custody
<b>SRA</b>	Sample Receipt Advice
<b>QSM</b>	US Department of Defense Quality Systems Manual Version 5.3
<b>CP</b>	Client Parent - QC was performed on samples pertaining to this report
<b>NCP</b>	Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within.
<b>TEQ</b>	Toxic Equivalency Quotient

**QC - Acceptance Criteria**

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR : No Limit

Results between 10-20 times the LOR : RPD must lie between 0-50%

Results >20 times the LOR : RPD must lie between 0-30%

Surrogate Recoveries: Recoveries must lie between 20-130% Phenols & 50-150% PFASs

PFAS field samples that contain surrogate recoveries in excess of the QC limit designated in QSM 5.3 where no positive PFAS results have been reported have been reviewed and no data was affected.

WA DWER (n=10): PFBA, PFPeA, PFHxA, PFHpA, PFOA, PFBS, PFHxS, PFOS, 6 2 FTSA, 8:2 FTSA

**QC Data General Comments**

- Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.
- Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.
- Organochlorine Pesticide analysis - where reporting LCS data, Toxaphene & Chlordane are not added to the LCS.
- Organochlorine Pesticide analysis - where reporting Spike data, Toxaphene is not added to the Spike.
- Total Recoverable Hydrocarbons - where reporting Spike & LCS data, a single spike of commercial Hydrocarbon products in the range of C12-C30 is added and it's Total Recovery is reported in the C10-C14 cell of the Report.
- pH and Free Chlorine analysed in the laboratory - Analysis on this test must begin within 30 minutes of sampling. Therefore laboratory analysis is unlikely to be completed within holding time. Analysis will begin as soon as possible after sample receipt.
- Recovery Data (Spikes & Surrogates) - where chromatographic interference does not allow the determination of Recovery the term "INT" appears against that analyte.
- Polychlorinated Biphenyls are spiked only using Aroclor 1260 in Matrix Spikes and LCS.
- For Matrix Spikes and LCS results a dash " - " in the report means that the specific analyte was not added to the QC sample.
- Duplicate RPDs are calculated from raw analytical data thus it is possible to have two sets of data.

**Quality Control Results**

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	mg/kg	< 20			20	Pass	
TRH C10-C14	mg/kg	< 20			20	Pass	
TRH C15-C28	mg/kg	< 50			50	Pass	
TRH C29-C36	mg/kg	< 50			50	Pass	
<b>Method Blank</b>							
<b>BTEX</b>							
Benzene	mg/kg	< 0.1			0.1	Pass	
Toluene	mg/kg	< 0.1			0.1	Pass	
Ethylbenzene	mg/kg	< 0.1			0.1	Pass	
m&p-Xylenes	mg/kg	< 0.2			0.2	Pass	
o-Xylene	mg/kg	< 0.1			0.1	Pass	
Xylenes - Total*	mg/kg	< 0.3			0.3	Pass	
<b>Method Blank</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	mg/kg	< 0.5			0.5	Pass	
TRH C6-C10	mg/kg	< 20			20	Pass	
TRH >C10-C16	mg/kg	< 50			50	Pass	
TRH >C16-C34	mg/kg	< 100			100	Pass	
TRH >C34-C40	mg/kg	< 100			100	Pass	
<b>Method Blank</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	mg/kg	< 0.5			0.5	Pass	
Acenaphthylene	mg/kg	< 0.5			0.5	Pass	
Anthracene	mg/kg	< 0.5			0.5	Pass	
Benz(a)anthracene	mg/kg	< 0.5			0.5	Pass	
Benzo(a)pyrene	mg/kg	< 0.5			0.5	Pass	
Benzo(b&j)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Benzo(g,h,i)perylene	mg/kg	< 0.5			0.5	Pass	
Benzo(k)fluoranthene	mg/kg	< 0.5			0.5	Pass	
Chrysene	mg/kg	< 0.5			0.5	Pass	
Dibenz(a,h)anthracene	mg/kg	< 0.5			0.5	Pass	
Fluoranthene	mg/kg	< 0.5			0.5	Pass	
Fluorene	mg/kg	< 0.5			0.5	Pass	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.5			0.5	Pass	
Naphthalene	mg/kg	< 0.5			0.5	Pass	
Phenanthrene	mg/kg	< 0.5			0.5	Pass	
Pyrene	mg/kg	< 0.5			0.5	Pass	
<b>Method Blank</b>							
<b>Heavy Metals</b>							
Arsenic	mg/kg	< 2			2	Pass	
Cadmium	mg/kg	< 0.4			0.4	Pass	
Chromium	mg/kg	< 5			5	Pass	
Copper	mg/kg	< 5			5	Pass	
Lead	mg/kg	< 5			5	Pass	
Mercury	mg/kg	< 0.1			0.1	Pass	
Nickel	mg/kg	< 5			5	Pass	
Zinc	mg/kg	< 5			5	Pass	
<b>Method Blank</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	mg/kg	< 0.1			0.1	Pass	

Test	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
4.4'-DDD	mg/kg	< 0.05			0.05	Pass	
4.4'-DDE	mg/kg	< 0.05			0.05	Pass	
4.4'-DDT	mg/kg	< 0.05			0.05	Pass	
a-BHC	mg/kg	< 0.05			0.05	Pass	
Aldrin	mg/kg	< 0.05			0.05	Pass	
b-BHC	mg/kg	< 0.05			0.05	Pass	
d-BHC	mg/kg	< 0.05			0.05	Pass	
Dieldrin	mg/kg	< 0.05			0.05	Pass	
Endosulfan I	mg/kg	< 0.05			0.05	Pass	
Endosulfan II	mg/kg	< 0.05			0.05	Pass	
Endosulfan sulphate	mg/kg	< 0.05			0.05	Pass	
Endrin	mg/kg	< 0.05			0.05	Pass	
Endrin aldehyde	mg/kg	< 0.05			0.05	Pass	
Endrin ketone	mg/kg	< 0.05			0.05	Pass	
g-BHC (Lindane)	mg/kg	< 0.05			0.05	Pass	
Heptachlor	mg/kg	< 0.05			0.05	Pass	
Heptachlor epoxide	mg/kg	< 0.05			0.05	Pass	
Hexachlorobenzene	mg/kg	< 0.05			0.05	Pass	
Methoxychlor	mg/kg	< 0.2			0.2	Pass	
Toxaphene	mg/kg	< 0.1			0.1	Pass	
<b>Method Blank</b>							
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016	mg/kg	< 0.5			0.5	Pass	
Aroclor-1221	mg/kg	< 0.1			0.1	Pass	
Aroclor-1232	mg/kg	< 0.5			0.5	Pass	
Aroclor-1242	mg/kg	< 0.5			0.5	Pass	
Aroclor-1248	mg/kg	< 0.5			0.5	Pass	
Aroclor-1254	mg/kg	< 0.5			0.5	Pass	
Aroclor-1260	mg/kg	< 0.5			0.5	Pass	
Total PCB*	mg/kg	< 0.5			0.5	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>							
TRH C6-C9	%	72			70-130	Pass	
TRH C10-C14	%	99			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>BTEX</b>							
Benzene	%	78			70-130	Pass	
Toluene	%	79			70-130	Pass	
Ethylbenzene	%	86			70-130	Pass	
m&p-Xylenes	%	83			70-130	Pass	
o-Xylene	%	89			70-130	Pass	
Xylenes - Total*	%	85			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>							
Naphthalene	%	74			70-130	Pass	
TRH C6-C10	%	70			70-130	Pass	
TRH >C10-C16	%	96			70-130	Pass	
<b>LCS - % Recovery</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	%	89			70-130	Pass	
Acenaphthylene	%	100			70-130	Pass	
Anthracene	%	93			70-130	Pass	
Benz(a)anthracene	%	96			70-130	Pass	
Benzo(a)pyrene	%	100			70-130	Pass	

Test	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code		
Benzo(b&i)fluoranthene	%	96	70-130	Pass			
Benzo(g,h,i)perylene	%	95	70-130	Pass			
Benzo(k)fluoranthene	%	91	70-130	Pass			
Chrysene	%	94	70-130	Pass			
Dibenz(a,h)anthracene	%	98	70-130	Pass			
Fluoranthene	%	91	70-130	Pass			
Fluorene	%	93	70-130	Pass			
Indeno(1,2,3-cd)pyrene	%	101	70-130	Pass			
Naphthalene	%	90	70-130	Pass			
Phenanthrene	%	88	70-130	Pass			
Pyrene	%	93	70-130	Pass			
<b>LCS - % Recovery</b>							
<b>Heavy Metals</b>							
Arsenic	%	96	80-120	Pass			
Cadmium	%	98	80-120	Pass			
Chromium	%	102	80-120	Pass			
Copper	%	100	80-120	Pass			
Lead	%	104	80-120	Pass			
Mercury	%	107	80-120	Pass			
Nickel	%	102	80-120	Pass			
Zinc	%	98	80-120	Pass			
<b>LCS - % Recovery</b>							
<b>Organochlorine Pesticides</b>							
Chlordanes - Total	%	91	70-130	Pass			
4,4'-DDD	%	93	70-130	Pass			
4,4'-DDE	%	86	70-130	Pass			
4,4'-DDT	%	130	70-130	Pass			
a-BHC	%	96	70-130	Pass			
Aldrin	%	90	70-130	Pass			
b-BHC	%	91	70-130	Pass			
d-BHC	%	77	70-130	Pass			
Dieldrin	%	97	70-130	Pass			
Endosulfan I	%	94	70-130	Pass			
Endosulfan II	%	90	70-130	Pass			
Endosulfan sulphate	%	116	70-130	Pass			
Endrin	%	127	70-130	Pass			
Endrin aldehyde	%	108	70-130	Pass			
Endrin ketone	%	120	70-130	Pass			
g-BHC (Lindane)	%	90	70-130	Pass			
Heptachlor	%	120	70-130	Pass			
Heptachlor epoxide	%	101	70-130	Pass			
Hexachlorobenzene	%	92	70-130	Pass			
Methoxychlor	%	120	70-130	Pass			
<b>LCS - % Recovery</b>							
<b>Polychlorinated Biphenyls</b>							
Aroclor-1016	%	70	70-130	Pass			
Aroclor-1260	%	90	70-130	Pass			
Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
<b>Spike - % Recovery</b>							
<b>Polycyclic Aromatic Hydrocarbons</b>							
Acenaphthene	S21-Ma31039	CP	%	106	70-130	Pass	
Acenaphthylene	S21-Ma31039	CP	%	101	70-130	Pass	
Anthracene	S21-Ma31039	CP	%	100	70-130	Pass	
Benz(a)anthracene	S21-Ma31039	CP	%	93	70-130	Pass	



Test	Lab Sample ID	QA Source	Units	Result 1	Acceptance Limits	Pass Limits	Qualifying Code
Benzo(a)pyrene	S21-Ma31039	CP	%	98	70-130	Pass	
Benzo(b&j)fluoranthene	S21-Ma31039	CP	%	75	70-130	Pass	
Benzo(g,h,i)perylene	S21-Ma31039	CP	%	118	70-130	Pass	
Benzo(k)fluoranthene	S21-Ma31039	CP	%	89	70-130	Pass	
Chrysene	S21-Ma31039	CP	%	89	70-130	Pass	
Dibenz(a,h)anthracene	S21-Ma31039	CP	%	93	70-130	Pass	
Fluoranthene	S21-Ma31039	CP	%	89	70-130	Pass	
Fluorene	S21-Ma31039	CP	%	106	70-130	Pass	
Indeno(1,2,3-cd)pyrene	S21-Ma31039	CP	%	88	70-130	Pass	
Naphthalene	S21-Ma31039	CP	%	110	70-130	Pass	
Phenanthrene	S21-Ma31039	CP	%	96	70-130	Pass	
Pyrene	S21-Ma31039	CP	%	97	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Organochlorine Pesticides</b>				Result 1			
Chlordanes - Total	S21-Ma20704	NCP	%	78	70-130	Pass	
4,4'-DDD	S21-Ma32454	NCP	%	87	70-130	Pass	
4,4'-DDE	S21-Ma20704	NCP	%	89	70-130	Pass	
4,4'-DDT	S21-Ma32454	NCP	%	86	70-130	Pass	
a-BHC	S21-Ma20704	NCP	%	80	70-130	Pass	
Aldrin	S21-Ma20704	NCP	%	79	70-130	Pass	
b-BHC	S21-Ma20704	NCP	%	74	70-130	Pass	
d-BHC	S21-Ma20704	NCP	%	84	70-130	Pass	
Dieldrin	S21-Ma20704	NCP	%	85	70-130	Pass	
Endosulfan I	S21-Ma20704	NCP	%	91	70-130	Pass	
Endosulfan II	S21-Ma32454	NCP	%	81	70-130	Pass	
Endosulfan sulphate	S21-Ma20704	NCP	%	75	70-130	Pass	
Endrin	S21-Ma20704	NCP	%	79	70-130	Pass	
Endrin aldehyde	S21-Ma20704	NCP	%	80	70-130	Pass	
Endrin ketone	S21-Ma32454	NCP	%	76	70-130	Pass	
g-BHC (Lindane)	S21-Ma20704	NCP	%	93	70-130	Pass	
Heptachlor	S21-Ma20704	NCP	%	78	70-130	Pass	
Heptachlor epoxide	S21-Ma20704	NCP	%	80	70-130	Pass	
Hexachlorobenzene	S21-Ma20704	NCP	%	75	70-130	Pass	
Methoxychlor	S21-Ma20704	NCP	%	84	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Polychlorinated Biphenyls</b>				Result 1			
Aroclor-1016	S21-Ma20704	NCP	%	113	70-130	Pass	
Aroclor-1260	S21-Ma20704	NCP	%	129	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1			
TRH C6-C9	S21-Ma31066	CP	%	79	70-130	Pass	
TRH C10-C14	S21-Ma31066	CP	%	91	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>BTEX</b>				Result 1			
Benzene	S21-Ma31066	CP	%	73	70-130	Pass	
Toluene	S21-Ma31066	CP	%	80	70-130	Pass	
Ethylbenzene	S21-Ma31066	CP	%	89	70-130	Pass	
m&p-Xylenes	S21-Ma31066	CP	%	90	70-130	Pass	
o-Xylene	S21-Ma31066	CP	%	92	70-130	Pass	
Xylenes - Total*	S21-Ma31066	CP	%	91	70-130	Pass	
<b>Spike - % Recovery</b>							
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1			
Naphthalene	S21-Ma31066	CP	%	78	70-130	Pass	
TRH C6-C10	S21-Ma31066	CP	%	79	70-130	Pass	

Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
TRH >C10-C16	S21-Ma31066	CP	%	89			70-130	Pass	
<b>Spike - % Recovery</b>									
<b>Heavy Metals</b>				Result 1					
Arsenic	S21-Ma31066	CP	%	101			75-125	Pass	
Cadmium	S21-Ma31066	CP	%	111			75-125	Pass	
Chromium	S21-Ma31066	CP	%	112			75-125	Pass	
Copper	S21-Ma31066	CP	%	123			75-125	Pass	
Lead	S21-Ma31066	CP	%	112			75-125	Pass	
Mercury	S21-Ma31066	CP	%	117			75-125	Pass	
Nickel	S21-Ma31066	CP	%	111			75-125	Pass	
Zinc	S21-Ma31066	CP	%	111			75-125	Pass	
Test	Lab Sample ID	QA Source	Units	Result 1			Acceptance Limits	Pass Limits	Qualifying Code
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 1999 NEPM Fractions</b>				Result 1	Result 2	RPD			
TRH C6-C9	S21-Ma31037	CP	mg/kg	47	46	1.0	30%	Pass	
TRH C10-C14	S21-Ma31037	CP	mg/kg	< 20	21	6.0	30%	Pass	
TRH C15-C28	S21-Ma31037	CP	mg/kg	100	110	6.0	30%	Pass	
TRH C29-C36	S21-Ma31037	CP	mg/kg	< 50	< 50	<1	30%	Pass	
<b>Duplicate</b>									
<b>BTEX</b>				Result 1	Result 2	RPD			
Benzene	S21-Ma31037	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Toluene	S21-Ma31037	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass	
Ethylbenzene	S21-Ma31037	CP	mg/kg	3.2	3.1	<1	30%	Pass	
m&p-Xylenes	S21-Ma31037	CP	mg/kg	19	18	1.0	30%	Pass	
o-Xylene	S21-Ma31037	CP	mg/kg	7.3	7.2	2.0	30%	Pass	
Xylenes - Total*	S21-Ma31037	CP	mg/kg	26	26	1.0	30%	Pass	
<b>Duplicate</b>									
<b>Total Recoverable Hydrocarbons - 2013 NEPM Fractions</b>				Result 1	Result 2	RPD			
Naphthalene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
TRH C6-C10	S21-Ma31037	CP	mg/kg	62	61	1.0	30%	Pass	
TRH >C10-C16	S21-Ma31037	CP	mg/kg	< 50	< 50	<1	30%	Pass	
TRH >C16-C34	S21-Ma31037	CP	mg/kg	150	180	17	30%	Pass	
TRH >C34-C40	S21-Ma31037	CP	mg/kg	< 100	< 100	<1	30%	Pass	
<b>Duplicate</b>									
<b>Polycyclic Aromatic Hydrocarbons</b>				Result 1	Result 2	RPD			
Acenaphthene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Acenaphthylene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Anthracene	S21-Ma31037	CP	mg/kg	0.6	< 0.5	52	30%	Fail	Q15
Benz(a)anthracene	S21-Ma31037	CP	mg/kg	1.2	1.1	4.0	30%	Pass	
Benzo(a)pyrene	S21-Ma31037	CP	mg/kg	0.7	1.2	43	30%	Fail	Q15
Benzo(b&j)fluoranthene	S21-Ma31037	CP	mg/kg	1.7	2.0	12	30%	Pass	
Benzo(g,h,i)perylene	S21-Ma31037	CP	mg/kg	0.6	0.8	23	30%	Pass	
Benzo(k)fluoranthene	S21-Ma31037	CP	mg/kg	1.9	1.1	55	30%	Fail	Q15
Chrysene	S21-Ma31037	CP	mg/kg	1.0	1.1	7.0	30%	Pass	
Dibenz(a,h)anthracene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Fluoranthene	S21-Ma31037	CP	mg/kg	2.5	1.9	28	30%	Pass	
Fluorene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Indeno(1,2,3-cd)pyrene	S21-Ma31037	CP	mg/kg	0.6	0.6	6.0	30%	Pass	
Naphthalene	S21-Ma31037	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass	
Phenanthrene	S21-Ma31037	CP	mg/kg	2.5	1.0	86	30%	Fail	Q15
Pyrene	S21-Ma31037	CP	mg/kg	2.3	1.8	26	30%	Pass	

Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Ma31037	CP	mg/kg	4.5	4.9	8.0	30%	Pass
Cadmium	S21-Ma31037	CP	mg/kg	0.5	0.5	7.0	30%	Pass
Chromium	S21-Ma31037	CP	mg/kg	11	12	12	30%	Pass
Copper	S21-Ma31037	CP	mg/kg	45	48	6.0	30%	Pass
Lead	S21-Ma31037	CP	mg/kg	110	120	14	30%	Pass
Mercury	S21-Ma31037	CP	mg/kg	0.2	0.2	24	30%	Pass
Nickel	S21-Ma31037	CP	mg/kg	8.4	8.4	<1	30%	Pass
Zinc	S21-Ma31037	CP	mg/kg	140	140	2.0	30%	Pass
Duplicate								
% Moisture				Result 1	Result 2	RPD		
% Moisture	S21-Ma31037	CP	%	7.1	6.8	4.0	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-Ma31037	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-Ma31037	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-Ma31037	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
% Moisture				Result 1	Result 2	RPD		
% Moisture	S21-Ma31051	CP	%	18	18	3.0	30%	Pass
Duplicate								
% Moisture				Result 1	Result 2	RPD		
% Moisture	S21-Ma31063	CP	%	7.0	5.9	16	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 1999 NEPM Fractions				Result 1	Result 2	RPD		
TRH C6-C9	S21-Ma31065	CP	mg/kg	< 20	< 20	<1	30%	Pass
Duplicate								
BTEX				Result 1	Result 2	RPD		
Benzene	S21-Ma31065	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Toluene	S21-Ma31065	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Ethylbenzene	S21-Ma31065	CP	mg/kg	0.3	0.3	1.0	30%	Pass
m&p-Xylenes	S21-Ma31065	CP	mg/kg	1.5	1.6	7.0	30%	Pass
o-Xylene	S21-Ma31065	CP	mg/kg	0.6	0.6	9.0	30%	Pass
Xylenes - Total*	S21-Ma31065	CP	mg/kg	2.1	2.2	8.0	30%	Pass
Duplicate								
Total Recoverable Hydrocarbons - 2013 NEPM Fractions				Result 1	Result 2	RPD		
Naphthalene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
TRH C6-C10	S21-Ma31065	CP	mg/kg	< 20	< 20	<1	30%	Pass

Duplicate								
Polycyclic Aromatic Hydrocarbons				Result 1	Result 2	RPD		
Acenaphthene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Acenaphthylene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Anthracene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Benz(a)anthracene	S21-Ma31065	CP	mg/kg	1.3	0.7	54	30%	Fail Q15
Benzo(a)pyrene	S21-Ma31065	CP	mg/kg	1.4	1.0	39	30%	Fail Q15
Benzo(b&j)fluoranthene	S21-Ma31065	CP	mg/kg	0.9	0.6	39	30%	Fail Q15
Benzo(g,h,i)perylene	S21-Ma31065	CP	mg/kg	0.7	0.6	29	30%	Pass
Benzo(k)fluoranthene	S21-Ma31065	CP	mg/kg	1.1	0.8	36	30%	Fail Q15
Chrysene	S21-Ma31065	CP	mg/kg	1.2	0.7	49	30%	Fail Q15
Dibenz(a,h)anthracene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Fluoranthene	S21-Ma31065	CP	mg/kg	2.4	1.1	71	30%	Fail Q15
Fluorene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Indeno(1,2,3-cd)pyrene	S21-Ma31065	CP	mg/kg	0.8	0.5	36	30%	Fail Q15
Naphthalene	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Phenanthrene	S21-Ma31065	CP	mg/kg	1.0	< 0.5	99	30%	Fail Q15
Pyrene	S21-Ma31065	CP	mg/kg	2.4	1.2	62	30%	Fail Q15
Duplicate								
Heavy Metals				Result 1	Result 2	RPD		
Arsenic	S21-Ma31065	CP	mg/kg	6.0	6.0	<1	30%	Pass
Cadmium	S21-Ma31065	CP	mg/kg	0.7	0.7	3.0	30%	Pass
Chromium	S21-Ma31065	CP	mg/kg	12	14	18	30%	Pass
Copper	S21-Ma31065	CP	mg/kg	40	44	9.0	30%	Pass
Lead	S21-Ma31065	CP	mg/kg	180	170	5.0	30%	Pass
Mercury	S21-Ma31065	CP	mg/kg	0.2	0.3	3.0	30%	Pass
Nickel	S21-Ma31065	CP	mg/kg	9.2	11	13	30%	Pass
Zinc	S21-Ma31065	CP	mg/kg	170	160	5.0	30%	Pass
Duplicate								
Organochlorine Pesticides				Result 1	Result 2	RPD		
Chlordanes - Total	S21-Ma31065	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
4,4'-DDD	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDE	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
4,4'-DDT	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
a-BHC	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Aldrin	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
b-BHC	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
d-BHC	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Dieldrin	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan I	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan II	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endosulfan sulphate	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin aldehyde	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Endrin ketone	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
g-BHC (Lindane)	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Heptachlor epoxide	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Hexachlorobenzene	S21-Ma31065	CP	mg/kg	< 0.05	< 0.05	<1	30%	Pass
Methoxychlor	S21-Ma31065	CP	mg/kg	< 0.2	< 0.2	<1	30%	Pass
Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1016	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1221	S21-Ma31065	CP	mg/kg	< 0.1	< 0.1	<1	30%	Pass
Aroclor-1232	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1242	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

Duplicate								
Polychlorinated Biphenyls				Result 1	Result 2	RPD		
Aroclor-1248	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1254	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Aroclor-1260	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass
Total PCB*	S21-Ma31065	CP	mg/kg	< 0.5	< 0.5	<1	30%	Pass

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## Comments

### Sample Integrity

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

### Qualifier Codes/Comments

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

### Authorised by:

Ursula Long	Analytical Services Manager
Andrew Sullivan	Senior Analyst-Organic (NSW)
John Nguyen	Senior Analyst-Metal (NSW)



**Glenn Jackson**  
General Manager

# DRAFT

Final Report – this report replaces any previously issued Report

- Indicates Not Requested

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

Measurement uncertainty of test data is available on request or please [click here](#).

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**Appendix G – Calibration Forms**

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## PID Calibration Certificate



Instrument **PhoCheck Tiger**  
Serial No. **T-105892**

Air-Met Scientific Pty Ltd  
1300 137 067

Item	Test	Pass	Comments			
<b>Battery</b>	Charge Condition	✓				
	Fuses	✓				
	Capacity	✓				
	Recharge OK?	✓				
<b>Switch/keypad</b>	Operation	✓				
<b>Display</b>	Intensity	✓				
	Operation (segments)	✓				
<b>Grill Filter</b>	Condition	✓				
	Seal	✓				
<b>Pump</b>	Operation	✓				
	Filter	✓				
	Flow	✓				
	Valves, Diaphragm	✓				
<b>PCB</b>	Condition	✓				
<b>Connectors</b>	Condition	✓				
<b>Sensor</b>	PID	✓	10.6 ev			
<b>Alarms</b>	Beeper	✓	<b>Low</b>	<b>High</b>	<b>TWA</b>	<b>STEL</b>
	Settings	✓	50ppm	100ppm	N/A	N/A
<b>Software</b>	Version	✓				
<b>Data logger</b>	Operation	✓				
<b>Download</b>	Operation	✓				
<b>Other tests:</b>						

### 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		93 ppm Isobutylene	NIST	SY361	92.6ppm

**Calibrated by:** Kylie Rawlings

**Calibration date:** 10/03/2021

**Next calibration due:** 9/04/2021



**LEGEND**

- SITE BOUNDARY
- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- STUDY AREAS

**DRAFT**

no.	description	drawn	approved	date
A	ORIGINAL ISSUE			

Scale (metres) 1:5000

SOURCE: NEARMAP MAGE - 24/01/2021

drawn	PP / AW
approved	-
date	24-03-2021
scale	AS SHOWN
original size	A3



client:	COUNCIL OF THE CITY OF SYDNEY		
project:	PRELIMINARY SITE INVESTIGATION SYDNEY PARK MITIGATION WORKS 416 SYDNEY PARK RD, ALEXANDRIA, NSW		
title:	BOREHOLE LOCATION PLAN		
project no:	754-SYDEN282211-R01	figure no:	FIGURE 2
rev:	A		

PLOT DATE 24/03/2021 11:02:38 AM DWG FILE F:\PROJECTS\SYDNEY\2020\74-SYDEN282211-PESA SYDNEY PARK\10\_CAD\74-SYDEN282211-R01.DWG

**DRAFT** Appendix D – Bore Logs

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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH101**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **11 Mar 2021**

date completed: **11 Mar 2021**

logged by: **FA**

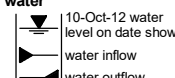
checked by: **EW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter :

drilling information				material substance			
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	material description	structure and additional observations
HA PT		E	19		0.5	<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to coarse grained sub-rounded to sub-angular, with organics (sticks).	<b>FILL</b>
		E	0.6		0.6 m: transi ion to slab sand		
					1.0	Borehole BH101 terminated at 0.70 m Refusal	
					1.5		
					2.0		
					2.5		
					3.0		
					3.5		

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CDF\_0\_9\_07\_LIBRARY\GLB revv:AU Log COF BOREHOLE: ENVIRONMENTAL\_754-SYDEN282211.GPJ <<DrawingFile>> 14/04/2021 08:51



<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

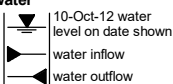
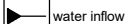
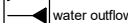
Hole ID: **BH102**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA		E	5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, dark grey, with sub-angular to sub-rounded aggregates with organics (wood, sticks).	M		<b>FILL</b> DUP01
		E	0.8		1.0			<b>FILL: Gravelly SAND:</b> fine to medium grained, dark grey, sub-angular to sub-rounded aggregates with organics (rootles).			
<p>Borehole BH102 terminated at 1.20 m Refusal</p> 											

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown  water inflow  water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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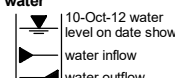
# Environmental Log - Borehole

Hole ID: **BH103**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA PT		E	0.2	1.5	0.5		FILL: <b>SILTY SAND</b> : fine to coarse grained, pale brown, grey, with sub-angular to sub-rounded aggregates with organics (clothes, sticks).	D		FILL
							FILL: <b>Gravelly SAND</b> : fine to coarse grained, pale brown, yellow.	M		
							FILL: <b>Gravelly SAND</b> : fine to coarse grained, dark brown, black, with sub-rounded to sub-angular gravels with charcoal.			
				1.5			FILL: <b>Gravelly CLAY</b> : fine to medium grained, pale brown-grey, yellow.			
Borehole BH103 terminated at 1.50 m										

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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CDF\_0\_9\_07\_LIBRARY\GLB revvAU Log COF BOREHOLE: ENVIRONMENTAL\_754-SYDEN282211.GPJ <<DrawingFile>> 14/04/2021 08:51

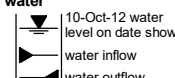
# Environmental Log - Borehole

Hole ID: **BH104**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.5		0.5		<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (woods, sticks).	D		<b>FILL</b>
					0.75		<b>FILL: Sandy CLAY:</b> fine to coarse grained, medium plasticity, pale grey.			
PT					1.0		<b>FILL: CLAY:</b> fine to coarse grained, pale brown-grey, sandstone.			
					1.5		<b>FILL: SAND:</b> fine to medium grained, pale brown-grey.			
Borehole BH104 terminated at 1.50 m										
					2.0					
					2.5					
					3.0					
					3.5					

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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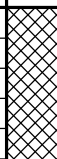
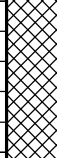


# Environmental Log - Borehole

Hole ID: **BH105**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

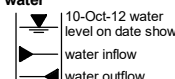
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.2		0.5			FILL: Gravelly SAND: fine to coarse grained, pale brown.	D		FILL
								FILL: Sandy GRAVEL: fine to coarse grained, pale grey, sub-angular to sub-rounded aggregates.			
PT					1.0			FILL: Gravelly SAND: fine to medium grained, dark grey, black, with sub-angular to sub-rounded gravels with charcoal.	M		
Borehole BH105 terminated at 1.50 m											

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH106**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **11 Mar 2021**

date completed: **11 Mar 2021**

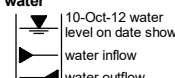
logged by: **FA**

checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 80 mm

drilling information				material substance						
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	0.6		0.5		<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (sticks).	D		<b>FILL</b>
					1.0			M		
PT					1.5		<b>FILL: Sandy CLAY:</b> low plasticity, dark brown, fine to coarse grained.			Borehole BH106 terminated at 1.50 m Target depth
					2.0					
					2.5					
					3.0					
					3.5					

CDF\_0\_9\_07\_LIBRARY\GLB revv:AU Log COF BOREHOLE: ENVIRONMENTAL\_754-SYDEN282211.GPJ <<DrawingFile>> 14/04/2021 08:51

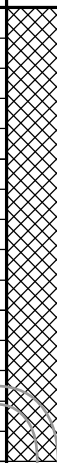
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **BH107**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

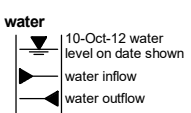
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD/T PT		E	0.2		0.2			FILL: SILTY SAND: fine to coarse grained, pale brown.	D		FILL
					0.5			FILL: CONCRETE AND COBBLES.			
		E	0.3		1.5			Borehole BH107 terminated at 1.50 m Refusal			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH108**

sheet: 1 of 1

project no. **754-SYDEN282211**

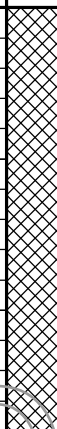
date started: **11 Mar 2021**

date completed: **11 Mar 2021**

logged by: **FA**

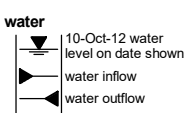
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT			114		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with organics (wood, sticks).	M		<b>FILL</b>  strong hydrocarbon odour
		E			1.0		<b>FILL: Sandy GRAVEL:</b> dark grey.				
					1.5		<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale to dark grey, black, with hydrocarbon with aggregates, sub-angular to sub-rounded.				
					1.5			Borehole BH108 terminated at 1.40 m Refusal			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

Hole ID: **BH109**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**


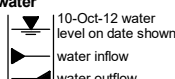
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information			well details		material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA PT	1 2 3		E		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates with organics (wood, sticks).	D		<b>FILL</b>  PID: 0.4 ppm
								<b>FILL: CRUSHED SANDSTONE:</b> fine to coarse grained, pale brown, yellow.			
					1.0			Borehole BH109 terminated at 1.00 m Refusal			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger	<b>support</b> M mud N nil C casing	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
* bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>penetration</b>  <b>water</b> 	<b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit		

# Environmental Log - Borehole

Hole ID: **BH110**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **11 Mar 2021**  
 date completed: **11 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

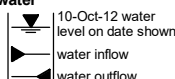
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD PT		E	0.2		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, dark brown, with sub-angular to sub-rounded aggregates with organics (plastic, pieces, clothes).	M		<b>FILL</b>
					1.0						
					1.5			Borehole BH110 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH111**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

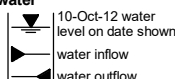
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA AD/T		E	4.5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Sandy GRAVEL:</b> fine to medium grained, grey, sub-angular to sub-rounded, sand is fine to coarse grained, with fines. <b>FILL: SAND:</b> fine to coarse grained, pale brown, with fine to coarse grained sub-angular gravel, and fines.	M		No noticeable odours or discolouration detected
					1.0			Borehole BH111 terminated at 0.80 m Refusal Re-drilled as BH111a			
					1.5						
					2.0						
					2.5						
					3.0						
					3.5						

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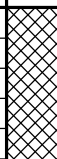
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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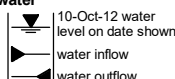
# Environmental Log - Borehole

Hole ID. **BH111a**  
 sheet: 1 of 1  
 project no. **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **TBM**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 60 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	3.8		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Sandy GRAVEL:</b> fine to medium grained, grey, sub-angular to sub-rounded, sand is fine to coarse grained, with fines. <b>FILL: SAND:</b> fine to coarse grained, pale brown, with fine to coarse grained sub-angular gravel, and fines. 0.5 m: cobbles appearing (inferred)	M		<b>FILL</b>  faint hydrocarbon odour detected
		E			1.0			1.1 m: becoming dark grey, faint hydrocarbon odour detected			
PT		E	4.6		1.5			Borehole BH111a terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

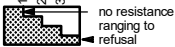
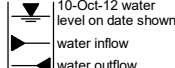
Hole ID: **BH112**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information			well details		material substance						
method & support	penetration	water	samples & field tests	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1		E		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, with sub-angular to sub-rounded aggregates.  0.7 m: colour changes to dark brown, dark grey	W		<b>FILL</b>  PID: 0.4 ppm
					1.5			<b>FILL: CRUSHED SANDSTONE:</b> fine to coarse grained, pale brown, yellow.  Borehole BH112 terminated at 1.50 m Target depth			

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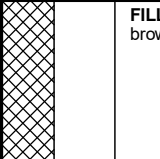

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger  * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud N nil C casing  <b>penetration</b>  no resistance ranging to refusal  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

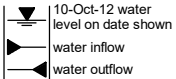
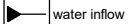
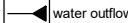
Hole ID: **BH113**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA PT		E	0.5		0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, pale brown, with sub-rounded aggregates.	D		<b>FILL</b>
					1.0			Borehole BH113 terminated at 1.00 m Refusal			
											

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown  water inflow  water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **BH114**

sheet: 1 of 1

project no. **754-SYDEN282211**


date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **FA**

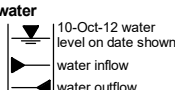
checked by: **EW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT		E			0.5			FILL: Gravelly SAND: fine to coarse grained, dark brown, with aggregates.	M		FILL
								FILL: Gravelly SAND: fine to coarse grained, low plasticity, dark brown, with aggregates, with some chunks of pale grey clay, fine to coarse grained gravel. Borehole BH114 terminated at 0.50 m Refusal			
					1.0						
					1.5						
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **BH115**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

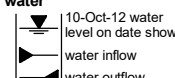
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:  
 hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA AD PT		E	1		0.5	[Cross-hatched pattern]		<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown-grey, sub-angular to sub-rounded, aggregates.			FILL  Dup 2
					1.0			<b>FILL: SANDSTONE:</b> pale brown, yellow-orange.  <b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown-grey, sub-angular to sub-rounded, aggregates.  0.9 m: becoming pale brown, brown-red, clay  <b>FILL: Sandy CLAY:</b> fine to coarse grained, medium plasticity, dark brown, pale grey, brown-red.			
					1.5			Borehole BH115 terminated at 1.50 m Target depth			

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migrations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH116**

sheet: 1 of 1

project no. **754-SYDEN282211**

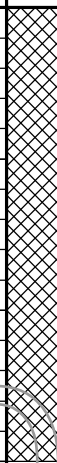
date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **FA**

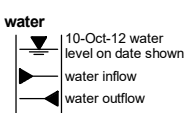
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter :

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
HA AD PT			0.3		0.5			FILL: Gravelly SAND: fine to coarse grained, dark brown, with sub-angular to sub-rounded, aggregates.	M		FILL
		E			1.0		FILL: Gravelly SAND: fine to coarse grained, dark brown, with sub-angular to sub-rounded, aggregates, with clay chunks, pale grey. FILL: Gravelly SAND: coarse grained, dark grey.				
					1.5		Borehole BH116 terminated at 1.50 m Target depth				
					2.0						
					2.5						
					3.0						
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **BH117**

sheet: 1 of 1

project no. **754-SYDEN282211**

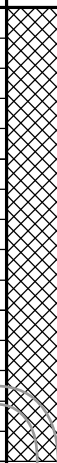
date started: **11 Mar 2021**

date completed: **11 Mar 2021**

logged by: **FA**

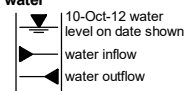
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT			0.3		0.5			FILL: SAND: fine to medium grained, pale brown.	M		FILL
		E			1.0		FILL: SAND: fine to medium grained, dark brown, yellow.				
					1.5		FILL: SAND: fine to medium grained, pale grey, pale brown.	W			
					1.5			Borehole BH117 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

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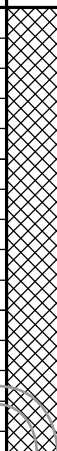
<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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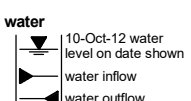
# Environmental Log - Borehole

Hole ID: **BH118**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **FA**  
 checked by: **EW**

client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 80 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description SOIL NAME: plasticity or particle characteristic, colour, secondary and minor components	moisture condition	consistency / relative density	structure and additional observations
PT		E	1		0.5			<b>FILL: Gravelly SAND:</b> fine to coarse grained, dark brown, black, with sub-rounded aggregates.	M		<b>FILL</b>
		E	0.4		1.5			<b>FILL: SILTY SAND:</b> fine to medium grained, pale brown / yellow.			
					1.5			Borehole BH118 terminated at 1.50 m Target depth			
					2.0						
					2.5						
					3.0						
					3.5						

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID. **MW01**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

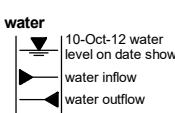
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information				material substance				
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	material description	structure and additional observations	
						<b>SOIL NAME:</b> plasticity or particle characteristic, colour, secondary and minor components moisture condition consistency / relative density		
HA		E	3.3		0.5	<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).  <b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.  0.8 to 1.0 m: red-brown, high plasticity, clay pockets appearing	<b>FILL</b>   faint hydrocarbon odour detected	
		E	5.3		1.0	1.6 m: sandstone cobbles appearing (inferred)		
		E	6.2		1.5	<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, gravel is fine to coarse grained, sub-rounded, with clay.		likely crushed sandstone
					2.0			
					2.5			
					3.0			
					3.5	Borehole MW01 terminated at 3.20 m Target depth		

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Migations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **MW01**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information			well details		material substance						
method & support	penetration	samples & field tests	MW01	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1	E			0.0 - 0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).	M		<b>FILL</b> PID: 3.3 ppm
	2				0.5 - 1.0			<b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.			faint hydrocarbon odour detected PID: 5.3 ppm
	3	E			1.0 - 1.6			0.8 to 1.0 m: red-brown, high plasticity, clay pockets appearing			PID: 6.2 ppm
					1.6 - 2.5			1.6 m: sandstone cobbles appearing (inferred)			
					2.5 - 3.0			<b>FILL: Gravelly SAND:</b> fine to coarse grained, pale brown, gravel is fine to coarse grained, sub-rounded, with clay.			likely crushed sandstone
					3.0 - 3.5			Borehole MW01 terminated at 3.20 m Target depth			<b>backfill details:</b> 0.0-0.1m: 0.1-0.8m: Bentonite 0.8-3.2m: Sand <b>standpipe piezo. MW01 details:</b> 1.0-3.2m: screen

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil <b>penetration</b>  no resistance ranging to refusal <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017 <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Environmental Log - Borehole

Hole ID: **MW02**  
 sheet: 1 of 1  
 project no: **754-SYDEN282211**  
 date started: **12 Mar 2021**  
 date completed: **12 Mar 2021**  
 logged by: **TBM**  
 checked by: **EW**

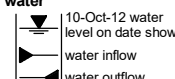
client: **City of Sydney**  
 principal:  
 project: **Sydney Park Migations Works**  
 location: **Sydney Park Road, Alexandria, NSW**

posi ion: Not Specified surface elevation: Not Specified angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted drilling fluid: hole diameter : 115 mm

drilling information				material substance							
method & support	water	samples & field tests	photoionization detector (ppmv)	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA		E	4.3		0.5	[Cross-hatched pattern]		FILL: <b>SILTY SAND</b> : fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets).	M		FILL
					1.0		FILL: <b>Gravelly SAND</b> : fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.				
SS		E	4.5		1.5	[Cross-hatched pattern]		0.6 m: sandstone cobbles appearing (inferred)			
					2.0		2.8 m: concrete cobbles/boulder/slab (inferred)				
					3.0			Borehole MW02 terminated at 2.90 m Refusal			
					3.5						

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<b>method</b> AD auger drilling* AS auger screwing* HA hand auger MR mud rotary W washbore PT hand auger SS push tube * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud C casing N nil  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> ALT air lift test B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter WS water sample HB hammer bouncing N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone PID photoionization detector R refusal	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit WI liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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# Engineering Log - Borehole

client: **City of Sydney**

principal:

project: **Sydney Park Mitigations Works**

location: **Sydney Park Road, Alexandria, NSW**

Hole ID: **MW02**

sheet: 1 of 1

project no. **754-SYDEN282211**

date started: **12 Mar 2021**

date completed: **12 Mar 2021**

logged by: **TBM**

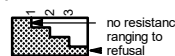
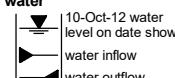
checked by: **EW**

position: Not Specified      surface elevation: Not Specified      angle from horizontal: 90°  
 equipment type: Geoprobe 7822 DT, Track mounted      drilling fluid:      hole diameter : 115 mm

drilling information			well details		material substance						
method & support	penetration	samples & field tests	MW02	RL (m)	depth (m)	graphic log	soil group symbol	material description	moisture condition	consistency / relative density	structure and additional observations
HA	1, 2, 3				0.5			<b>FILL: SILTY SAND:</b> fine to coarse grained, dark brown, with fine to medium grained, sub-angular to sub-rounded gravel, and organics (rootlets). <b>FILL: Gravelly SAND:</b> fine to coarse grained, grey-brown, gravel is fine to coarse grained, sub-angular to sub-rounded, with fines.  0.6 m: sandstone cobbles appearing (inferred)	M		<b>FILL</b>  PID: 4.3 ppm
					1.0						
					1.5						PID: 4.5 ppm
					2.0						
					2.5						
					3.0			2.8 m: concrete cobbles/boulder/slab (inferred)			
					3.0			Borehole MW02 terminated at 2.90 m Refusal			<b>backfill details:</b> 0.0-0.2m: 0.2-0.8m: Bentonite 0.8-2.75m: Sand <b>standpipe piezo. MW02 details:</b> 1.0-2.75m: screen

CDF\_0\_9\_07\_LIBRARY\GLB rev\AU Log COF PIEZOMETER 754-SYDEN282211.GPJ <<DrawingFile>> 14/04/2021 08:52

DRAFT

<b>method</b> AD auger drilling* AS auger screwing* HA hand auger W washbore HA hand auger PT push tube SS solid stem flight auger  * bit shown by suffix e.g. AD/T B blank bit T TC bit V V bit	<b>support</b> M mud      N nil C casing  <b>penetration</b>  no resistance ranging to refusal  <b>water</b>  10-Oct-12 water level on date shown water inflow water outflow	<b>samples &amp; field tests</b> B bulk disturbed sample D disturbed sample E environmental sample SS split spoon sample U## undisturbed sample ##mm diameter HP hand penetrometer (kPa) N standard penetration test (SPT) N* SPT - sample recovered Nc SPT with solid cone VS vane shear; peak/remoulded (kPa) R refusal HB hammer bouncing	<b>soil group symbol &amp; soil description</b> based on AS 1726:2017  <b>moisture condition</b> D dry M moist W wet Wp plastic limit Wl liquid limit	<b>consistency / relative density</b> VS very soft S soft F firm St stiff VSt very stiff H hard Fb friable VL very loose L loose MD medium dense D dense VD very dense
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	Asbestos		BTEX					Inorganics	Metals																		
	Sample mass g	Asbestos detected result comment	Benzene mg/kg	Ethylbenzene mg/kg	Toluene mg/kg	Xylene (m & p) mg/kg	Xylene (o) mg/kg	Xylene Total mg/kg	Moisture Content (dried @ 103°C) %	Arsenic mg/kg	Cadmium mg/kg	Chromium (total) mg/kg	Copper mg/kg	Lead mg/kg	Mercury mg/kg	Nickel mg/kg	Zinc mg/kg	4,4-DDE mg/kg	a-BHC mg/kg	Aldrin mg/kg	Aldrin + Dieldrin mg/kg	b-BHC mg/kg	Chlordane mg/kg	d-BHC mg/kg	DDD mg/kg	DDT mg/kg	DDT+DDE+DDD mg/kg
EQL	1	-	0.1	0.1	0.1	0.2	0.1	0.3	1	2	0.4	5	5	5	0.1	5	5	0.05	0.05	0.05	0.05	0.05	0.1	0.05	0.05	0.05	0.05
CRC CARE HSL-C - Recreational / Open Space Direct Contact																											
			120	5300	18000			15000																			
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)																											
											203	88	1263		35	192											
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil																											
			50	70	85			105																			
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)																											
									100				1100												180		
NEPM 2013 HIL-C Recreational Soil																											
									300	90		17000	600	80	1200	30000				10		70					400
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																											

Field_ID	LocCode	Sample Depth	Sample Date	Sample mass	Asbestos detected result	Benzene	Ethylbenzene	Toluene	Xylene (m & p)	Xylene (o)	Xylene Total	Moisture Content (dried @ 103°C)	Arsenic	Cadmium	Chromium (total)	Copper	Lead	Mercury	Nickel	Zinc	4,4-DDE	a-BHC	Aldrin	Aldrin + Dieldrin	b-BHC	Chlordane	d-BHC	DDD	DDT	DDT+DDE+DDD		
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	136	ND	<0.1	3.2	<0.1	19	7.3	26	7.1	4.5	0.5	11	45	110	0.2	8.4	140	-	-	-	-	-	-	-	-	-	-	-	-
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	100	ND	<0.1	0.4	<0.1	2.2	0.9	3.1	7.6	7.7	0.8	14	54	280	0.3	10	180	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	63	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	20	5.1	<0.4	10	11	32	<0.1	7.5	150	-	-	-	-	-	-	-	-	-	-	-	
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	59	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	3.5	2.2	<0.4	<5	<5	9.3	0.1	<5	13	-	-	-	-	-	-	-	-	-	-	-	
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	37	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	16	21	2.4	53	260	250	0.5	1600	570	-	-	-	-	-	-	-	-	-	-	-	
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	73	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	5.5	4.5	<0.4	47	23	56	0.2	43	140	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05		
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	149	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	24	5.5	0.4	33	32	130	0.2	8.8	200	-	-	-	-	-	-	-	-	-	-	-	
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	61	ND	<0.1	14	0.6	1.2	<0.1	1.3	7.5	9.7	1	160	110	440	2.9	14	400	-	-	-	-	-	-	-	-	-	-	-	
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	24	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	5.1	<2	<0.4	11	9.7	15	<0.1	<5	50	-	-	-	-	-	-	-	-	-	-	-	
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	114	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	4.9	<0.4	18	46	90	0.2	14	130	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05		
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	122	ND	-	-	-	-	-	-	18	4.2	<0.4	8.5	<5	9.1	<0.1	<5	12	-	-	-	-	-	-	-	-	-	-	-	
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	-	-	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	89	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	8.2	<0.4	11	23	130	0.1	6.2	57	-	-	-	-	-	-	-	-	-	-	-	
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	46	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7.2	15	<0.4	30	26	200	1.8	11	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05		
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	57	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	11	11	<0.4	10	7.1	35	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-	
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	52	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7.3	17	<0.4	21	19	54	<0.1	9.3	96	-	-	-	-	-	-	-	-	-	-	-	
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	22	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	6.1	68	0.5	20	67	150	<0.1	22	160	-	-	-	-	-	-	-	-	-	-	-	
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	90	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	13	<2	<0.4	5	<5	<5	<0.1	<5	<5	-	-	-	-	-	-	-	-	-	-	-	
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	64	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	14	25	0.7	14	95	89	0.1	27	270	-	-	-	-	-	-	-	-	-	-	-	
DUP01	BH102	0.1-0.3	11/03/2021	-	-	<0.1	0.3	<0.1	1.5	0.6	2.1	5.4	6	0.7	12	40	180	0.2	9.2	170	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05	<0.05	
DUP02	BH115	0.6-0.8	12/03/2021	-	-	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	12	2.5	<0.4	6.1	5.6	18	<0.1	<5	28	-	-	-	-	-	-	-	-	-	-	-	
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	113	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	18	8	0.8	58	45	1400	0.3	17	250	-	-	-	-	-	-	-	-	-	-	-	
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	136	ND	<0.1	<0.1	<0.1	<0.2	<0.1	<0.3	7	7.2	0.6	13	34	630	0.1	8.9	150	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.05	<0.05		

	OCP														PAH														
	Diendrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Vic EPA IWRG 621 OCP (Total)*	Vic EPA IWRG 621 Other OCP (Total)*	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound) *	Benzo(a)pyrene TEQ (medium bound) *	Benzo(a)pyrene TEQ (upper bound) *	Benzo(b,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(b)fluoranthene		
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	MG/KG	MG/KG	MG/KG	MG/KG	mg/kg	mg/kg	mg/kg	mg/kg	
EQL	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.2	0.1	0.1	0.1	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
CRC CARE HSL-C - Recreational / Open Space Direct Contact																													
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)																													
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil																				0.7									
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)																													
NEPM 2013 HIL-C Recreational Soil					20				10		10	400	30								4	4	4						
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																													

Field_ID	LocCode	Sample Depth	Sample Date	Diendrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	Endrin ketone	γ-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Hexachlorobenzene	Methoxychlor	Toxaphene	Vic EPA IWRG 621 OCP (Total)*	Vic EPA IWRG 621 Other OCP (Total)*	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(a)pyrene TEQ (lower bound) *	Benzo(a)pyrene TEQ (medium bound) *	Benzo(a)pyrene TEQ (upper bound) *	Benzo(b,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Benzo(b)fluoranthene	
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	0.6	1.2	0.7	1.3	1.5	1.8	0.6	1.9	1	1.7	
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	0.7	0.8	1.1	1.4	1.7	0.6	1.3	0.7	1.2	
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.2	1.2	1.6	1.8	2.1	0.7	1	1.1	0.7	
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.1	1.4	1.8	2.1	2.3	1	1.2	1.1	1	
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	0.7	0.9	1.2	1.5	0.6	0.6	<0.5	1.1	
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	0.5	0.5	0.9	1.2	<0.5	<0.5	<0.5	<0.5	
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	2.1	3.3	4.9	4.9	4.9	2.2	2.6	2.2	2.2	
DUP01	BH102	0.1-0.3	11/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	1.3	1.4	1.8	2.1	2.3	0.7	1.1	1.2	0.9	
DUP02	BH115	0.6-0.8	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.2	<0.5	<0.5	<0.5	<0.5	
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.5	<0.5	<0.5	0.9	1.1	1.4	1.7	1.9	0.6	0.9	0.8	0.8	
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.2	<0.1	<0.2	<0.2	<0.5	<0.5	<0.5	0.8	1.1	1.4	1.6	1.9	0.7	0.8	0.8	0.6	

	Polychlorinated Biphenyls								TRH (NEPM 1999 Fractions)					TRH (NEPM 2013 Fractions)														
	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Total PAHs	Arochlor 1221	Arochlor 1016	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	PCBs (Sum of total)	C6 - C9	C10 - C14	C15 - C28	C29 - C36	C10 - C36 (Sum of total)	C6 - C10	C10-C16	TRH F1 (TRH C6-C10 less BTEX)	TRH F2 (TRH C10-C16 minus naphthalene)	TRH F3 (C16-34)	TRH F4 (C34-C40)	C10 - C40 (Sum of total)
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	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	20	20	50	50	50	20	50	20	50	100	100	100
CRC CARE HSL-C - Recreational / Open Space Direct Contact					1900																	3800	5100		5300	7400		
NEPM 2013 Conservative EILs - Urban residential/public open space (aged)																												
NEPM 2013 ESLs - Urban residential and public open space, Coarse Soil																					180	120			300	2800		
NEPM 2013 Generic EILs - Urban residential and open public spaces (Aged)					170																							
NEPM 2013 HIL-C Recreational Soil								300							1													
NEPM 2013 Mgmt Limits Residential, parkland and public open space, Coarse Soil																					700	1000			2500	10000		

Field_ID	LocCode	Sample Depth	Sample Date	<0.5	2.5	<0.5	0.6	<0.5	2.5	2.3	15.6	-	-	-	-	-	-	-	47	<20	100	<50	100	62	<50	33	<50	150	<100	150		
BH101 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.5	2.5	<0.5	0.6	<0.5	2.5	2.3	15.6	-	-	-	-	-	-	-	47	<20	100	<50	100	62	<50	33	<50	150	<100	150		
BH102 0.1-0.3	Area 5	0.1-0.3	11/03/2021	<0.5	1.1	<0.5	<0.5	<0.5	<0.5	1.2	7.6	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	25	130	<50	155	<20	<50	<20	<50	230	<100	230		
BH103 1.3-1.5	Area 5	1.3-1.5	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH104 1.1-1.3	Area 5	1.1-1.3	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH105 1.2-1.4	Area 4	1.2-1.4	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	30	120	<50	150	<20	<50	<20	<50	190	<100	190		
BH106 0.7-0.9	Area 4	0.7-0.9	11/03/2021	<0.5	1.6	<0.5	0.6	<0.5	0.8	1.9	10.8	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	73	<50	73	<20	<50	<20	<50	100	<100	100		
BH107 0.2-0.4	Area 4	0.2-0.4	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH108 0.8-1.0	Area 4	0.8-1	11/03/2021	<0.5	<0.5	2.1	<0.5	13 - 16	1.9	<0.5	<0.5	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	60	1100	<50	<50	1100	110	1800	94	1787	<100	1900	3700
BH109 0.7-0.9	Area 3	0.7-0.9	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	<50	60	60	<20	<50	<20	<50	<100	<100	<100		
BH110 0.5-0.7	Area 3	0.5-0.7	11/03/2021	<0.5	1.8	<0.5	0.7	<0.5	0.8	2.1	12.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	130	160	290	<20	<50	<20	<50	250	140	390		
BH111A 0.3-0.4	Area 1	0.3-0.4	12/03/2021	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
BH111A 1.3-1.5	Area 1	1.3-1.5	12/03/2021	<0.5	0.6	<0.5	<0.5	<0.5	<0.5	0.8	4.4	-	-	-	-	-	-	-	<20	<20	110	110	220	<20	<50	<20	<50	190	<100	190		
BH112 0.3-0.5	Area 1	0.3-0.5	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6	1.1	-	-	-	-	-	-	-	<20	26	82	<50	108	<20	<50	<20	<50	140	<100	140		
BH113 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<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	<20	25	130	77	232	<20	<50	<20	<50	280	150	430		
BH114 0.3-0.2	Area 2	0.3-0.2	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	23	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH115 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	23	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH116 0.6-0.8	Area 2	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	59	<50	59	<20	<50	<20	<50	<100	<100	<100		
BH117 0.6-0.9	Area 3	0.6-0.9	11/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	<20	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
BH118 0.3-0.5	Area 3	0.3-0.5	11/03/2021	0.7	3	<0.5	2	<0.5	1.2	3.4	24.9	-	-	-	-	-	-	-	<20	<20	160	85	245	<20	<50	<20	<50	330	<100	330		
DUP01	BH102	0.1-0.3	11/03/2021	<0.5	2.4	<0.5	0.8	<0.5	1	2.4	13.2	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	37	120	<50	157	<20	<50	<20	<50	190	110	300		
DUP02	BH115	0.6-0.8	12/03/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	-	-	<20	28	<50	<50	<50	<20	<50	<20	<50	<100	<100	<100		
MW01 0.8-0.9	Area 1	0.8-0.9	12/03/2021	<0.5	1.5	<0.5	0.6	<0.5	0.8	1.6	9.6	-	-	-	-	-	-	-	<20	96	500	110	706	<20	120	<20	120	650	210	980		
MW02 0.2-0.3	Area 1	0.2-0.3	12/03/2021	<0.5	1.3	<0.5	0.6	<0.5	0.6	1.4	8.7	<0.1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<20	<20	86	<50	86	<20	<50	<20	<50	190	<100	190		