



**REPORT TO
NSW DEPARTMENT OF EDUCATION**

**ON
DETAILED SITE INVESTIGATION**

**FOR
PROPOSED MULGOA RISE PUBLIC SCHOOL**

**AT
1-23 FORESTWOOD DRIVE, GLENMORE PARK,
NSW**

Date: 5 November 2020

Ref: E33177Prpt3-DSI

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Executive Summary

NSW Department of Education | School Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed new primary school development at 1-23 Forestwood Drive, Glenmore Park, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination and assess whether remediation is required. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 attached in Appendix A.

This report has been prepared to support the lodgement of a State Significant Development (SSD) application for the proposed new primary school development.

A geotechnical investigation was undertaken in conjunction with this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report. A salinity investigation was also undertaken in conjunction with this DSI by JKE. The results of the salinity investigation are presented in a separate report. These reports should be read in conjunction with the DSI report.

JKE have previously undertaken a Preliminary Site Investigation (PSI) at the site and a summary of this information is provided in Section 2.1 of this report.

Based on the information provided, we understand that the proposed development includes the construction of a new primary school (Mulgoa Rise Public School). It is assumed that relatively minor cut/fill earthworks may be required. The proposed buildings will be over the northern and western parts of the site and will not include basements. A carpark is proposed at the eastern end of the site.

The primary aim of the investigation was to characterise the soil and groundwater contamination conditions in order to establish whether remediation is required. A secondary aim of the investigation was to provide preliminary waste classification data for off-site disposal of soil waste which may be generated during the proposed development works. The objectives were to:

- Supplement the PSI data via an additional soil and groundwater investigation;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM);
- Provide a preliminary waste classification for the in-situ soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

The scope of work included a review of the PSI prepared by JKE, soil sampling from 13 boreholes and 10 test pits, and groundwater sampling from three monitoring wells installed at the site. The PSI indicated that the site has historically been used for grazing, though extractive activities (quarrying) occurred between 1986 and 2000. The site was rehabilitated (i.e. filled and grassed) between 2000 and 2007 and has remained vacant since. The recent site inspection for the DSI confirmed the site was largely unchanged since the PSI.

The DSI identified fill across the site from depths of approximately 11.2m below ground level (BGL) to 14.2mBGL, underlain by siltstone bedrock. The fill typically comprised silty clay with inclusions of gravels indicative of natural clay and ripped bedrock used in a controlled filling exercise to rehabilitate the former quarry. Ash, and building rubble (bricks, steel, plastic, glass, terracotta, tile fragments) were encountered to a lesser extent, in minor quantities in fill. No stained soils or offensive odours were encountered during the investigation.

The laboratory analysis detected concentrations of heavy metals, total recoverable hydrocarbons (TRH) and polycyclic aromatic hydrocarbons (PAHs) within the fill. All of the detected concentrations were below the respective human health and ecological-based site assessment criteria (SAC). The contaminant concentrations reported in soils were not considered to pose a risk under the proposed land use scenario.



Based on the soil results, the fill was assigned a preliminary waste classification of general solid waste (non-putrescible). The majority of the fill was also considered likely to meet the requirements for classification as Excavated Natural Material (ENM). Further sampling and analysis are required to confirm these classifications.

The laboratory analysis detected concentrations of arsenic, cadmium, copper, nickel and zinc within the groundwater beneath the site. With the exception of arsenic, nickel and zinc within the samples collected from MW8, all of the detected concentrations were below the respective human-health and ecological-based SAC. The concentrations of arsenic, nickel and zinc detected in the groundwater collected from MW8 exceeded the ecological-based SAC and were relatively consistent with the results obtained during the PSI. Overall, the minor elevations of these heavy metals in groundwater were assessed not to pose an unacceptable risk under the proposed land use scenario.

Based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed primary school development. Remediation and/or further investigation is not considered to be required based on the information and data collected and evaluated by JKE.

JKE recommend that a Fill Import Protocol (FIP) is prepared for the site and implemented as part of the Construction Environmental Management Plan (CEMP) during the proposed development. The FIP should include appropriate measures (including visual inspections and/or validation sampling) to ensure that all materials imported to the site (i.e. road-base and gravel, sandstone, general fill, topsoil, mulch etc) are free of contamination and are aesthetically suitable. Although there is considered to be a relatively low potential for contamination-related unexpected finds to occur at the site during the proposed development works, an Unexpected Finds Protocol (UFP) is also to be developed and integrated into the CEMP as a conservative measure.

The conclusions and recommendations should be read in conjunction with the limitations presented in the body of this report.



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Abbreviations

Asbestos Fines/Fibrous Asbestos	AF/FA
Ambient Background Concentrations	ABC
Added Contaminant Limits	ACL
Asbestos Containing Material	ACM
Australian Drinking Water Guidelines	ADWG
Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Above-Ground Storage Tank	AST
Below Ground Level	BGL
Benzo(a)pyrene Toxicity Equivalent Factor	BaP TEQ
Bureau of Meteorology	BOM
Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Cation Exchange Capacity	CEC
Construction Environmental Management Plan	CEMP
Contaminated Land Management	CLM
Contaminant(s) of Potential Concern	CoPC
Chain of Custody	COC
Conceptual Site Model	CSM
Development Application	DA
Dial Before You Dig	DBYD
Data Quality Indicator	DQI
Data Quality Objective	DQO
Detailed Site Investigation	DSI
Ecological Investigation Level	EIL
Ecological Screening Level	ESL
Environmental Management Plan	EMP
Excavated Natural Material	ENM
Environment Protection Authority	EPA
Environmental Site Assessment	ESA
Ecological Screening Level	ESL
Fibre Cement Fragment(s)	FCF
Fill Import Protocol	FIP
Health Investigation Level	HILs
Health Screening Level	HSL
Health Screening Level-Site Specific Assessment	HSL-SSA
International Organisation of Standardisation	ISO
JK Environments	JKE
Lab Control Spike	LCS
Light Non-Aqueous Phase Liquid	LNAPL
Map Grid of Australia	MGA
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCF
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Potential ASS	PASS
Polychlorinated Biphenyls	PCBs
Per- and Polyfluoroalkyl Substances	PFAS
Photo-ionisation Detector	PID
Protection of the Environment Operations	POEO
Practical Quantitation Limit	PQL
Quality Assurance	QA



Quality Control	QC
Remediation Action Plan	RAP
Relative Percentage Difference	RPD
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
Site Audit Statement	SAS
Site Audit Report	SAR
Site Specific Assessment	SSA
State Significant Development	SSD
Source, Pathway, Receptor	SPR
Specific Contamination Concentration	SCC
Standard Penetration Test	SPT
Standing Water Level	SWL
Trip Blank	TB
Toxicity Characteristic Leaching Procedure	TCLP
Total Recoverable Hydrocarbons	TRH
Trip Spike	TS
Upper Confidence Limit	UCL
Unexpected Finds Protocol	UFP
United States Environmental Protection Agency	USEPA
Underground Storage Tank	UST
Virgin Excavated Natural Material	VENM
Volatile Organic Compounds	VOC
World Health Organisation	WHO
Work Health and Safety	WHS
Units	
Litres	L
Metres BGL	mBGL
Metres	m
Millivolts	mV
Millilitres	ml or mL
Milliequivalents	meq
micro Siemens per Centimetre	$\mu\text{S}/\text{cm}$
Micrograms per Litre	$\mu\text{g}/\text{L}$
Milligrams per Kilogram	mg/kg
Milligrams per Litre	mg/L
Parts Per Million	ppm
Percentage	%

1 INTRODUCTION

NSW Department of Education | School Infrastructure ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed new primary school development at 1-23 Forestwood Drive, Glenmore Park, NSW ('the site'). The purpose of the investigation is to make an assessment of site contamination and assess whether remediation is required. The site location is shown on Figure 1 and the investigation was confined to the site boundaries as shown on Figure 2 in Appendix A.

This report has been prepared to support the lodgement of a State Significant Development (SSD) application for the proposed new primary school development.

A geotechnical investigation was undertaken in conjunction with this DSI by JK Geotechnics (JKG). The results of the geotechnical investigation are presented in a separate report (Ref: 33177PN2rpt)¹. A salinity investigation was also undertaken in conjunction with this DSI by JKE. The results of the salinity investigation are presented in a separate report (Ref: E33177Prpt4-SAL, dated 5 November 2020)². These reports should be read in conjunction with the DSI report.

JKE have previously undertaken a Preliminary Site Investigation (PSI) at the site. A summary of this information has been included in Section 2. JKE have also prepared a Sampling, Analysis and Quality Plan (SAQP) for the DSI. A summary of the SAQP has been included in Section 4 and the SAQP is attached in Appendix J.

1.1 Proposed Development Details

Based on the information provided, we understand that the proposed development includes construction of a new primary school (Mulgoa Rise Public School). It is assumed that relatively minor cut/fill earthworks may be required. The proposed buildings will be over the northern and western parts of the site and will not include basements. A carpark is proposed at the eastern end of the site. It is understood that the development may occur over two stages.

A concept layout plan for the school is attached in Appendix A.

1.2 Aims and Objectives

The primary aim of the investigation was to characterise the soil and groundwater contamination conditions in order to establish whether remediation is required. A secondary aim of the investigation was to provide preliminary waste classification data for off-site disposal of soil waste which may be generated during the proposed development works. The objectives were to:

- Supplement the PSI data via an additional soil and groundwater investigation;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM);

¹ JKG, (2020). *Report to NSW Department of Education on Geotechnical Investigation for Proposed Public School at 1-23 Forestwood Drive, Glenmore Park, NSW*. (Ref: 33177PN2rpt) (referred to as JKG report)

² JKE, (2020). *Report to NSW Department of Education on Salinity Investigation for Proposed Public School at 1-23 Forestwood Drive, Glenmore Park, NSW*. (Ref: E33177Prpt4-SAL, dated 5 November 2020). (Referred to as Salinity Report)

- Provide a preliminary waste classification for the in-situ soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

1.3 Scope of Work

The investigation was undertaken generally in accordance with a JKE proposal (Ref: EP52030P-P52030PN Rev2) of 16 June 2020, a formal agreement in relation to a tender (Ref: SINSW00711/20) executed on 8 May 2020, and a variation approval from the client dated 18 September 2020. The scope of work included the following:

- Review of existing environmental data presented in the PSI;
- Undertake the sampling and analysis in accordance with the SAQP;
- Interpretation of the analytical results against the adopted Site Assessment Criteria (SAC);
- Data Quality Assessment; and
- Preparation of a report including a Tier 1 risk assessment.

The scope of work was undertaken with reference to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)³, other guidelines made under or with regards to the Contaminated Land Management Act (1997)⁴ and State Environmental Planning Policy No.55 – Remediation of Land (1998)⁵. A list of reference documents/guidelines is included in the appendices.

³ National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

⁴ Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

⁵ *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

2 SITE INFORMATION

2.1 Background

A PSI was previously undertaken by JKE in June 2020⁶. The PSI included a review of historical information, soil sampling from 12 boreholes, 10 test pits and groundwater sampling from one monitoring well installed on-site (see Figure 2 in Appendix A). The site has historically been used quarrying activities and was rehabilitated from around the year 2000 via importation of material and controlled filling. A summary of the site history is provided in Section 2.7 of this DSI.

The PSI did not identify any soil or groundwater contamination that was assessed to pose a risk to on-site receptors and/or in relation to the proposed land use. Groundwater was found to be impacted by arsenic, nickel and zinc at concentrations that exceeded the ecological SAC. However, the occurrence of these heavy metals in the groundwater was considered likely to be attributed to regional factors. A copy of the laboratory data summary tables from the PSI is included in Appendix C.

Due to the presence of deep fill and the identification of potential sources of contamination, the PSI recommended a DSI. JKE prepared a SAQP⁷ for the DSI in October 2020 which is attached in Appendix J.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner (certificate of title):	The Minister for Education
Site Address:	1-23 Forestwood Drive, Glenmore Park, NSW
Lot & Deposited Plan:	Lot 1663 in DP1166869
Current Land Use:	Vacant
Proposed Land Use:	Primary School (kindergarten to year six)
Local Government Authority:	Penrith City Council
Current Zoning:	R1 – General Residential
Site Area (m²) (approx.):	30,000
RL (AHD in m) (approx.):	58 - 64
Geographical Location (decimal degrees) (approx.):	Latitude: -33.802927 Longitude: 150.681562

⁶ JKE, (2020). *Report to NSW Department of Education on Preliminary Site Investigation (PSI) – Contamination, for Proposed Mulgoa Rise Public School at 1-23 Forestwood Drive, Glenmore Park, NSW.* (Ref: E33177PArpt, dated 3 June 2020) (referred to as PSI)

⁷ JKE, (2020). *Report to NSW Department of Education on Sampling, Analysis and Quality Plan for Detailed Site Investigation – Proposed Mulgoa Rise Public School at 1-23 Forestwood Drive, Glenmore Park, NSW.* (Ref: E33177Prpt-SAQP, dated 6 October 2020) (Referred to as SAQP).

Site Location Plan:	Figure 1
Sample Location Plan:	Figure 2
Site Assessment Criteria Exceedance Location Plan:	Figure 3

2.3 Site Description

The site is located in a predominantly residential and recreational area of Glenmore Park and is bound by Deerubbin Drive to the north, Darug Avenue to the west, Forestwood Drive to the south and Mulgoa Rise Field recreational grounds to the east/south-east. The majority of the surrounding properties were residential in nature. The site is located approximately 200m to the west of Surveyors Creek.

The site fell gently towards the north-east with an overall slope of approximately 2°. The site topography was generally in-line with the surrounding natural elevation and topographic features.

A walkover inspection of the site was undertaken by JKE on 12 October 2020. At the time of the inspection, the site was vacant, levelled grassed area. A substation kiosk was observed along the western site boundary. This was most likely installed during late 1990s to early 2000s and was therefore considered unlikely to contain polychlorinated biphenyl (PCB) oils.

The site was fenced by steel post and wire fencing along the southern boundary, and steel post/tubing along the eastern boundary. Visual inspection of the site extents revealed no obvious signs of soil erosion.

No apparent visible or olfactory indicators of contamination were identified during the site inspection and throughout the course of the investigations.

A stormwater swale drain ran along the eastern site boundary, with stormwater collection pit situated in the north-eastern corner of the site. A sewer main was also noted to be present in the north-eastern corner of the site.

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds.

The site was overgrown with grasses and weeds, with larger tree plantings along the footpaths next to the northern, western and southern site boundaries. No obvious signs of vegetation stress or grass dieback were observed on site.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site. We observed the following land uses in the immediate surrounds:

- North – vacant grassed lot beyond Deerubbin Drive as well as residential properties including an early learning centre (“Young Academics”) to the north-east;
- South – residential properties beyond Forestwood Drive;

- East – recreational land (Mulgoa Rise Field) including parking area, soccer fields, children’s playground and amenities; and
- West – residential properties beyond Darug Avenue.

2.4 Underground Services

The ‘Dial Before You Dig’ (DBYD) plans were reviewed for the investigation in order to establish whether any major underground services exist at the site or in the immediate vicinity that could act as a preferential pathway for contamination migration. The DBYD plans indicated that a sewer main was present in the north-eastern corner of the site.

2.5 Local Meteorology

Key meteorological data for Penrith Lakes weather station available on the Bureau of Meteorology (BOM)⁸ website has been reviewed and JKE note the following:

- The highest mean rainfall occurs in February, with a total of 122.6mm;
- The lowest mean rainfall occurs in August, with a total of 29.8mm; and
- Minimal rainfall was recorded in the two weeks preceding the JKE site inspection.

2.6 Summary of Geology and Hydrogeology

2.6.1 Regional Geology

Regional geological information presented in the PSI indicated that the site is underlain by Bringelly Shale of the Wianamatta Group, which typically consists of shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff.

2.6.2 Hydrogeology

Hydrogeological information presented in the PSI indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There were a total of seven registered bores within the report buffer of 1,000m. In summary:

- The nearest registered bore was located approximately 800m north of the site. This was utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 1,000m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified top soil and/or clay soil to depths of 1.0-6.0m, underlain by shale bedrock. Standing water levels (SWLs) in these bores was not recorded however final drill depth ranged from 2.5mBGL to 8.9mBGL.

The potential for viable groundwater abstraction and use of groundwater at the site or in the vicinity was considered to be low. There is a reticulated water supply in the area and consumption of groundwater was not expected to occur. Use of groundwater is not proposed as part of the development.

⁸ http://www.bom.gov.au/climate/averages/tables/cw_067133.shtml visited on 29 October 2020

Considering the local topography and surrounding land features, JKE expected groundwater to flow eastwards towards Surveyors Creek.

The site location and regional topography indicates that most of the excess surface water flows through the site are expected to eventuate in the stormwater drainage trench along the eastern perimeter and collection pit in the north-eastern corner of the site which is expected to discharge into Surveyors Creek to the east of the site. This water body is considered to be the closest potential ecological receptor. JKE note that at its closest point, Surveyors Creek comprises an ephemeral/intermittent gully feature with no ponded water.

During the PSI, all test pits were dry on completion of excavation (maximum depth of 2mBGL). Groundwater seepage was observed in BH2, BH6, BH8, BH10 and BH16 at depths ranging between 4.0-7.2mBGL after completion of drilling. A groundwater monitoring well was installed at BH8 to allow for groundwater sampling. The groundwater in MW8 was observed at depths ranging between 2.05-2.07mBGL during well development and upon return to the site for sampling at a later date.

2.6.3 Acid Sulfate Soil

The site is not located in an acid sulfate soil (ASS) risk area according to the risk maps prepared by the Department of Land and Water Conservation and the Penrith City Council.

2.7 Summary of Site History

A time line summary of the historical land uses and activities is presented in the table below. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE during the investigations.

Table 2-2: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Circa early 1900s until at least 1982	Vacant land, overgrown with trees, shrubs and grasses which was possibly used for grazing purposes.	Vacant land, possibly used for agricultural activities (i.e. crop cultivation) and/or grazing.
Since at least 1986 until 2007.	Quarry activities which ceased by 2000.	Quarry activities which ceased by 2007.
2000-2007	Rehabilitation of land post Quarry activities. Filling of the site occurred.	Rehabilitation of land post Quarry activities. Filling of the surrounding land also occurred.
2007-Current	Vacant, levelled grassed area.	Mostly residential and recreational uses. Neighbouring land to the north remains vacant.

3 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

A review of the CSM in relation to source, pathway and receptor (SPR) linkages has been undertaken as part of the Tier 1 risk assessment process, as outlined in Section 8.

3.1 Potential Contamination Sources/AEC and CoPC

The potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC) are presented in the following table:

Table 3-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<u>Fill material</u> – The site has been historically filled to achieve the existing levels. The PSI identified fill to depths of over 12m. The client supplied limited information for the PSI relating to earthworks and compaction which suggested that the filling of the site was undertaken in controlled manner (i.e. controlled fill/earthworks).	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), and asbestos, and to a lesser extent organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), and PCBs.
<u>Historical mining/extractive industry</u> – The site and surrounding areas were historically used for quarrying activities. The aerial photographs suggested soil and/or rock quarrying occurred. The main source of contamination is therefore considered to be the operational aspect of the mining such as the use of machinery and plant (e.g. re-fuelling, spills, leaks etc). Backfilling of the quarry also occurred (see discussion on ‘fill material’ above).	TRH/BTEX and the PAH compound naphthalene. Heavy metals, cyanide, radionuclides and explosives are generally associated with minerals mining. Minerals mining and the associated processing of ores and minerals is not expected to have occurred at the site. On this basis these have not been considered as CoPC.
<u>Use of the site by parked vehicles</u> – eastern and northern parts of the site.	Heavy metal lead, TRHs, BTEX and the PAH compound naphthalene.

3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 3-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, ‘top-down’ impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of the site by parked vehicles – ‘top-down’ and spills (e.g. leaks onto unpaved ground surface); and • Historical mining/extractive industry – spills associated with refuelling of plant, fuel stores etc, or sub-surface release (e.g. impacts from buried material during rehabilitation works).
Affected media	Soil and groundwater have been identified as potentially affected media.
Receptor identification	Human receptors include site users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, and recreational water users within Surveyors Creek. Ecological receptors include terrestrial organisms and plants within unpaved areas, and freshwater ecology of Surveyors Creek.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens/playground areas, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings. Exposure to groundwater could occur in Surveyors Creek through direct migration, however, connectivity between the aquifer and the creek has not been confirmed. Groundwater has the potential to enter the creek via the stormwater system (which is expected to discharge into the creek) in a situation where groundwater seepage is captured and discharged to stormwater, e.g. subsoil drainage.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed structures (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site and into nearby water body (Surveyors Creek), including aquatic ecosystems and those being used for recreation.



	JKE note that at its closest point, Surveyors Creek comprises an ephemeral/intermittent gully feature with no ponded water.
Presence of preferential pathways for contaminant movement	Local underground services such as sewer and stormwater have the potential to act as preferential pathways for contaminant migration at the site. However, the potential for migration would depend on the fate and transport properties of the CoPC.

4 SAMPLING, ANALYSIS AND QUALITY PLAN

JKE prepared a SAQP for the DSI and is summarised in the following sub-sections. A copy of the SAQP is attached in Appendix J.

4.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) were developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013) and the Guidelines for the NSW Site Auditor Scheme, 3rd Edition (2017)⁹. The seven-step DQO approach for this project is outlined in the SAQP.

The DQO process is validated in part by the Data Quality Assurance/Quality Control (QA/QC) Evaluation. The Data (QA/QC) Evaluation is summarised in Section 6.1 and the detailed evaluation is provided in the appendices.

4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this investigation is summarised in the table below. Refer to the SAQP (attached in the appendices) for further details.

Table 4-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples were collected from an additional 23 locations for the DSI. Combined with the locations sampled for the PSI, the overall sampling density meets the minimum sampling density for hotspot identification on a 30,000m² site, as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)¹⁰. Sampling for field asbestos quantification occurred from the 10 test pit locations only. This density is considered to be adequate based on the findings of the PSI and considering the requirements recommended in the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009)¹¹ (endorsed in NEPM 2013).
Sampling Plan	Twenty (20) of the locations (BH/TP301 to BH/TP320 inclusive) were placed on a systematic, grid-based sampling plan to supplement the PSI locations. Three additional locations (BH102, BH103 and BH104) were targeted in the proposed building area and were drilled/sampled concurrently with the geotechnical investigation by JKG. The grid-based sampling locations were limited to a depth of approximately 2-3.5mBGL, with samples collected from each stratum profile encountered, or generally at 1m intervals when there were few/no strata changes. From the three targeted locations, samples were collected from a depth of approximately 3mBGL to the base of the fill.

⁹ NSW EPA, (2017). *Guidelines for the NSW Site Auditor Scheme, 3rd ed.* (referred to as Site Auditor Guidelines 2017)

¹⁰ NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines*. (referred to as EPA Sampling Design Guidelines 1995)

¹¹ Western Australian (WA) Department of Health (DoH), (2009). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2009)

Aspect	Input
Set-out and Sampling Equipment	Sampling locations were set out using hand held GPS unit (with an accuracy of $\pm 5\text{m}$), with samples collected from test pits and boreholes. The samples from borehole locations were collected from a Standard Penetration Test (SPT) split-spoon sampler, supplemented by auger sampling when insufficient return was encountered in the SPT sampler. Samples from the test pits were obtained from the walls or directly from the bucket by hand. Where sampling occurred from the bucket, JKE collected samples from the central portion of large soil clods, or from material that was unlikely to have come into contact with the bucket.
Sample Collection and Field QA/QC	All locations were logged to an appropriate standard in accordance with NEPM (2013) and all samples were documented on the logs. Samples were collected and preserved in accordance with NEPM (2013) requirements. Soil at selected depths were split into primary and duplicate samples for field QA/QC analysis. The splitting procedure included alternate filling of the jars with soil.
Field Screening	A portable Photo-ionisation Detector (PID) fitted with a 10.6mV lamp was used to screen the samples for the presence of volatile organic compounds (VOCs), using the soil sample headspace method. Representative 10L bulk samples were collected from fill at approximately 1m intervals and/or distinct fill profiles encountered within the test pits. The samples were screened for the presence of suspected asbestos/asbestos containing materials (i.e. fibre cement) with regards to the WA DoH 2009/NEPM 2013 requirements.
Decontamination and Sample Preservation	Sampling personnel utilised disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using a Decon and potable water solution (with rags and scrubbing brush), followed by a rinse with potable water. Soil samples were preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples were stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

4.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 4-2: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	Two additional groundwater monitoring wells were installed in BH311 (MW311) and BH317 (MW317) to supplement the existing monitoring well installed in BH8 (MW8) during the PSI. The additional wells were located to provide spatial coverage whilst also targeting the proposed building area. MW311 and MW317 were considered to be in up-gradient areas of the site and were expected to provide an indication of groundwater flowing into (beneath) the site from the west and south respectively. MW8 was considered to be in the intermediate area of the site and was expected to provide an indication of groundwater flowing across (beneath) the site.

Aspect	Input
Monitoring Well Installation Procedure	The monitoring well construction details are documented on the corresponding borehole logs. The wells were installed to approximately 5-6mBGL and generally constructed as follows: • 50mm diameter Class 18 PVC (machine slotted screen) installed in the lower section of the well to intersect groundwater; • 50mm diameter Class 18 PVC casing installed in the upper section of the well (screw fixed); • A 2mm sand filter pack around the screen section for groundwater infiltration; • A hydrated bentonite seal/plug on top of the sand pack to seal the well; and • A gatic cover installed at the surface with a concrete plug to limit the inflow of surface water.
Monitoring Well Development	The monitoring wells were developed using a submersible electrical pump with single-use tubing. A calibrated water quality meter was used to measure pH, electrical conductivity (EC), dissolved oxygen (DO), redox potential (Eh) and temperature. Development continued until steady state conditions were achieved.
Groundwater Sampling	Prior to sampling, the monitoring wells were checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) using an inter-phase probe electronic dip meter. The monitoring well head space was also checked for volatile organic compounds (VOCs) using a calibrated PID unit. Samples were obtained using a peristaltic pump, after purging to achieve steady state conditions. Groundwater samples were obtained directly from the single use tubing and placed in the sample containers. Duplicate samples are to be obtained by alternate filling of sample containers. This technique will be adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling was transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal.
Decontaminant and Sample Preservation	Groundwater sampling utilised single-use tubing, therefore no decontamination procedure was necessary. The samples were preserved with reference to the analytical requirements and placed in an insulated container with ice in accordance. On completion of the fieldwork, the samples were temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

4.4 Analytical Schedule

Samples analysed for the presence of OCP, OPP and PCB were selected to provide spatial coverage of the site, though were limited to the top 1m of fill. The selection process for analysing asbestos concentrations in soil included providing adequate spatial coverage of the site, whilst targeting profiles where anthropogenic inclusions were encountered. The samples analysed for the physiochemical parameters for Excavated Natural Material (ENM) were selected to target the top 2m of fill within the proposed building area and carpark.

4.4.1 Laboratory Analysis

Samples were analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. Reference should be made to the laboratory reports attached in the appendices for further details.

Table 4-3: Laboratory Details

Samples	Laboratory	Report Reference
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks, trip spikes and field rinsate samples)	EnviroLab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	253071, 253565 and 253783
Inter-laboratory duplicates	EnviroLab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)	23012

4.5 Deviations from the SAQP

The DSI was undertaken generally in accordance with the SAQP, with only minor deviations recorded. The deviations are discussed in the following sub-sections.

4.5.1 Deviation from DQO Step 5 – Develop an Analytical Approach

Section 4.1.5.2 of the SAQP stipulated that field QA/QC would include analysis of inter-laboratory duplicates (minimum of 5% of primary samples), intra-laboratory duplicate samples (minimum of 5% of primary samples), and one trip spike, trip blank and rinsate sample (one for each medium sampled to assess the adequacy of field practices).

In regard to groundwater sampling, a rinsate sample was not collected, as single-use tubing was utilised for sample collection. This process was considered an appropriate alternative to decontamination of equipment.

Regarding the groundwater analysis, due to a sample processing error by JKE, the request for the inter-laboratory duplicate sample to be analysed by a secondary laboratory was not completed. The inter-laboratory duplicate sample was analysed by the primary laboratory (as an intra-laboratory duplicate sample).

4.5.2 Deviation from Soil Sampling Plan

The soil sampling plan indicated that soil samples were to be recovered from each stratum profile encountered for each sampling location (to the proposed investigation depths), with additional samples where the profile was greater than 1m thickness with little to no changes in the stratum. This plan was generally adhered to, with the exception of strata profiles encountered at depths of 3.3mBGL to 3.45mBGL in BH312, BH314, BH319 and BH320. Samples were not collected from these profiles due to the limited sample return achieved within the SPT sampler and/or smearing of the soil profile during auger extraction.

These profiles were not significantly different to the remaining soils, therefore the lack of sampling from these profiles is not considered to alter the outcome of this DSI.

5 SITE ASSESSMENT CRITERIA (SAC)

The SAC were derived from the NEPM 2013 and other guidelines as discussed in the following sub-sections. The guideline values for individual contaminants are presented in the attached report tables and further explanation of the various criteria adopted is provided in the appendices.

5.1 Soil

Soil data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013) as outlined below.

5.1.1 Human Health

- Health Investigation Levels (HILs) for a 'residential with accessible soils' exposure scenario (HIL-A);
- Health Screening Levels (HSLs) for a 'low-high density residential' exposure scenario (HSL-A & HSL-B). HSLs were calculated based on conservative assumptions including a 'sand' type and a depth interval of 0m to 1m;
- HSLs for direct contact presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)¹²; and
- Asbestos was assessed against the HSL-A criteria. A summary of the asbestos criteria is provided in the table below:

Table 5-1: Details for Asbestos SAC

Guideline	Applicability
Asbestos in Soil	The HSL-A criteria were adopted for the assessment of asbestos in soil. The SAC adopted for asbestos were derived from the NEPM 2013 and are based on WA DoH (2009) guidance. The SAC include the following: • No visible asbestos at the surface/in the top 10cm of soil; • <0.01% w/w bonded asbestos containing material (ACM) in soil; and • <0.001% w/w asbestos fines/fibrous asbestos (AF/FA) in soil. Concentrations for bonded ACM concentrations in soil are based on the following equation which is presented in Schedule B1 of NEPM (2013): $\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content} \times \text{bonded ACM (kg)}}{\text{Soil volume (L)} \times \text{soil density (kg/L)}}$ However, we are of the opinion that the actual soil volume in a 10L bucket varies considerably due to the presence of voids, particularly when assessing cohesive soils. Therefore, each bucket sample was weighed using electronic scales and the above equation was adjusted as follows (we note that the units have also converted to grams): $\% \text{ w/w asbestos in soil} = \frac{\% \text{ asbestos content} \times \text{bonded ACM (g)}}{\text{Soil weight (g)}}$

¹² Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

5.1.2 Environment (Ecological – terrestrial ecosystems)

- Ecological Investigation Levels (EILs) and Ecological Screening Levels (ESLs) for an 'urban residential and public open space' (URPOS) exposure scenario. Though NEPM (2013) recommends that ecological SAC are applied to the top 2m of soil, soils to a depth of 3mBGL have been considered to account for minor excavation works which may reduce the site levels;
- ESLs were adopted based on the soil type; and
- EILs for selected metals were calculated using site specific soil parameters for pH and cation exchange capacity (CEC). For this investigation, the arithmetic mean pH and CEC values for all samples analysed for the concurrent salinity investigation were utilised. The calculated arithmetic mean pH and CEC values adopted for the DSI were pH 8.7 and 21 meq/100g respectively. Refer to the Salinity Report for further details. These data were used to select the added contaminant limit (ACL) values presented in Schedule B(1) of NEPM (2013), and published ambient background concentration (ABC) presented in the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)¹³. This method is considered to be adequate for the Tier 1 screening.

5.1.3 Management Limits for Petroleum Hydrocarbons

Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) were considered.

5.1.4 Waste Classification

5.1.4.1 NSW EPA Waste Classification Guidelines

Data for the waste classification assessment were assessed in accordance with the Waste Classification Guidelines, Part 1: Classifying Waste (2014)¹⁴ as outlined in the following table:

Table 5-2: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) $\leq$ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; and • If TCLP $\leq$ TCLP1 and SCC $\leq$ SCC1 then treat as general solid waste.
Restricted Solid Waste (non-putrescible)	• If SCC $\leq$ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP $\leq$ TCLP2 and SCC $\leq$ SCC2 then treat as restricted solid waste.
Hazardous Waste	• If SCC $>$ CT2 then TCLP not needed to classify the soil as hazardous waste; and • If TCLP $>$ TCLP2 and/or SCC $>$ SCC2 then treat as hazardous waste.
Virgin Excavated Natural Material (VENM)	Natural material (such as clay, gravel, sand, soil or rock fines) that meet the following: • That has been excavated or quarried from areas that are not contaminated with manufactured chemicals, or with process residues, as a result of industrial, commercial mining or agricultural activities; • That does not contain sulfidic ores or other waste; and

¹³ Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia*. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission.

¹⁴ NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste*. (referred to as Waste Classification Guidelines 2014)

Category	Description
	Includes excavated natural material that meets such criteria for virgin excavated natural material as may be approved from time to time by a notice published in the NSW Government Gazette.

5.1.4.2 ENM Assessment Criteria

Soil data (to a maximum depth of 3.5mBGL) were compared to the Absolute Maximum Concentrations (AMC) and Maximum Average Concentrations (MAC) presented in the Excavated Natural Material Order (2014)¹⁵.

5.2 Groundwater

Groundwater data were compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)¹⁶. Environmental values for this investigation include aquatic ecosystems and human-health risks in non-use scenarios.

5.2.1 Human Health

- HSLs for a 'low-high density residential' exposure scenario (HSL-A/HSL-B). Due to the shallow depth of groundwater (approximately 2mBGL), the HSLs for a sand soil type with a groundwater level of 2-4m were adopted for the purpose of an initial screening of TRH/BTEX data;
- Following the initial screening, JKE undertook a site-specific assessment (SSA) for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater. The assessment included selection of alternative Tier 1 criteria that were considered suitably protective of human health. These criteria are based on drinking water guidelines and have been referred to as HSL-SSA. The criteria were based on the following (as shown in the attached report tables):
 - Australian Drinking Water Guidelines 2011 (updated 2018)¹⁷ for BTEX compounds;
 - World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)¹⁸ for petroleum hydrocarbons (i.e. TRH fractions);
 - USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
 - The use of the laboratory PQLs for other contaminants where there were no Australian guideline.
- The ADWG 2011 were multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies). These have been deemed as 'recreational' SAC.

¹⁵ NSW EPA, (2014). *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014. The excavated natural material order 2014* (referred to as the ENM Order 2014).

¹⁶ NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination*.

¹⁷ National Health and Medical Research Council (NHMRC), (2018). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

¹⁸ World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

5.2.2 Environment (Ecological - aquatic ecosystems)

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species were adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)¹⁹. The 99% trigger values were adopted where required to account for bioaccumulation. Low and moderate reliability trigger values were also adopted for some contaminants where high-reliability trigger values don't exist.

¹⁹ Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

6 RESULTS

6.1 Summary of Data (QA/QC) Evaluation

The data evaluation is presented in Appendix G. In summary, JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

6.2 Subsurface Conditions

A summary of the subsurface conditions encountered during the investigation is presented in the following table. Reference should be made to the borehole and test pit logs attached in Appendix D for further details.

Table 6-1: Summary of Subsurface Conditions

Profile	Description
Fill	Fill was encountered at the surface in all boreholes and test pits and extended from depths of approximately 11.2mBGL to 14.2mBGL. With the exception of boreholes BH101 to BH104, all boreholes and test pits terminated in the fill at a maximum depth of approximately 3mBGL to 6mBGL. The fill typically comprised silty clay with inclusions of gravel, and to much a lesser extent ash and building rubble (bricks, steel, plastic, glass, terracotta, tile fragments). No stained soils or offensive odours were encountered during the investigation.
Natural Soil	Natural soil was not encountered during the investigation.
Bedrock	Siltstone was encountered beneath the fill in boreholes BH101 to BH104 at depths of approximately 11.2mBGL to 14.2mBGL.
Groundwater	Groundwater seepage was encountered in boreholes BH101 to BH104 during drilling at depths of approximately 3.8mBGL to 9mBGL. On completion of drilling, groundwater was also encountered in BH311 and BH317, with SWLs of 4.4mBGL and 3.4mBGL respectively measured a short time after. All other boreholes and all test pits remained on completion of drilling/excavation and a short time after.

6.3 Field Screening

A summary of the field screening results is presented in the following table:

Table 6-2: Summary of Field Screening

Aspect	Details
PID Screening of Soil Samples for VOCs	PID soil sample headspace readings are presented in attached report tables and the COC documents attached in Appendix E. The results ranged from 0ppm to 1.6ppm isobutylene equivalents which indicates a general lack of PID detectable VOCs.
Bulk Screening for Asbestos	The bulk field screening results are summarised in the attached report tables. All results were below the SAC. Visible asbestos materials were not identified within the bulk field screening samples.
Groundwater Depth	A standing water level was measured in boreholes BH101, BH102, BH103, BH104, BH311 and BH317 at depths ranging from 1.4mBGL to 5mBGL a short time after completion of

Aspect	Details
	drilling. The remaining boreholes were dry during and a short time after completion of drilling. Prior to groundwater sampling, SWLs measured in the monitoring wells installed at the site ranged from 1.49mBGL to 2.39mBGL. Based on the initial water strike level/seepage depths recorded during drilling, compared to the SWLs recorded in the monitoring wells, it was considered possible that the groundwater is confined or semi-confined. The SWLs may be representative of a potentiometric water level rather than the true groundwater level.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 6.6 to 7.1; - EC ranged from 4,769µS/cm to 11,688µS/cm; - Eh ranged from -97.7mV to -102.6mV; and - DO ranged from 0.5ppm to 1.3ppm.
LNAPLs petroleum hydrocarbons	Phase separated product (i.e. LNAPL) were not detected using the interphase probe during groundwater sampling.

6.4 Soil Laboratory Results

The soil laboratory results were assessed against the SAC presented in Section 5.1. Individual SAC are shown in the report tables attached in Appendix C. A summary of the DSI results is presented below:

6.4.1 Human Health and Environmental (Ecological) Assessment

Table 6-3: Summary of Soil Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	80	16	0	NSL	-
Cadmium	80	2	0	NSL	-
Chromium (total)	80	19	0	0	-
Copper	80	55	0	0	-
Lead	80	100	0	0	-
Mercury	80	0.1	0	NSL	-
Nickel	80	22	0	0	-
Zinc	80	120	0	0	-
Total PAHs	80	1.1	0	NSL	-
Benzo(a)pyrene	80	0.06	NSL	0	-

Analyte	N	Max. (mg/kg)	N> Human Health SAC	N> Ecological SAC	Comments
Carcinogenic PAHs (as BaP TEQ)	80	<PQL	0	NSL	-
Naphthalene	80	<PQL	0	NSL	-
DDT+DDE+DDD	20	<PQL	0	NSL	-
DDT	20	<PQL	NSL	0	-
Aldrin and dieldrin	20	<PQL	0	NSL	-
Chlordane	20	<PQL	0	NSL	-
Heptachlor	20	<PQL	0	NSL	-
PCBs	20	<PQL	0	NSL	-
TRH F1	80	<PQL	0	0	-
TRH F2	80	<PQL	0	0	-
TRH F3	80	160	0	0	-
TRH F4	80	<PQL	0	0	-
Benzene	80	<PQL	0	0	-
Toluene	80	<PQL	0	0	-
Ethylbenzene	80	<PQL	0	0	-
Xylenes	80	<PQL	0	0	-
Asbestos (in soil)	13	-	-	NA	Asbestos was not detected in the samples analysed. All ACM >7mm concentrations were <0.01%w/w and all AF/FA concentrations were <0.001%w/w.

Notes:

N: Total number (primary samples)

NSL: No set limit

NL: Not limiting

6.4.2 Waste Classification Assessment

The laboratory results were assessed against the criteria presented in Section 5.1.4. The results are presented in the report tables attached in Appendix C. A summary of the DSI results are presented in the following tables:

Table 6-4: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	80	0	0	-
Cadmium	80	0	0	-
Chromium	80	0	0	-
Copper	80	NSL	NSL	-
Lead	80	0	0	-
Mercury	80	0	0	-
Nickel	80	0	0	-
Zinc	80	NSL	NSL	-
TRH (C ₆ -C ₉)	80	0	0	-
TRH (C ₁₀ -C ₃₆)	80	0	0	-
BTEX	80	0	0	-
Total PAHs	80	0	0	-
Benzo(a)pyrene	80	0	0	-
OCPs & OPPs	20	0	0	-
PCBs	20	0	0	-
Asbestos	13	-	-	Asbestos was not detected in the samples analysed.

Notes:

N: Total number (primary samples)

NSL: No set limit

Table 6-5: Summary of Soil Laboratory Results Compared to ENM Criteria

Analyte	N	N > AMC Criteria	N > MAC Criteria	Comments
Arsenic	62	0	0	-
Cadmium	62	1	0	The cadmium concentration exceeded the AMC of 1mg/kg in one fill sample collected from BH314 (1.7-1.95m). The maximum cadmium concentration was 2mg/kg.
Chromium	62	0	0	-
Copper	62	0	0	-
Lead	62	0	0	-
Mercury	62	0	0	-
Nickel	62	0	0	-
Zinc	62	0	0	-
TRH (C ₆ -C ₉)	62	0	0	-
TRH (C ₁₀ -C ₃₆)	62	0	0	-
BTEX	62	0	0	-
Total PAHs	62	0	0	-
Benzo(a)pyrene	62	0	0	-
pH	10	0	0	-
EC	10	0	0	-
Foreign Materials	10	0	0	-
Asbestos	13	-	-	Asbestos was not detected in the samples analysed.

Notes:

N: Total number (primary samples)

6.5 Groundwater Laboratory Results

The groundwater laboratory results were assessed against the SAC presented in Section 5.2. Individual SAC are shown in the report tables attached in Appendix C. A summary of the DSI results is presented below:

Table 6-6: Summary of Groundwater Laboratory Results – Human Health and Environmental (Ecological)

Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
Arsenic	3	40	0	1	Arsenic concentrations exceeded the ecological SAC in groundwater collected from MW8. The maximum arsenic concentration was 40µg/L.
Cadmium	3	0.2	0	0	-
Chromium (total)	3	<PQL	0	0	-
Copper	3	1	0	0	-
Lead	3	<PQL	0	0	-
Mercury	3	<PQL	0	0	-
Nickel	3	20	0	1	Nickel concentrations exceeded the ecological SAC in groundwater collected from MW8. The maximum nickel concentration was 20µg/L.
Zinc	3	12	0	1	Zinc concentrations exceeded the ecological SAC in groundwater collected from MW8. The maximum zinc concentration was 12µg/L.
Total PAHs	3	<PQL	0	0	-
Benzo(a)pyrene	3	<PQL	0	0	-
Naphthalene	3	<PQL	0	0	-
TRH F1	3	<PQL	0	0	-
TRH F2	3	<PQL	0	0	-
TRH F3	3	<PQL	NSL	0	-
TRH F4	3	<PQL	NSL	0	-
Benzene	3	<PQL	0	0	-
Toluene	3	<PQL	0	0	-
Ethylbenzene	3	<PQL	0	0	-



Analyte	N ^	Max. (µg/L)	N> Human Health SAC	N> Ecological SAC	Comments
m+p-Xylene	3	<PQL	0	0	-
o-Xylene	3	<PQL	0	0	-
Total Xylenes	3	<PQL	0	0	-
pH	3	-	0	0	The pH results ranged from 6.8 to 7.3 and were within the acceptable range for human health and ecological protection.
EC	3	14,000 µs/cm	NSL	NSL	-

Notes:

^: Primary samples

N: Total number

NSL: No set limit

NL: Not limiting

7 PRELIMINARY WASTE CLASSIFICATION ASSESSMENT

Based on the results of the assessment, and at the time of reporting, the fill material is assigned a preliminary classification of **General Solid Waste (non-putrescible) with regards to Part 1 of the Waste Classification Guidelines 2014**. Further assessment is required to confirm this classification prior to off-site disposal of the waste. The anticipated waste quantities should also be confirmed at that time and documented in the report.

The results were also screened against the criteria for classification as ENM. Based on the results of the assessment, and at the time of reporting, JKE consider that the majority of the fill material will likely meet the conditions of the ENM Order 2014. JKE note that one exceedance of the AMC for cadmium (BH314 1.7-1.9m) was recorded. Should excavation and off-site disposal of fill from within the vicinity of this location be required to facilitate the project, JKE recommend that the material is segregated from the remaining fill on-site and assessed separately.

During construction, we recommend that surplus/waste fill/soil be stockpiled and assessed for potential re-use on other sites in accordance with the conditions of the ENM Order/Exemption 2014. Further assessment (i.e. sampling and analysis) is required to comply with the conditions of the ENM Order 2014. Building and demolition waste should not be mixed in with the soil.

8 DISCUSSION

8.1 Tier 1 Risk Assessment and Review of CSM

For a contaminant to represent a risk to a receptor, the following three conditions must be present:

1. Source – The presence of a contaminant;
2. Pathway – A mechanism or action by which a receptor can become exposed to the contaminant; and
3. Receptor – The human or ecological entity which may be adversely impacted following exposure to contamination.

If one of the above components is missing, the potential for adverse risks is relatively low.

8.1.1 Soil

8.1.1.1 Asbestos

Asbestos were not detected in the samples analysed and there was no complete or unacceptable SPR linkage identified.

8.1.1.2 Heavy metals

Heavy metals were detected across the site, generally at low concentrations. All detected concentrations of heavy metals were below the human health and ecological SAC, and there was no complete or unacceptable SPR linkage identified.

8.1.1.3 Hydrocarbons

Several PAH compounds and TRH F3 were detected within the samples analysed. All detected concentrations of PAHs and TRH F3 were below the human health and ecological SAC, and there were no complete or unacceptable SPR linkages identified.

BTEX, TRH F1, TRH F2 and TRH F4 were not detected in the samples analysed.

8.1.1.4 Pesticides and PCBs

Pesticides and PCBs were not detected in the samples analysed and there was no complete or unacceptable SPR linkage identified.

8.1.2 Groundwater

8.1.2.1 Heavy metals

Arsenic, nickel and zinc were detected in groundwater samples collected from MW8 at concentrations above the ecological SAC. The concentrations recorded in the PSI and this investigation were relatively consistent. The heavy metals concentrations across all three monitoring wells were largely below the ecological SAC and were generally within the same order of magnitude. A point source of heavy metals contamination (e.g.

elevated heavy metals in fill) was not identified. On this basis, groundwater at the site is not considered to pose an unacceptable ecological risk.

8.1.2.2 Hydrocarbons

BTEX, TRH F1, F2, F3 and F4 and PAHs were not detected in the samples analysed and there were no complete or unacceptable SPR linkages identified.

8.2 Decision Statements

The decision statements are addressed below:

Are any results above the SAC?

Arsenic, nickel and zinc were detected in groundwater samples collected from MW8 during the PSI and DSI, at concentrations above the ecological SAC.

Do potential risks associated with contamination exist, and if so, what are they?

No.

Is remediation required?

No.

Is the site characterisation sufficient to provide adequate confidence that remediation is/is not required?

Yes.

Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

The site is suitable in its current condition for the proposed Mulgoa Rise Public School development.

8.3 Data Gaps

SafeWork records were not reviewed for the PSI or DSI. The site historically comprised grassed paddocks likely used for grazing, and later, was part of a quarry excavation. Given the limited use of the site, and the depth of fill placed during site rehabilitation, JKE consider it is unlikely that any records relating to the storage of dangerous goods would exist. Records relating to the storage of dangerous goods during the mining activities would likely be associated with other properties outside the quarry excavation boundaries. Nevertheless, JKE sought permission from the client to search the SafeWork dangerous goods register. This permission had not been received at the date of this report.

9 CONCLUSIONS AND RECOMMENDATIONS

The investigation included a review of historical information (including existing environmental data from the PSI), soil sampling from 13 boreholes and 10 test pits, and groundwater sampling from three monitoring wells installed at the site. The site has historically been used for grazing, though extractive activities (quarrying) occurred between 1986 and 2000. The site was rehabilitated (i.e. filled and grassed) between 2000 and 2007 and has remained vacant since.

The investigation has not identified contamination that was assessed to pose a risk in the context of the proposed development. Therefore, based on the findings of the investigation, JKE are of the opinion that the site is suitable for the proposed development described in Section 1.1. Remediation and/or further investigation is not considered to be required based on the information and data collected and evaluated by JKE.

There is considered to be a relatively low potential for contamination-related unexpected finds to occur at the site during the proposed development works. Recommendations have been made below to account for this.

Given the proposed land use and the sensitive on-site receptors (i.e. children), JKE recommend that a Fill Import Protocol (FIP) is prepared for the site and implemented as part of the Construction Environmental Management Plan (CEMP). The FIP should include appropriate measures (including visual inspections and/or validation sampling) to ensure that all materials imported to the site (i.e. road-base and gravel, sandstone, general fill, mulch etc) are free of contamination and are aesthetically suitable. Although there is considered to be a relatively low potential for contamination-related unexpected finds to occur at the site during the proposed development works, an Unexpected Finds Protocol (UFP) is also to be developed and integrated into the CEMP as a conservative measure.

JKE consider that the report objectives outlined in Section 1.2 have been addressed.

10 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the investigation; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- The conclusions presented in this report are based on investigation of conditions at specific locations, chosen to be as representative as possible under the given circumstances, visual observations of the site and immediate surrounds and documents reviewed as described in the report;
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the investigation. If the subject site is sold, ownership of the investigation report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the investigation was undertaken. No person should apply an investigation for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an investigation report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site investigations identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an investigation indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Investigation Limitations

Although information provided by a site investigation can reduce exposure to the risk of the presence of contamination, no environmental site investigation can eliminate the risk. Even a rigorous professional investigation may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Investigations by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an investigation report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Investigation Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the investigation. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the investigation. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete investigation should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

Read Responsibility Clauses Closely

Because an environmental site investigation is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site investigation, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.



Appendix A: Report Figures

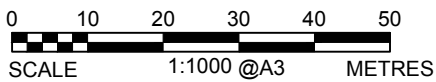
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LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ⊕ TP (Fill Depth) TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ● SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - DSI
- BH(Fill Depth) DEEP GEOTECHNICAL BOREHOLES AND DEPTH OF FILL (m) BY JKG

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM



This plan should be read in conjunction with the Environmental report.

Title: SAMPLE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 2
JKEnvironments	



PLOT DATE: 2/11/2020 1:25:52 PM DWG FILE: Z:\5 EIS\SC EIS JOBS\33000\SE3177PA GLENMORE PARK\DSI AND SAC\DAE33177P.DWG

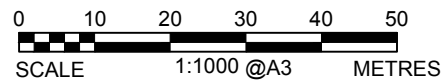


BH8/MW8 (18/05/20)	
Arsenic	48µg/L
Nickel	25µg/L
Zinc	11µg/L
BH8/MW8 (19/10/20)	
Arsenic	40µg/L
Nickel	20µg/L
Zinc	12µg/L

LEGEND

- APPROXIMATE SITE BOUNDARY
 - BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
 - ⊕ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
 - ⊕ TP(Fill Depth) TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
 - ⊕ SAMPLE LOCATION, NUMBER AND DEPTH OF FILL (m) - DSI
 - BH(Fill Depth) DEEP GEOTECHNICAL BOREHOLES AN DEPTH OF FILL (m) BY JKG
- | SAMPLE ID | - | GROUNDWATER SAMPLE EXCEEDANCE |
|-----------|----------------------|-------------------------------------|
| CHEMICAL | CONCENTRATION (µg/L) | |
| | | GROUNDWATER CONCENTRATION ABOVE SAC |

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM



This plan should be read in conjunction with the Environmental report.

Title: SAC EXCEEDANCE LOCATION PLAN

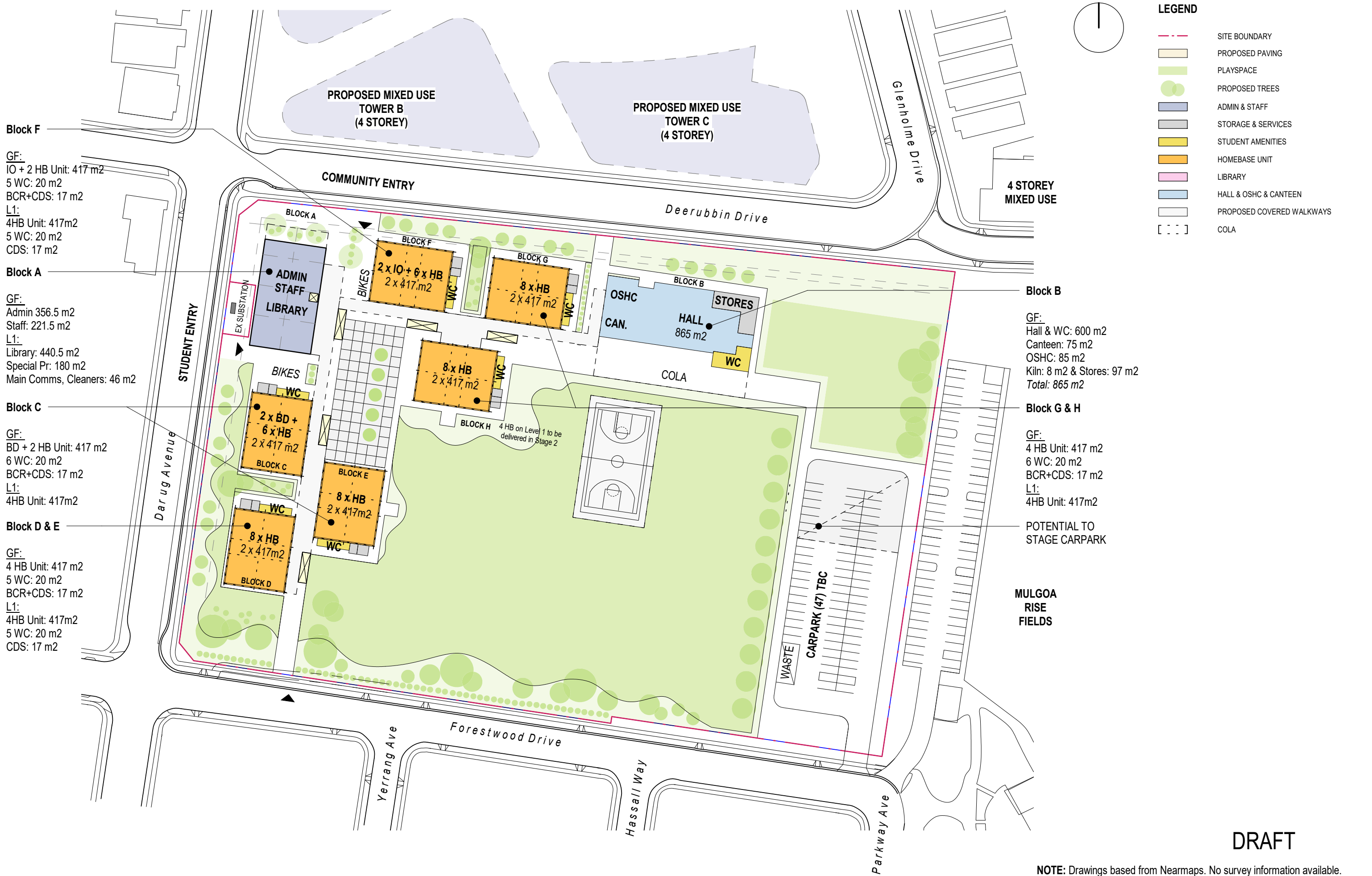
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Project No: E33177P

Figure No: 3

JKEnvironments







Appendix B: Selected Site Photographs



Photograph 1: View of site and parked vehicles within the north



Photograph 2: View of north-western portion of the site



Photograph 3: View of site with 'Young Academics' site beyond



Photograph 4: Substation kiosk along western boundary



Photograph 5: TP301



Photograph 6: Close up of fill spoil (TP310)



Photograph 7: Soccer fields to the east of the site



Photograph 8: Amenities building and children's playground to the east



Appendix C: Laboratory Results Summary Tables



DSI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	OCP:	Organochlorine Pesticides
ACM:	Asbestos Containing Material	OPP:	Organophosphorus Pesticides
ADWG:	Australian Drinking Water Guidelines	PAHs:	Polycyclic Aromatic Hydrocarbons
AF:	Asbestos Fines	PCBs:	Polychlorinated Biphenyls
AMC:	Absolute Maximum Concentration	PCE:	Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
ANZG:	Australian and New Zealand Guidelines	pH_{KCL}:	pH of filtered 1:20, 1M KCL extract, shaken overnight
B(a)P:	Benzo(a)pyrene	pH_{ox}:	pH of filtered 1:20 1M KCl after peroxide digestion
CEC:	Cation Exchange Capacity	PQL:	Practical Quantitation Limit
CRC:	Cooperative Research Centre	RS:	Rinsate Sample
CT:	Contaminant Threshold	RSL:	Regional Screening Levels
EC:	Electrical Conductivity	RSW:	Restricted Solid Waste
EILs:	Ecological Investigation Levels	SAC:	Site Assessment Criteria
ENM:	Excavated Natural Material	SCC:	Specific Contaminant Concentration
ESLs:	Ecological Screening Levels	S_{Cr}:	Chromium reducible sulfur
FA:	Fibrous Asbestos	S_{POS}:	Peroxide oxidisable Sulfur
GIL:	Groundwater Investigation Levels	SSA:	Site Specific Assessment
GSW:	General Solid Waste	SSHSs:	Site Specific Health Screening Levels
HILs:	Health Investigation Levels	TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
HSLs:	Health Screening Levels	TB:	Trip Blank
HSL-SSA:	Health Screening Level-Site Specific Assessment	TCA:	1,1,1 Trichloroethane (methyl chloroform)
kg/L	kilograms per litre	TCE:	Trichloroethylene (Trichloroethene)
MAC:	Maximum Average Concentration	TCLP:	Toxicity Characteristics Leaching Procedure
NA:	Not Analysed	TPA:	Total Potential Acidity, 1M KCL peroxide digest
NC:	Not Calculated	TS:	Trip Spike
NEPM:	National Environmental Protection Measure	TRH:	Total Recoverable Hydrocarbons
NHMRC:	National Health and Medical Research Council	TSA:	Total Sulfide Acidity (TPA-TAA)
NL:	Not Limiting	UCL:	Upper Level Confidence Limit on Mean Value
NSL:	No Set Limit	USEPA	United States Environmental Protection Agency
OCP:	Organochlorine Pesticides	VOCC:	Volatile Organic Chlorinated Compounds
OPP:	Organophosphorus Pesticides	WHO:	World Health Organisation
PAHs:	Polycyclic Aromatic Hydrocarbons		
%w/w:	weight per weight		
ppm:	Parts per million		

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also referred to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.
for new suburbs with low traffic have been quoted).

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for new suburbs with low traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorvos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

ENM Table:

- Data has been assessed in accordance with the criteria specified in the 'The Excavated Natural Material Order NSW EPA 2014
- The MAC values have been calculated by adding the concentration of each sample and dividing by the total number of samples. For the purposes of calculation, a value equal to 50% of the PQL was adopted for results that were less than the PQL.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

All data in mg/kg unless stated otherwise			HEAVY METALS							PAHs		ORGANOCHLORINE PESTICIDES (OCPs)								OP PESTICIDES (OPP)			
	Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor	Chlorpyrifos	TOTAL PCBs	ASBESTOS FIBRES			
PQL - Envirolab Services	4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100			
Site Assessment Criteria (SAC)	100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected			
Sample Reference	Sample Depth	Sample Description																					
BH102	3-3.45	Fill: Silty Clay	<4	<0.4	6	22	9	<0.1	7	31	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102 - [LAB_DUP]	3-3.45	Laboratory Duplicate	5	<0.4	7	29	13	<0.1	12	40	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102 - [TRIPLICATE]	3-3.45	Laboratory Triplicate	4	<0.4	8	31	17	<0.1	13	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	4.5-4.95	Fill: Silty Clay	<4	<0.4	7	31	11	<0.1	12	78	0.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	6-6.45	Fill: Silty Clay	5	<0.4	9	39	12	<0.1	15	64	0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	7.5-7.95	Fill: Silty Clayey Gravel	<4	<0.4	8	31	10	<0.1	14	51	0.1	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	9-9.45	Fill: Gravely Silty Clay	6	<0.4	5	40	14	<0.1	22	57	0.56	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	10.5-10.95	Fill: Silty Clay	8	<0.4	7	33	12	<0.1	17	59	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH102	13.5-13.95	Fill: Gravely Silty Clay	6	<0.4	4	33	12	<0.1	14	58	0.5	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	3-3.45	Fill: Silty Clay	<4	<0.4	4	23	9	<0.1	10	41	0.1	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	4.5-4.95	Fill: Silty Clay	<4	<0.4	7	23	10	<0.1	10	38	0.2	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	6-6.45	Fill: Silty Clay	<4	<0.4	6	35	12	<0.1	14	50	0.1	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	7.5-7.95	Fill: Silty Clay	<4	<0.4	7	33	12	<0.1	15	56	0.3	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103 - [LAB_DUP]	7.5-7.95	Laboratory Duplicate	<4	<0.4	6	27	10	<0.1	14	48	0.3	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	9-9.45	Fill: Silty Clay	<4	<0.4	4	27	13	<0.1	14	31	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH103	10.5-10.95	Fill: Gravelly Clay	5	<0.4	5	41	13	<0.1	20	90	0.71	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH104	3-3.45	Fill: Silty Clay	<4	<0.4	7	38	14	<0.1	15	64	0.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH104	4.5-4.65	Fill: Silty Clay	<4	<0.4	6	26	10	<0.1	10	43	0.2	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH104	6-6.15	Fill: Silty Clay	8	<0.4	5	25	8	<0.1	11	44	0.51	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH104	7.5-7.95	Fill: Silty Clay	<4	<0.4	4	24	9	<0.1	10	39	0.4	<0.5	NA	NA	NA	NA	NA	NA	NA	NA			
BH104	9-9.45	Fill: Silty Clay	<4	<0.4	4	25	11	<0.1	10	36	1.1	<0.5	NA	NA	NA	NA</							

Concentration above the SAC **VALUE**

Concentration above the PQL **Bold**

The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C ₁₀ -C ₁₄ (F1)	>C ₁₀ -C ₁₄ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
BH102	3-4.35	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102 - [LAB_DUP]	3-4.35	Laboratory Duplicate	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	4.5-4.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	6-6.45	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	7.5-7.95	Fill: Silty Clayey Gravel	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	9-9.45	Fill: Gravely Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	10.5-10.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH102	13.5-13.95	Fill: Gravely Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	3-4.35	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	4.5-4.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	6-6.45	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	7.5-7.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103 - [LAB_DUP]	7.5-7.95	Laboratory Duplicate	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	9-9.45	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH103	10.5-10.95	Fill: Gravely Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	3-4.35	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	4.5-4.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	6-6.45	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	7.5-7.95	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	9-9.45	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	10.5-10.95	Fill: Gravely Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	12-12.45	Fill: Gravely Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104 - [LAB_DUP]	12-12.45	Laboratory Duplicate	0m to 1cm	Sand	45	110	0.5	160	55	40	3
BH104	13.5-13.95	Fill: Gravely Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP301	0-0.2	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP301 - [LAB_DUP]	0-0.2	Laboratory Duplicate	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP301	0-0.8	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP301	1-1.2	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP302	0-0.2	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP302	0.8-1.1	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP302	1.9-2.1	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP303	0-0.2	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP303	0.8-1	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP303	2.2-2.4	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP304	0-0.2	Fill: Silty Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP304	0.2-0.4	Fill: Silty Gravely Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP304	1.2-1.4	Fill: Silty Gravely Clay	0m to 1cm	Sand	45	110	0.5	160	55	40	3
TP304	2.2-2.4	Fill: Silty Gravely Clay	0m to 1cm	Sand	45	110	0.				



TABLE 53 SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS All data in mg/kg unless stated otherwise						
		C _d -C _u (F1) plus BTEX	>C _d -C _u (F2) plus naphthalene	>C _u -C _u (F3)	>C _u -C _u (F4)	
PQL - EnviroLab Services		25	50	100	100	
NEPM 2013 Land Use Category						
Sample Reference	Sample Depth	Soil Texture	RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE			
BH102	3-3.45	Coarse	<25	<50	<100	<100
BH102 - [LAB_DUP]	3-3.45	Coarse	<25	<50	<100	<100
BH102	4.5-4.95	Coarse	<25	<50	160	<100
BH102	6-6.45	Coarse	<25	<50	<100	<100
BH102	7.5-7.95	Coarse	<25	<50	<100	<100
BH102	9-9.45	Coarse	<25	<50	<100	<100
BH102	10.5-10.95	Coarse	<25	<50	<100	<100
BH102	13.5-13.95	Coarse	<25	<50	<100	<100
BH103	3-3.45	Coarse	<25	<50	<100	<100
BH103	4.5-4.95	Coarse	<25	<50	<100	<100
BH103	6-6.45	Coarse	<25	<50	<100	<100
BH103	7.5-7.95	Coarse	<25	<50	<100	<100
BH103 - [LAB_DUP]	7.5-7.95	Coarse	<25	<50	<100	<100
BH103	9-9.45	Coarse	<25	<50	<100	<100
BH103	10.5-10.95	Coarse	<25	<50	<100	<100
BH104	3-3.45	Coarse	<25	<50	<100	<100
BH104	4.5-4.65	Coarse	<25	<50	<100	<100
BH104	6-6.15	Coarse	<25	<50	<100	<100
BH104	7.5-7.95	Coarse	<25	<50	<100	<100
BH104	9-9.45	Coarse	<25	<50	<100	<100
BH104	10.5-10.95	Coarse	<25	<50	<100	<100
BH104	12-12.45	Coarse	<25	<50	<100	<100
BH104 - [LAB_DUP]	12-12.45	Coarse	<25	<50	<100	<100
BH104	13.5-13.95	Coarse	<25	<50	<100	<100
TP301	0-0.2	Coarse	<25	<50	<100	<100
TP301 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP301	0.6-0.8	Coarse	<25	<50	<100	<100
TP301	1-1.2	Coarse	<25	<50	<100	<100
TP302	0-0.2	Coarse	<25	<50	<100	<100
TP302	0.9-1.1	Coarse	<25	<50	<100	<100
TP302	1.9-2.1	Coarse	<25	<50	<100	<100
TP303	0-0.2	Coarse	<25	<50	<100	<100
TP303	0.8-1	Coarse	<25	<50	<100	<100
TP303	2-2-2.4	Coarse	<25	<50	<100	<100
TP304	0-0.2	Coarse	<25	<50	<100	<100
TP304	0.2-0.4	Coarse	<25	<50	<100	<100
TP304	1.2-1.4	Coarse	<25	<50	<100	<100
TP304	2-2-2.4	Coarse	<25	<50	<100	<100
TP305	0-0.2	Coarse	<25	<50	<100	<100
TP305 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP305	0.8-1	Coarse	<25	<50	<100	<100
TP305	2-2-2.4	Coarse	<25	<50	<100	<100
TP306	0-0.2	Coarse	<25	<50	<100	<100
TP306	0.9-1.1	Coarse	<25	<50	<100	<100
TP307	0-0.2	Coarse	<25	<50	<100	<100
TP307	0.8-1	Coarse	<25	<50	<100	<100
TP307	1.5-1.7	Coarse	<25	<50	<100	<100
TP308	0-0.2	Coarse	<25	<50	<100	<100
TP308	0.8-1	Coarse	<25	<50	<100	<100
TP309	0-0.2	Coarse	<25	<50	<100	<100
TP309 - [LAB_DUP]	0-0.2	Coarse	<25	<50	<100	<100
TP309	0.8-1	Coarse	<25	<50	<100	<100
TP309	1.5-1.7	Coarse	<25	<50	<100	<100
TP309	2.1-2.3	Coarse	<25	<50	<100	<100
TP310	0-0.2	Coarse	<25	<50	<100	<100
TP310	0.8-1	Coarse	<25	<50	<100	<100
TP310	1.7-1.9	Coarse	<25	<50	<100	<100
TP310	1.9-2.1	Coarse	<25	<50	<100	<100
BH311	0-0.2	Coarse	<25	<50	<100	<100
BH311	0.7-0.95	Coarse	<25	<50	<100	<100
BH311 - [LAB_DUP]	0.7-0.95	Coarse	<25	<50	<100	<100
BH311	1.7-1.95	Coarse	<25	<50	<100	<100
BH311	3.2-3.45	Coarse	<25	<50	<100	<100
BH312	0-0.2	Coarse	<25	<50	<100	<100
BH312	0.7-0.95	Coarse	<25	<50	<100	<100
BH312	1.7-1.95	Coarse	<25	<50	<100	<100
BH313	0-0.2	Coarse	<25	<50	<100	<100
BH313	0.7-0.95	Coarse	<25	<50	<100	<100
BH313	1.7-1.95	Coarse	<25	<50	<100	<100
BH314	0-0.2	Coarse	<25	<50	<100	<100
BH314	0.7-0.95	Coarse	<25	<50	<100	<100
BH314 - [LAB_DUP]	0.7-0.95	Coarse	<25	<50	<100	<100
BH314	1.7-1.95	Coarse	<25	<50	<100	<100
BH315	0-0.2	Coarse	<25	<50	<100	<100
BH315	0.7-0.95	Coarse	<25	<50	<100	<100
BH315	1.7-1.95	Coarse	<25	<50	<100	<100
BH316	0-0.2	Coarse	<25	<50	<100	<100
BH316	0.7-0.95	Coarse	<25	<50	<100	<100
BH316	1.7-1.95	Coarse	<25	<50	<100	<100
BH317	0-0.2	Coarse	<25	<50	<100	<100
BH317	0.7-0.95	Coarse	<25	<50	<100	<100
BH317 - [LAB_DUP]	0.7-0.95	Coarse	<25	<50	<100	<100
BH317	1.7-1.95	Coarse	<25	<50	<100	<100
BH318	0-0.2	Coarse	<25	<50	<100	<100
BH318	0.5-0.7	Coarse	<25	<50	<100	<100
BH319	0-0.2	Coarse	<25	<50	<100	<100
BH319	0.5-0.7	Coarse	<25	<50	<100	<100
BH320	0-0.2	Coarse	<25	<50	<100	<100
BH320	0.7-0.95	Coarse	<25	<50	<100	<100
SDUP301	-	Coarse	<25	<50	<100	<100
SDUP302	-	Coarse	<25	<50	<100	<100
SDUP303	-	Coarse	<25	<50	<100	<100
SDUP303	-	Coarse	<25	<50	<100	<100
SDUP304	-	Coarse	<25	<50	<100	<100
SDUP305	-	Coarse	<25	<50	<100	<100
SDUP305	-	Coarse	<25	<50	<100	<100
SDUP306	-	Coarse	<25	<50	<100	<100
SDUP307	-	Coarse	<25	<50	<100	<100
SDUP308	-	Coarse	<25	<50	<100	<100
SDUP309	-	Coarse	<25	<50	<100	<100
SDUP310	-	Coarse	<25	<50	<100	<100
Total Number of Samples			101	101	101	101
Maximum Value			<PQL	<PQL	160	<PQL
Concentration above the SAC			VALUE			
Concentration above the PQL			Bold			

MANAGEMENT LIMIT ASSESSMENT CRITERIA						
Sample Reference	Sample Depth	Soil Texture	C _d -C _u (F1) plus BTEX	>C _d -C _u (F2) plus naphthalene	>C _u -C _u (F3)	>C _u -C _u (F4)
BH102	3-3.45	Coarse	700	1000	2500	10000
BH102 - [LAB_DUP]	3-3.45	Coarse	700	1000	2500	10000
BH102	4.5-4.95	Coarse	700	1000	2500	10000
BH102	6-6.45	Coarse	700	1000	2500	10000
BH102	7.5-7.95	Coarse	700	1000	2500	10000
BH102	9-9.45	Coarse	700	1000	2500	10000
BH102	10.5-10.95	Coarse	700	1000	2500	10000
BH102	13.5-13.95	Coarse	700	1000	2500	10000
BH103	3-3.45	Coarse	700	1000	2500	10000
BH103	4.5-4.95	Coarse	700	1000	2500	10000
BH103	6-6.45	Coarse	700	1000	2500	10000
BH103	7.5-7.95	Coarse	700	1000	2500	10000
BH103 - [LAB_DUP]	7.5-7.95	Coarse	700	1000	2500	10000
BH103	9-9.45	Coarse	700	1000	2500	10000
BH103	10.5-10.95	Coarse	700	1000	2500	10000
BH104	3-3.45	Coarse	700	1000	2500	10000
BH104	4.5-4.65	Coarse	700	1000	2500	10000
BH104	6-6.15	Coarse	700	1000	2500	10000
BH104	7.5-7.95	Coarse	700	1000	2500	10000
BH104	9-9.45	Coarse	700	1000	2500	10000
BH104	10.5-10.95	Coarse	700	1000	2500	10000
BH104	12-12.45	Coarse	700	1000	2500	10000
BH104 - [LAB_DUP]	12-12.45	Coarse	700	1000	2500	10000
BH104	13.5-13.95	Coarse	700	1000	2500	10000
TP301	0-0.2	Coarse	700	1000	2500	10000
TP301 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP301	0.6-0.8	Coarse	700	1000	2500	10000
TP301	1-1.2	Coarse	700	1000	2500	10000
TP302	0-0.2	Coarse	700	1000	2500	10000
TP302	0.9-1.1	Coarse	700	1000	2500	10000
TP302	1.9-2.1	Coarse	700	1000	2500	10000
TP303	0-0.2	Coarse	700	1000	2500	10000
TP303	0.8-1	Coarse	700	1000	2500	10000
TP303	2-2.4	Coarse	700	1000	2500	10000
TP304	0-0.2	Coarse	700	1000	2500	10000
TP304	0.2-0.4	Coarse	700	1000	2500	10000
TP304	1.2-1.4	Coarse	700	1000	2500	10000
TP304	2-2.4	Coarse	700	1000	2500	10000
TP305	0-0.2	Coarse	700	1000	2500	10000
TP305 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP305	0.8-1	Coarse	700	1000	2500	10000
TP305	2-2.4	Coarse	700	1000	2500	10000
TP306	0-0.2	Coarse	700	1000	2500	10000
TP306	0.9-1.1	Coarse	700	1000	2500	10000
TP307	0-0.2	Coarse	700	1000	2500	10000
TP307	0.8-1	Coarse	700	1000	2500	10000
TP307	1.5-1.7	Coarse	700	1000	2500	10000
TP308	0-0.2	Coarse	700	1000	2500	10000
TP308	0.8-1	Coarse	700	1000	2500	10000
TP309	0-0.2	Coarse	700	1000	2500	10000
TP309 - [LAB_DUP]	0-0.2	Coarse	700	1000	2500	10000
TP309	0.8-1	Coarse	700	1000	2500	10000
TP309	1.5-1.7	Coarse	700	1000	2500	10000
TP309	2.1-2.3	Coarse	700	1000	2500	10000
TP310	0-0.2	Coarse	700	1000	2500	10000
TP310	0.8-1	Coarse	700	1000	2500	10000
TP310	1.7-1.9	Coarse	700	1000	2500	10000
TP310	1.9-2.1	Coarse	700	1000	2500	10000
BH311	0-0.2	Coarse	700	1000	2500	10000
BH311	0.7-0.95	Coarse	700	1000	2500	10000
BH311 - [LAB_DUP]	0.7-0.95	Coarse	700	1000	2500	10000
BH311	1.7-1.95	Coarse	700	1000	2500	10000
BH311	3.2-3.45	Coarse	700	1000	2500	10000
BH312	0-0.2	Coarse	700	1000	2500	10000
BH312	0.7-0.95	Coarse	700	1000	2500	10000
BH312	1.7-1.95	Coarse	700	1000	2500	10000
BH313	0-0.2	Coarse	700	1000	2500	10000
BH313	0.7-0.95	Coarse	700	1000	2500	10000
BH313	1.7-1.95	Coarse	700	1000	2500	10000
BH314	0-0.2	Coarse	700	1000	2500	10000
BH314	0.7-0.95	Coarse	700	1000	2500	10000
BH314 - [LAB_DUP]	0.7-0.95	Coarse	700	1000	2500	10000
BH314	1.7-1.95	Coarse	700	1000	2500	10000
BH315	0-0.2	Coarse	700	1000	2500	10000
BH315	0.7-0.95	Coarse	700	1000	2500	10000
BH315	1.7-1.95	Coarse	700	1000	2500	10000
BH316	0-0.2	Coarse	700	1000	2500	10000
BH316	0.7-0.95	Coarse	700	1000	2500	10000
BH316	1.7-1.95	Coarse	700	1000	2500	10000
BH317	0-0.2	Coarse	700	1000	2500	10000
BH317	0.7-0.95	Coarse	700	1000	2500	10000
BH317 - [LAB_DUP]	0.7-0.95	Coarse	700	1000	2500	10000
BH317	1.7-1.95	Coarse	700	1000	2500	10000
BH318	0-0.2	Coarse	700	1000	2500	10000
BH318	0.5-0.7	Coarse	700	1000	2500	10000
BH319	0-0.2	Coarse	700	1000	2500	10000
BH319	0.5-0.7	Coarse	700	1000	2500	10000
BH320	0-0.2	Coarse	700	1000	2500	10000
BH320	0.7-0.95	Coarse	700	1000	2500	10000
SOU3P01	-	Coarse	700	1000	2500	10000
SOU3P02	-	Coarse	700	1000	2500	10000
SOU3P03	-	Coarse	700	1000	2500	10000
SOU3P03 -	-	Coarse	700	1000	2500	10000
SOU3P04	-	Coarse	700	1000	2500	10000
SOU3P05	-	Coarse	700	1000	2500	10000
SOU3P05 -	-	Coarse	700	1000	2500	10000
SOU3P06	-	Coarse	700	1000	2500	10000
SOU3P07	-	Coarse	700	1000	2500	10000
SOU3P08	-	Coarse	700	1000	2500	10000
SOU3P08 -	-	Coarse	700	1000	2500	10000
SOU3P10	-	Coarse	700	1000	2500	10000



TABLE S4 SOIL LABORATORY RESULTS COMPARED TO DIRECT CONTACT CRITERIA All data in mg/kg unless stated otherwise											
Analyte		C ₆ -C ₁₀	>C ₁₀ -C ₁₆	>C ₁₆ -C ₃₄	>C ₃₄ -C ₄₀	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services		25	50	100	100	0.2	0.5	1	1	1	
CRC 2011 -Direct contact Criteria		4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400	
Site Use		RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT									
Sample Reference	Sample Depth										
BH102	3-3.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.3
BH102 - [LAB_DUP]	3-3.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH102	4.5-4.95	<25	<50	160	<100	<0.2	<0.5	<1	<3	<1	0.2
BH102	6-6.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.6
BH102	7.5-7.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1.6
BH102	9-9.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH102	10.5-10.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
BH102	13.5-13.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103	3-3.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103	4.5-4.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
BH103	6-6.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103	7.5-7.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103 - [LAB_DUP]	7.5-7.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH103	9-9.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH103	10.5-10.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	3-3.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
BH104	4.5-4.65	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	6-6.15	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	7.5-7.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	9-9.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	10.5-10.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104	12-12.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH104 - [LAB_DUP]	12-12.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH104	13.5-13.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
TP301	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP301 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
TP301	0.6-0.8	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP301	1-1.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP302	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP302	0.9-1.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP302	1.9-2.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP303	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
TP303	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP303	2.2-2.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP304	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP304	0.2-0.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP304	1.2-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP304	2.2-2.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP305	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP305 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
TP305	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP305	2.2-2.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP306	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
TP306	0.9-1.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP307	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP307	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP307	1.5-1.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP308	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP308	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	1
TP309	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.2
TP309 - [LAB_DUP]	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
TP309	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP309	1.5-1.7	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP309	2.1-2.3	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP310	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP310	0.8-1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP310	1.7-1.9	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP310	1.9-2.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH311	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH311	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH311 - [LAB_DUP]	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH311	1.7-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH311	3.2-3.45	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH312	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH312	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH312	1.7-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH313	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH313	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH313	1.7-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH314	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH314	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH314 - [LAB_DUP]	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	NA
BH314	1.7-1.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH315	0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1
BH315	0.7-0.95	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0.1

TABLE S5
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample reference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation % (w/w)	FA and AF Estimation % (w/w)
SAC		No		0.01		0.001		0.001		0.01															0.001	
12.10.2020	TP301	0-0.2	No	10	11,500	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP301	0.6-0.8	739.24	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP301	0.2-0.8	NA	10	11,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP302	0-0.2	724.41	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP301	0.8-1.8	NA	10	12,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP304	0-0.2	800.46	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP301	1.8-2.4	NA	10	12,310	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP304	1.2-1.4	700.01	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP302	0-0.2	No	10	12,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP305	0-0.2	705.29	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP302	0.2-0.9	NA	10	13,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP305	0.8-1.0	789.09	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP302	0.9-1.9	NA	10	14,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP306	0-0.2	817.87	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP302	1.9-2.5	NA	10	12,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP309	0-0.2	682.1	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP303	0-0.2	No	10	10,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	TP309	0.8-1.0	746.7	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP303	0.2-1.0	NA	10	12,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	BH313	0-0.2	644.59	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP303	1.0-2.0	NA	10	12,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	BH313	0.7-0.95	1012.13	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP303	2.0-2.6	NA	10	12,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	BH318	0-0.2	922.31	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP304	0-0.2	No	10	15,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	253565	BH319	0-0.2	796.7	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12.10.2020	TP304	0.2-1.2	NA	10	14,100	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP304	1.2-2.2	NA	10	11,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP304	2.2-2.7	NA	10	15,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP305	0-0.2	No	10	11,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP305	0.2-1.0	NA	10	10,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP305	1.0-2.0	NA	10	13,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP305	2.0-2.4	NA	10	14,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP306	0-0.2	No	10	11,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP306	0.2-0.9	NA	10	10,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP306	0.9-1.9	NA	10	9,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP306	1.9-2.5	NA	10	11,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP306	2.5-2.8	NA	10	8,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP307	0-0.2	No	10	8,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP307	0.2-1.0	NA	10	12,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP307	1.0-1.5	NA	10	8,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP307	1.5-2.4	NA	10	10,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP307	2.4-2.8	NA	10	10,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP308	0-0.2	No	10	9,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP308	0.2-0.8	NA	10	11,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP308	0.8-1.5	NA	10	13,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP309	0-0.2	No	10	9,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP309	0.2-1.0	NA	10	11,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP309	1.0-1.5	NA	10	10,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP309	1.5-2.1	NA	10	10,400	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP309	2.1-2.3	NA	10	10,700	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP310	0-0.2	No	10	9,900	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP310	0.2-0.8	NA	10	9,300	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP310	0.8-1.7	NA	10	12,600	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP310	1.7-1.9	NA	10	16,000	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	
12.10.2020	TP310	1.9-2.2	NA	10	13,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	

Concentration above the SAC

VALUE

TABLE S6
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND EQLs
All data in mg/kg unless stated otherwise

Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																				
				AGED HEAVY METALS EILs										EILs				EQLs						
		pH	CEC (cmol/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₂₅ (F2) plus naphthalene	>C ₁₀ -C ₂₅ (F3)	>C ₁₀ -C ₂₅ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B[a]P			
POB - EnviroLab Services		-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05			
Ambient Background Concentration (ABC)				-	-	-	NSL	9	11	17	5	24	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL		
Sample Reference	Sample Depth	Sample Description	Soil Texture																					
BH102	3-3.45	Fil: Silty Clay	Fine	8.7	21	NA	<4	6	22	9	7	31	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	3-3.45	Laboratory Duplicate	Fine	8.7	21	NA	5	7	29	13	12	40	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	3-3.45	Laboratory Triplicate	Fine	8.7	21	NA	4	8	31	17	13	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH102	4.5-4.95	Fil: Silty Clay	Fine	8.7	21	NA	<4	7	31	11	12	78	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	6.4-6.5	Fil: Silty Clay	Fine	8.7	21	NA	5	8	39	12	14	51	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	7.5-7.95	Fil: Silty Clayey Gravel	Fine	8.7	21	NA	<4	8	31	10	14	51	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	9.9-45	Fil: Gravelly Silty Clay	Fine	8.7	21	NA	6	5	40	14	22	57	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.06	
BH102	10.5-10.95	Fil: Silty Clay	Fine	8.7	21	NA	8	6	33	12	17	68	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH102	13.5-13.95	Fil: Gravelly Silty Clay	Fine	8.7	21	NA	6	4	33	12	14	58	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	3-3.45	Fil: Silty Clay	Fine	8.7	21	NA	<4	4	23	9	10	41	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	4.5-4.95	Fil: Silty Clay	Fine	8.7	21	NA	<4	4	3	22	14	58	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	6.4-6.5	Fil: Silty Clay	Fine	8.7	21	NA	<4	6	35	12	14	50	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	7.5-7.95	Fil: Silty Clay	Fine	8.7	21	NA	<4	7	33	12	15	56	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	7.5-7.95	Laboratory Duplicate	Fine	8.7	21	NA	<4	6	27	10	14	48	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	9.9-45	Fil: Silty Clay	Fine	8.7	21	NA	<4	4	27	13	14	31	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH103	10.5-10.95	Fil: Gravelly Clay	Fine	8.7	21	NA	5	5	41	13	20	90	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	3-3.45	Fil: Silty Clay	Fine	8.7	21	NA	<4	6	38	15	38	15	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	4.5-4.95	Fil: Silty Clay	Fine	8.7	21	NA	<4	6	26	10	10	43	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	6.4-6.5	Fil: Silty Clay	Fine	8.7	21	NA	8	5	8	34	11	44	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	7.5-7.95	Fil: Silty Clay	Fine	8.7	21	NA	<4	4	24	9	10	39	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	9.9-45	Fil: Silty Clay	Fine	8.7	21	NA	<4	4	25	11	10	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	10.5-10.95	Fil: Gravelly Silty Clay	Fine	8.7	21	NA	<4	4	39	13	18	75	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	12-12.45	Fil: Gravelly Silty Clay	Fine	8.7	21	NA	<4	4	5	37	14	19	88	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	0.06
BH104	12-12.45	Laboratory Duplicate	Fine	8.7	21	NA	4	5	36	13	19	54	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH104	13.5-13.95	Fil: Gravelly Silty Clay	Fine	8.7	21	NA	6	3	28	13	16	62	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP301	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	4	6	10	20	14	9	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05		
TP301	0-0.2	Laboratory Duplicate	Fine	8.7	21	NA	6	11	21	14	8	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP301	0.6-0.8	Fil: Silty Clay	Fine	8.7	21	NA	6	8	30	15	13	60	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP302	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	5	8	38	15	17	66	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP302	0-0.2	Laboratory Duplicate	Fine	8.7	21	NA	5	11	15	11	7	34	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP302	0.9-1.1	Fil: Silty Clay	Fine	8.7	21	NA	5	7	10	15	10	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP302	1.9-2.1	Fil: Silty Clay	Fine	8.7	21	NA	7	8	33	15	16	58	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP303	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	5	8	29	14	12	42	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP303	0.8-1	Fil: Silty Clay	Fine	8.7	21	NA	6	8	39	17	17	61	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP303	2.2-2.4	Fil: Silty Clay	Fine	8.7	21	NA	6	8	29	14	13	52	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP304	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	6	10	20	14	8	31	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP304	0.2-0.4	Fil: Silty Gravelly Clay	Fine	8.7	21	NA	10	6	27	15	15	61	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP304	1.2-1.4	Fil: Silty Gravelly Clay	Fine	8.7	21	NA	9	6	25	10	14	54	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP304	2.2-2.4	Fil: Silty Gravelly Clay	Fine	8.7	21	NA	8	4	31	28	12	50	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP305	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	5	7	22	12	9	35	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP305	0-0.2	Laboratory Duplicate	Fine	8.7	21	NA	6	10	24	16	10	40	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP305	0.8-1	Fil: Silty Clay	Fine	8.7	21	NA	6	9	34	15	16	56	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP305	2.2-2.4	Fil: Silty Clay	Fine	8.7	21	NA	4	6	36	14	18	57	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP306	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	5	9	25	15	11	45	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP306	0.9-1.1	Fil: Silty Clay	Fine	8.7	21	NA	5	7	32	13	15	58	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP307	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	6	10	29	15	12	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP307	0.8-1	Fil: Silty Clay	Fine	8.7	21	NA	5	8	33	14	11	47	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP307	1.5-1.7	Fil: Silty Clay	Fine	8.7	21	NA	6	9	27	14	12	46	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP308	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	6	7	32	15	11	5	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP308	0.8-1	Fil: Silty Gravelly Clay	Fine	8.7	21	NA	4	6	40	15	17	65	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP309	0-0.2	Fil: Silty Clay	Fine	8.7	21	NA	7	9	23	14	10	39	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP309	0-0.2	Laboratory Duplicate	Fine	8.7	21	NA	6	8	27	12														

TABLE S7
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES
All data in mg/kg unless stated otherwise

			HEAVY METALS								PAHs		OC/OP PESTICIDES				Total	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B[a]P	Total Endosulfans	Chlorpyrifos	Total Moderately Harmful	Total Scheduled	PCBs	C ₁ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Total C ₁₀ -C ₃₆	Benzene	Toluene	Ethyl benzene	Total Xylenes	
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL		10,000	10	288	600	1,000	-
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL		10,000	18	518	1,080	1,800	-
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL		40,000	40	1,152	2,400	4,000	-
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL		40,000	72	2,073	4,320	7,200	-
Sample Reference	Sample Depth	Sample Description																									
BH102	3-3.45	Fill: Silty Clay	<4	<0.4	6	22	9	<0.1	7	31	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102 - [LAB_DUP]	3-3.45	Laboratory Duplicate	5	<0.4	7	29	13	<0.1	12	40	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102 - [TRIPLICATE]	3-3.45	Laboratory Triplicate	4	<0.4	8	31	17	<0.1	13	42	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH102	4.5-4.95	Fill: Silty Clay	<4	<0.4	7	31	11	<0.1	12	78	0.4	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	110	110	<0.2	<0.5	<1	<3	NA
BH102	6-6.45	Fill: Silty Clay	5	<0.4	9	39	12	<0.1	15	64	0.5	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	7.5-7.95	Fill: Silty Clayey Gravel	<4	<0.4	8	31	10	<0.1	14	51	0.1	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	9-9.45	Fill: Gravely Silty Clay	6	<0.4	5	40	14	<0.1	22	57	0.56	0.06	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	10.5-10.95	Fill: Silty Clay	8	<0.4	7	33	12	<0.1	17	59	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH102	13.5-13.95	Fill: Gravely Silty Clay	6	<0.4	4	33	12	<0.1	14	58	0.5	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	3-3.45	Fill: Silty Clay	<4	<0.4	4	23	9	<0.1	10	41	0.1	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	4.5-4.95	Fill: Silty Clay	<4	<0.4	7	23	10	<0.1	10	38	0.2	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	6-6.45	Fill: Silty Clay	<4	<0.4	6	35	12	<0.1	14	50	0.1	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	7.5-7.95	Fill: Silty Clay	<4	<0.4	7	33	12	<0.1	15	56	0.3	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103 - [LAB_DUP]	7.5-7.95	Laboratory Duplicate	<4	<0.4	6	27	10	<0.1	14	48	0.3	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	9-9.45	Fill: Silty Clay	<4	<0.4	4	27	13	<0.1	14	31	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH103	10.5-10.95	Fill: Gravely Clay	5	<0.4	5	41	13	<0.1	20	90	0.71	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	3-3.45	Fill: Silty Clay	<4	<0.4	7	38	14	<0.1	15	64	0.4	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	4.5-4.65	Fill: Silty Clay	<4	<0.4	6	26	10	<0.1	10	43	0.2	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	6-6.15	Fill: Silty Clay	8	<0.4	5	25	8	<0.1	11	44	0.51	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	7.5-7.95	Fill: Silty Clay	<4	<0.4	4	24	9	<0.1	10	39	0.4	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	9-9.45	Fill: Silty Clay	<4	<0.4	4	25	11	<0.1	10	36	1.1	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	10.5-10.95	Fill: Gravely Silty Clay	<4	<0.4	4	39	13	<0.1	18	75	0.5	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	12-12.45	Fill: Gravely Silty Clay	4	<0.4	5	37	14	<0.1	19	58	0.57	0.06	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104 - [LAB_DUP]	12-12.45	Laboratory Duplicate	4	<0.4	5	36	13	<0.1	19	54	0.5	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH104	13.5-13.95	Fill: Gravely Silty Clay	<4	<0.4	3	28	13	<0.1	11	62	0.56	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP301	0-0.2	Fill: Silty Clay	6	<0.4	10	20	14	<0.1	9	38	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP301 - [LAB_DUP]	0-0.2	Laboratory Duplicate	6	<0.4	11	21	14	<0.1	8	34	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP301	0.6-0.8	Fill: Silty Clay	6	<0.4	8	30	15	<0.1	13	50	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP301	1-1.2	Fill: Silty Clay	5	<0.4	8	38	15	<0.1	17	66	0.1	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP302	0-0.2	Fill: Silty Clay	5	<0.4	11	15	11	<0.1	7	34	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP302	0.9-1.1	Fill: Silty Clay	7	<0.4	10	25	15	<0.1	10	40	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP302	1.9-2.1	Fill: Silty Clay	7	<0.4	8	33	15	<0.1	16	58	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP303	0-0.2	Fill: Silty Clay	5	<0.4	8	29	32	<0.1	10	42	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100							

TABLE S8 SUMMARY OF LABORATORY RESULTS COMPARED TO THE ENM ASSESSMENT CRITERIA All data in mg/kg unless stated otherwise																									
			HEAVY METALS							PAHs		TRH				BTEX COMPOUNDS				Foreign Material (%)	EC (µS/cm)	pH	FIELD PID VALUES	ASBESTOS	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Total C ₁₀ -C ₃₆	Benzene	Toluene	Ethyl benzene						Total Xylenes
PQL			4	0.5	1	1	1	0.1	1	1	0.05	0.05	50	100	100	250	0.2	0.5	1	3	0.05	1	0.1		--
Maximum Average Concentration (MAC) ¹			20	0.5	75	100	50	0.5	30	150	20	0.5	NSL			250	--	--	--	--	0.05	1500	5 to 9	--	--
Absolute Maximum Concentration (AMC) ¹			40	1	150	200	100	1	60	300	40	1	NSL			500	0.5	65	25	15	0.01	3000	4.5 to 10	--	--
Sample Reference	Sample Depth	Sample Description																							
BH102	3-3.45	Fill: Silty Clay	<4	<0.4	6	22	9	<0.1	7	31	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0.3	NA
BH103	3-3.45	Fill: Silty Clay	<4	<0.4	4	23	9	<0.1	10	41	0.1	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
BH104	3-3.45	Fill: Silty Clay	<4	<0.4	7	38	14	<0.1	15	64	0.4	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0.1	NA
TP301	0-0.2	Fill: Silty Clay	6	<0.4	10	20	14	<0.1	9	38	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	190	8.4	0	NA
TP301	0.6-0.8	Fill: Silty Clay	6	<0.4	8	30	15	<0.1	13	50	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	910	8.5	0	Not Detected
TP301	1-1.2	Fill: Silty Clay	5	<0.4	8	38	15	<0.1	17	66	0.1	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	300	9.6	0	NA
TP302	0-0.2	Fill: Silty Clay	5	<0.4	11	15	11	<0.1	7	34	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	180	7.9	0	Not Detected
TP302	0.9-1.1	Fill: Silty Clay	7	<0.4	10	25	15	<0.1	10	40	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	670	7.5	0	NA
TP302	1.9-2.1	Fill: Silty Clay	7	<0.4	8	33	15	<0.1	16	58	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	740	8.6	0	NA
TP303	0-0.2	Fill: Silty Clay	5	<0.4	8	29	32	<0.1	10	42	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	220	8.7	0.1	NA
TP303	0.8-1	Fill: Silty Clay	6	<0.4	5	35	19	<0.1	17	67	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP303	2.2-2.4	Fill: Silty Clay	6	<0.4	8	29	14	<0.1	13	52	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP304	0-0.2	Fill: Silty Clay	6	<0.4	10	20	14	<0.1	8	31	0.3	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	430	8.5	0	Not Detected
TP304	0.2-0.4	Fill: Silty Gravelly Clay	10	<0.4	6	37	15	<0.1	15	61	0.2	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	270	9.1	0	NA
TP304	1.2-1.4	Fill: Silty Gravelly Clay	9	<0.4	6	25	10	<0.1	14	54	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	Not Detected
TP304	2.2-2.4	Fill: Silty Gravelly Clay	8	0.5	4	31	28	<0.1	12	50	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP305	0-0.2	Fill: Silty Clay	5	<0.4	7	22	12	<0.1	9	35	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	Not Detected
TP305	0.8-1	Fill: Silty Clay	6	<0.4	9	34	15	<0.1	16	56	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	Not Detected
TP305	2.2-2.4	Fill: Silty Clay	4	<0.4	6	36	14	<0.1	18	57	0.1	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP306	0-0.2	Fill: Silty Clay	5	<0.4	9	25	15	<0.1	11	45	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	<0.05	270	8.6	0.1	Not Detected
TP306	0.9-1.1	Fill: Silty Clay	5	<0.4	7	32	13	<0.1	15	58	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP307	0-0.2	Fill: Silty Clay	6	<0.4	10	29	15	<0.1	12	55	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP307	0.8-1	Fill: Silty Clay	5	<0.4	8	33	14	<0.1	11	47	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP307	1.5-1.7	Fill: Silty Clay	6	<0.4	9	27	14	<0.1	12	46	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP308	0-0.2	Fill: Silty Clay	5	<0.4	9	16	11	<0.1	5	22	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP308	0.8-1	Fill: Silty Gravelly Clay	4	<0.4	6	40	15	<0.1	17	65	0.4	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	1	NA
TP309	0-0.2	Fill: Silty Clay	7	<0.4	9	23	14	<0.1	10	39	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0.2	Not Detected
TP309	0.8-1	Fill: Silty Clay	6	<0.4	11	22	17	<0.1	9	35	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	Not Detected
TP309	1.5-1.7	Fill: Silty Clay	<4	<0.4	6	26	12	<0.1	9	40	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP309	2.1-2.3	Fill: Silty Clay	<4	<0.4	7	12	10	<0.1	3	11	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP310	0-0.2	Fill: Silty Clay	5	<0.4	7	25	16	<0.1	11	46	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP310	0.8-1	Fill: Silty Clay	6	<0.4	10	31	16	<0.1	12	49	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP310	1.7-1.9	Fill: Silty Clay	6	<0.4	10	27	15	<0.1	11	120	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
TP310	1.9-2.1	Fill: Silty Gravelly Clay	<4	<0.4	6	33	14	<0.1	15	55	0.3	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
BH311	0-0.2	Fill: Clayey Silt	5	<0.4	9	31	15	<0.1	10	42	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
BH311	0.7-0.95	Fill: Silty Clay	6	<0.4	12	25	15	<0.1	10	41	<0.05	<0.05	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA	NA	NA	0	NA
BH311	1.7-1.95	Fill: Silty Clay	7	1	4	35	37																		

TABLE G1								
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC								
All results in µg/L unless stated otherwise.								
	PQL Envirolab Services	ANZG 2018 Fresh Waters	SAMPLES					
			MW8	MW8 - [LAB_DUP]	MW311	MW317	WDUP301	WDUP302
Inorganic Compounds and Parameters								
pH		6.5 - 8.5	7.1	NA	6.8	7.3	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	5700	NA	14000	7400	NA	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA
Metals and Metalloids								
Arsenic (As III)	1	24	40	40	1	7	8	<1
Cadmium	0.1	0.2	<0.1	<0.1	0.2	<0.1	<0.1	0.2
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1	<1	<1	<1	<1
Copper	1	1.4	<1	<1	1	<1	<1	1
Lead	1	3.4	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	11	20	20	7	4	4	7
Zinc	1	8	12	11	7	3	1	6
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)								
Benzene	1	950	<1	<1	<1	<1	<1	<1
Toluene	1	180	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	80	<1	<1	<1	<1	<1	<1
m+p-xylene	2	75	<2	<2	<2	<2	<2	<2
o-xylene	1	350	<1	<1	<1	<1	<1	<1
Total xylenes	2	NSL	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	0.2	16	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Concentration above the SAC			VALUE					
Concentration above the PQL			Bold					
GIL >PQL			Red					

TABLE G2								
SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILs								
All results in µg/L unless stated otherwise.								
	PQL EnviroLab Services	Recreational (10 x NHMRC ADWG)	SAMPLES					
			MW8	MW8 - [LAB_DUP]	MW311	MW317	WDUP301	WDUP302
Inorganic Compounds and Parameters								
pH		6.5 - 8.5	7.1	NA	6.8	7.3	NA	NA
Electrical Conductivity (µS/cm)	1	NSL	5700	NA	14000	7400	NA	NA
Turbidity (NTU)		NSL	NA	NA	NA	NA	NA	NA
Metals and Metalloids								
Arsenic (As III)	1	100	40	40	1	7	8	<1
Cadmium	0.1	20	<0.1	<0.1	0.2	<0.1	<0.1	0.2
Chromium (total)	1	500	<1	<1	<1	<1	<1	<1
Copper	1	20000	<1	<1	1	<1	<1	1
Lead	1	100	<1	<1	<1	<1	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel	1	200	20	20	7	4	4	7
Zinc	1	30000	12	11	7	3	1	6
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)								
Benzene	1	10	<1	<1	<1	<1	<1	<1
Toluene	1	8000	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	3000	<1	<1	<1	<1	<1	<1
m+p-xylene	2	NSL	<2	<2	<2	<2	<2	<2
o-xylene	1	NSL	<1	<1	<1	<1	<1	<1
Total xylenes	2	6000	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)								
Naphthalene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Concentration above the SAC			VALUE					
Concentration above the PQL			Bold					
GIL >PQL			Red					

TABLE G3
GROUNDWATER LABORATORY RESULTS COMPARED TO HSLs
All data in µg/L unless stated otherwise

				C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID
PQL - Envirolab Services				10	50	1	1	1	2	1	
NEPM 2013 - Land Use Category				HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	Water Depth	Depth Category	Soil Category								
MW8	2	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0
MW8 - [LAB_DUP]	2	2m to <4m	Sand	<10	[NT]	<1	<1	<1	<2	<1	NA
MW311	1.49	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	0.3
MW317	2.39	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	1
WDUP301	-	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
WDUP302	-	2m to <4m	Sand	<10	<50	<1	<1	<1	<2	<1	NA
Total Number of Samples				6	5	6	6	6	6	6	4
Maximum Value				<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	1

Concentration above the SAC

VALUE

Site specific assesment (SSA) required

VALUE

Concentration above the PQL

Bold

The guideline corresponding to the elevated value is highlighted in grey in the Groundwater Assessment Criteria Table below

HSL GROUNDWATER ASSESSMENT CRITERIA

Sample Reference	Water Depth	Depth Category	Soil Category	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
MW8	2	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW8 - [LAB_DUP]	2	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW311	1.49	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
MW317	2.39	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
WDUP301	-	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL
WDUP302	-	2m to <4m	Sand	1000	1000	800	NL	NL	NL	NL

TABLE G4 GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT All results in µg/L unless stated otherwise.										
	PQL	NHMRC	WHO 2008	USEPA RSL	SAMPLES					
	EnviroLab	ADWG 2011		Tapwater	MW8	MW8 -	MW311	MW317	WDUP301	WDUP302
	Services	(v3.5 2018)		2017		[LAB_DUP]				
Total Recoverable Hydrocarbons (TRH)										
C ₆ -C ₉ Aliphatics (assessed using F1)	10	-	15000	-	<10	<10	<10	<10	<10	<10
>C ₉ -C ₁₄ Aliphatics (assessed using F2)	50	-	100	-	<50	[NT]	<50	<50	<50	<50
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)										
Benzene	1	1	-	-	<1	<1	<1	<1	<1	<1
Toluene	1	800	-	-	<1	<1	<1	<1	<1	<1
Ethylbenzene	1	300	-	-	<1	<1	<1	<1	<1	<1
Total xylenes	2	600	-	-	<2	<2	<2	<2	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)										
Naphthalene	1	-	-	6.1	<1	<1	<1	<1	<1	<1
Concentration above the SAC	VALUE									
Concentration above the PQL	Bold									
GIL >PQL	Red									

Result outside of QA/QC acceptance criteria	

TABLE Q2
GROUNDWATER QA/QC SUMMARY

		TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m+p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,i,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc				
	PQL Envirolab SYD	10	50	100	100	1	1	1	2	1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1				
	PQL Envirolab VIC	10	50	100	100	1.0	1.0	1.0	2.0	1.0	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1				
Intra laboratory duplicate	MW317	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	7	<0.1	<1	<1	<1	<0.05	4	3				
	WDUP301	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	8	<0.1	<1	<1	<1	<0.05	4	1				
	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	7.5	nc	nc	nc	nc	nc	4	2				
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	13%	nc	nc	nc	nc	nc	0%	100%				
Intra laboratory duplicate	MW311	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	1	0.2	<1	1	<1	<0.05	7	7				
	WDUP302	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<1	0.2	<1	1	<1	<0.05	7	6				
	MEAN	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	0.75	0.2	nc	1	nc	nc	7	6.5				
	RPD %	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	67%	0%	nc	0%	nc	nc	0%	15%				
Field Blank	TB-W301 19/10/2020	NA	NA	NA	NA	<1	<1	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA				
Trip Spike	TS-W301 19/10/2020	-	-	-	-	97%	99%	110%	110%	110%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Result outside of QA/QC acceptance criteria																																Value					



PSI Results Summary Tables

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ABC:	Ambient Background Concentration	PCBs:	Polychlorinated Biphenyls
ACM:	Asbestos Containing Material	PCE:	Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
ADWG:	Australian Drinking Water Guidelines	pH_{KCL}:	pH of filtered 1:20, 1M KCL extract, shaken overnight
AF:	Asbestos Fines	pH_{ox}:	pH of filtered 1:20 1M KCL after peroxide digestion
ANZG:	Australian and New Zealand Guidelines	PQL:	Practical Quantitation Limit
B(a)P:	Benzo(a)pyrene	RS:	Rinsate Sample
CEC:	Cation Exchange Capacity	RSL:	Regional Screening Levels
CRC:	Cooperative Research Centre	RSW:	Restricted Solid Waste
CT:	Contaminant Threshold	SAC:	Site Assessment Criteria
EILs:	Ecological Investigation Levels	SCC:	Specific Contaminant Concentration
ESLs:	Ecological Screening Levels	S_{Cr}:	Chromium reducible sulfur
FA:	Fibrous Asbestos	S_{POS}:	Peroxide oxidisable Sulfur
GIL:	Groundwater Investigation Levels	SSA:	Site Specific Assessment
GSW:	General Solid Waste	SSHLs:	Site Specific Health Screening Levels
HILs:	Health Investigation Levels	TAA:	Total Actual Acidity in 1M KCL extract titrated to pH6.5
HSLs:	Health Screening Levels	TB:	Trip Blank
HSL-SSA:	Health Screening Level-Site Specific Assessment	TCA:	1,1,1 Trichloroethane (methyl chloroform)
kg/L	kilograms per litre	TCE:	Trichloroethylene (Trichloroethene)
NA:	Not Analysed	TCLP:	Toxicity Characteristics Leaching Procedure
NC:	Not Calculated	TPA:	Total Potential Acidity, 1M KCL peroxide digest
NEPM:	National Environmental Protection Measure	TS:	Trip Spike
NHMRC:	National Health and Medical Research Council	TRH:	Total Recoverable Hydrocarbons
NL:	Not Limiting	TSA:	Total Sulfide Acidity (TPA-TAA)
NSL:	No Set Limit	UCL:	Upper Level Confidence Limit on Mean Value
OCP:	Organochlorine Pesticides	USEPA	United States Environmental Protection Agency
OPP:	Organophosphorus Pesticides	VOCC:	Volatile Organic Chlorinated Compounds
PAHs:	Polycyclic Aromatic Hydrocarbons	WHO:	World Health Organisation
%w/w:	weight per weight		
ppm:	Parts per million		

Table Specific Explanations:

HIL Tables:

- The chromium results are for Total Chromium which includes Chromium III and VI. For initial screening purposes, we have assumed that the samples contain only Chromium VI unless demonstrated otherwise by additional analysis.
- Carcinogenic PAHs is a toxicity weighted sum of analyte concentrations for a specific list of PAH compounds relative to B(a)P. It is also referred to as the B(a)P Toxic Equivalence Quotient (TEQ).
- Statistical calculations are undertaken using ProUCL (USEPA). Statistical calculation is usually undertaken using data from fill samples.

EIL/ESL Table:

- ABC Values for selected metals have been adopted from the published background concentrations presented in Olszowy et. al., (1995), Trace Element Concentrations in Soils from Rural and Urban New South Wales (the 25th percentile values for new suburbs with low traffic have been quoted).

Waste Classification and TCLP Table:

- Data assessed using the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014).
- The assessment of Total Moderately Harmful pesticides includes: Dichlorovos, Dimethoate, Fenitrothion, Ethion, Malathion and Parathion.
- Assessment of Total Scheduled pesticides include: HBC, alpha-BHC, gamma-BHC, beta-BHC, Heptachlor, Aldrin, Heptachlor Epoxide, gamma-Chlordane, alpha-chlordane, pp-DDE, Dieldrin, Endrin, pp-DDD, pp-DDT, Endrin Aldehyde.

QA/QC Table:

- Field blank, Inter and Intra laboratory duplicate results are reported in mg/kg.
- Trip spike results are reported as percentage recovery.
- Field rinsate results are reported in µg/L.

TABLE S1
SOIL LABORATORY RESULTS COMPARED TO NEPM 2013.
HIL-A: 'Residential with garden/accessible soils; children's day care centers; preschools; and primary schools'

All data in mg/kg unless stated otherwise			HEAVY METALS							PAHs		ORGANOCHLORINE PESTICIDES (OCPs)							OP PESTICIDES (OPPs)	TOTAL PCBs	ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	Carcinogenic PAHs	HCB	Endosulfan	Methoxychlor	Aldrin & Dieldrin	Chlordane	DDT, DDD & DDE	Heptachlor			Chlorpyrifos
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.5	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	100
Site Assessment Criteria (SAC)			100	20	100	6000	300	40	400	7400	300	3	10	270	300	6	50	240	6	160	1	Detected/Not Detected
Sample Reference	Sample Depth	Sample Description																				
TP1	0.0-0.1	Fill: Silty Clay	6	<0.4	8	24	16	<0.1	10	50	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP1 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	6	<0.4	9	27	16	<0.1	10	47	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH2	0.0-0.2	Fill: Silty Clay	5	<0.4	9	36	16	<0.1	19	75	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP3	0.0-0.1	Fill: Silty Clay	7	<0.4	9	32	18	<0.1	14	55	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH4	0.0-0.2	Fill: Silty Clay	8	<0.4	11	30	16	<0.1	14	55	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP5	0.0-0.1	Fill: Silty Clay	7	<0.4	9	33	19	<0.1	15	61	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH6	0.0-0.1	Fill: Silty Clay	7	<0.4	13	24	13	<0.1	16	57	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP7	0.0-0.1	Fill: Silty Clay	<4	<0.4	4	10	6	<0.1	2	10	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
TP7	1.3-1.4	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH8	0.0-0.2	Fill: Silty Clay	5	<0.4	8	18	12	<0.1	7	30	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP9	0.0-0.1	Fill: Silty Clay	7	<0.4	11	23	15	<0.1	9	36	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
BH10	0.0-0.2	Fill: Silty Clay	6	<0.4	10	29	15	<0.1	12	47	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH10 - [LAB_DUP]	0.0-0.2	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP11	0.0-0.1	Fill: Silty Clay	6	<0.4	10	26	17	<0.1	11	45	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP11	0.3-0.4	Fill: Silty Gravelly Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH12	0.0-0.2	Fill: Silty Clay	6	<0.4	12	25	17	<0.1	10	38	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP13	0.0-0.1	Fill: Silty Clay	8	<0.4	10	29	17	<0.1	12	47	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH14	0.0-0.2	Fill: Silty Clay	5	<0.4	10	24	15	<0.1	10	39	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP15	0.0-0.1	Fill: Silty Gravelly Clay	<4	<0.4	7	27	13	<0.1	11	42	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	Not Detected
BH16	0.0-0.2	Fill: Silty Clay	6	<0.4	12	41	26	<0.1	14	62	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP17	0.0-0.1	Fill: Silty Clay	7	<0.4	9	33	17	<0.1	13	71	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP17 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	6	<0.4	8	30	16	<0.1	26	77	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
BH18	0.0-0.2	Fill: Silty Clay	8	<0.4	9	32	21	<0.1	14	54	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP19	0.0-0.1	Fill: Silty Clay	7	<0.4	7	27	19	<0.1	12	51	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TP19	0.3-0.5	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH20	0.0-0.2	Fill: Silty Clay	8	<0.4	10	32	15	<0.1	14	61	<0.05	<0.5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	NA
TP17 - [TRIPLICATE]	0.0-0.1	Fill: Silty Clay	6	<0.4	9	28	12	<0.1	14	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP1	-	-	8	<0.4	12	27	22	<0.1	11	48	<0.05	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP5	-	-	9	<0.4	12	28	22	<0.1	14	58	0.3	<0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Samples			25	25	25	25	25	25	25	25	24	24	12	12	12	12	12	12	12	12	12	5
Maximum Value			9	<PQL	13	41	26	<PQL	26	77	0.3	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the SAC
Concentration above the PQL

VALUE

Bold

TABLE S2
SOIL LABORATORY RESULTS COMPARED TO HSLs
All data in mg/kg unless stated otherwise

					C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	Field PID Measurement
PQL - Envirolab Services					25	50	0.2	0.5	1	1	1	ppm
NEPM 2013 HSL Land Use Category					HSL-A/B: LOW/HIGH DENSITY RESIDENTIAL							
Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category								
TP1	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP1 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH2	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP3	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH4	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP5	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH6	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP7	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP7	1.3-1.4	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	3.1
BH8	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP9	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH10	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH10 - [LAB_DUP]	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	NA	<0.2	<0.5	<1	<3	<1	0
TP11	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP11	0.3-0.4	Fill: Silty Gravelly Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA	0
BH12	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP13	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH14	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP15	0.0-0.1	Fill: Silty Gravelly Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH16	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP17	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP17 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
BH18	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP19	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP19	0.3-0.5	Fill: Silty Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA	0
BH20	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	0
TP17 - [TRIPLICATE]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA	-
SDUP1	-	-	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	-
SDUP5	-	-	0m to <1m	Clay	<25	<50	<0.2	<0.5	<1	<3	<1	-
Total Number of Samples					26	25	26	26	26	26	26	26
Maximum Value					<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	3.1
Concentration above the SAC VALUE Concentration above the PQL Bold The guideline corresponding to the concentration above the SAC is highlighted in grey in the Site Assessment Criteria Table below												

HSL SOIL ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Sample Description	Depth Category	Soil Category	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2)	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene
TP1	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP1 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH2	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP3	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH4	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP5	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH6	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP7	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP7	1.3-1.4	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH8	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP9	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH10	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH10 - [LAB_DUP]	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	NA	0.7	480	NL	110	5
TP11	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP11	0.3-0.4	Fill: Silty Gravelly Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA
BH12	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP13	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH14	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP15	0.0-0.1	Fill: Silty Gravelly Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH16	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP17	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP17 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
BH18	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP19	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP19	0.3-0.5	Fill: Silty Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA
BH20	0.0-0.2	Fill: Silty Clay	0m to <1m	Clay	50	280	0.7	480	NL	110	5
TP17 - [TRIPLICATE]	0.0-0.1	Fill: Silty Clay	0m to <1m	Clay	NA	NA	NA	NA	NA	NA	NA
SDUP1	-	-	0m to <1m	Clay	50	280	0.7	480	NL	110	5
SDUP5	-	-	0m to <1m	Clay	50	280	0.7	480	NL	110	5

TABLE S3 SOIL LABORATORY RESULTS COMPARED TO MANAGEMENT LIMITS All data in mg/kg unless stated otherwise						
			C ₆ -C ₁₀ (F1) plus BTX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
PQL - Envirolab Services			25	50	100	100
NEPM 2013 Land Use Category			RESIDENTIAL, PARKLAND & PUBLIC OPEN SPACE			
Sample Reference	Sample Depth	Soil Texture				
TP1	0.0-0.1	Fine	<25	<50	<100	<100
TP1 - [LAB_DUP]	0.0-0.1	Fine	<25	<50	<100	<100
BH2	0.0-0.2	Fine	<25	<50	<100	<100
TP3	0.0-0.1	Fine	<25	<50	<100	<100
BH4	0.0-0.2	Fine	<25	<50	<100	<100
TP5	0.0-0.1	Fine	<25	<50	<100	<100
BH6	0.0-0.1	Fine	<25	<50	<100	<100
TP7	0.0-0.1	Fine	<25	<50	<100	<100
TP7	1.3-1.4	Fine	<25	<50	<100	<100
BH8	0.0-0.2	Fine	<25	<50	<100	<100
TP9	0.0-0.1	Fine	<25	<50	<100	<100
BH10	0.0-0.2	Fine	<25	<50	<100	<100
BH10 - [LAB_DUP]	0.0-0.2	Fine	<25	NA	NA	NA
TP11	0.0-0.1	Fine	<25	<50	<100	<100
TP11	0.3-0.4	Fine	NA	NA	NA	NA
BH12	0.0-0.2	Fine	<25	<50	<100	<100
TP13	0.0-0.1	Fine	<25	<50	<100	<100
BH14	0.0-0.2	Fine	<25	<50	<100	<100
TP15	0.0-0.1	Fine	<25	<50	<100	<100
BH16	0.0-0.2	Fine	<25	<50	<100	<100
TP17	0.0-0.1	Fine	<25	<50	<100	<100
TP17 - [LAB_DUP]	0.0-0.1	Fine	<25	<50	<100	<100
BH18	0.0-0.2	Fine	<25	<50	<100	<100
TP19	0.0-0.1	Fine	<25	<50	<100	<100
TP19	0.3-0.5	Fine	NA	NA	NA	NA
BH20	0.0-0.2	Fine	<25	<50	<100	<100
TP17 -	0.0-0.1	Fine	NA	NA	NA	NA
SDUP1	-	Fine	<25	<50	<100	<100
SDUP5	-	Fine	<25	<50	<100	<100
Total Number of Samples			26	25	25	25
Maximum Value			<PQL	<PQL	<PQL	<PQL
Concentration above the SAC			VALUE			
Concentration above the PQL			Bold			

MANAGEMENT LIMIT ASSESSMENT CRITERIA

Sample Reference	Sample Depth	Soil Texture	C ₆ -C ₁₀ (F1) plus BTX	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)
TP1	0.0-0.1	Fine	800	1000	3500	10000
TP1 - [LAB_DUP]	0.0-0.1	Fine	800	1000	3500	10000
BH2	0.0-0.2	Fine	800	1000	3500	10000
TP3	0.0-0.1	Fine	800	1000	3500	10000
BH4	0.0-0.2	Fine	800	1000	3500	10000
TP5	0.0-0.1	Fine	800	1000	3500	10000
BH6	0.0-0.1	Fine	800	1000	3500	10000
TP7	0.0-0.1	Fine	800	1000	3500	10000
TP7	1.3-1.4	Fine	800	1000	3500	10000
BH8	0.0-0.2	Fine	800	1000	3500	10000
TP9	0.0-0.1	Fine	800	1000	3500	10000
BH10	0.0-0.2	Fine	800	1000	3500	10000
BH10 - [LAB_DUP]	0.0-0.2	Fine	800	--	--	--
TP11	0.0-0.1	Fine	800	1000	3500	10000
TP11	0.3-0.4	Fine	--	--	--	--
BH12	0.0-0.2	Fine	800	1000	3500	10000
TP13	0.0-0.1	Fine	800	1000	3500	10000
BH14	0.0-0.2	Fine	800	1000	3500	10000
TP15	0.0-0.1	Fine	800	1000	3500	10000
BH16	0.0-0.2	Fine	800	1000	3500	10000
TP17	0.0-0.1	Fine	800	1000	3500	10000
TP17 - [LAB_DUP]	0.0-0.1	Fine	800	1000	3500	10000
BH18	0.0-0.2	Fine	800	1000	3500	10000
TP19	0.0-0.1	Fine	800	1000	3500	10000
TP19	0.3-0.5	Fine	--	--	--	--
BH20	0.0-0.2	Fine	800	1000	3500	10000
TP17 -	0.0-0.1	Fine	--	--	--	--
SDUP1	-	Fine	800	1000	3500	10000
SDUP5	-	Fine	800	1000	3500	10000

TABLE S4
SOIL LABORATORY RESULTS COMPARED TO DIRECT CONTACT CRITERIA
All data in mg/kg unless stated otherwise

Analyte	C ₆ -C ₁₀	>C ₁₀ -C ₁₆	>C ₁₆ -C ₃₄	>C ₃₄ -C ₄₀	Benzene	Toluene	Ethylbenzene	Xylenes	Naphthalene	PID	
PQL - Envirolab Services	25	50	100	100	0.2	0.5	1	1	1		
CRC 2011 -Direct contact Criteria	4,400	3,300	4,500	6,300	100	14,000	4,500	12,000	1,400		
Site Use	RESIDENTIAL WITH ACCESSIBLE SOIL- DIRECT SOIL CONTACT										
Sample Reference	Sample Depth										
TP1	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP1 - [LAB_DUP]	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH2	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP3	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH4	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP5	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH6	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP7	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP7	1.3-1.4	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	3.1
BH8	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP9	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH10	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH10 - [LAB_DUP]	0.0-0.2	<25	NA	NA	NA	<0.2	<0.5	<1	<3	<1	0
TP11	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP11	0.3-0.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BH12	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP13	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH14	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP15	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH16	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP17	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP17 - [LAB_DUP]	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
BH18	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP19	0.0-0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP19	0.3-0.5	NA	NA	NA	NA	NA	NA	NA	NA	NA	0
BH20	0.0-0.2	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	0
TP17 - [TRIPLICATE]	0.0-0.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
SDUP1	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	-
SDUP5	-	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<1	-
Total Number of Samples		26	25	25	25	26	26	26	26	26	26
Maximum Value		<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	3.1
Concentration above the SAC	VALUE										
Concentration above the PQL	Bold										

TABLE 55
ASBESTOS QUANTIFICATION - FIELD OBSERVATIONS AND LABORATORY RESULTS
HSL-A: Residential with garden/accessible soils; children's day care centers; preschools; and primary schools

FIELD DATA															LABORATORY DATA											
Date Sampled	Sample reference	Sample Depth	Visible ACM in top 100mm	Approx. Volume of Soil (L)	Soil Mass (g)	Mass ACM (g)	Mass Asbestos in ACM (g)	[Asbestos from ACM in soil] (%w/w)	Mass ACM <7mm (g)	Mass Asbestos in ACM <7mm (g)	[Asbestos from ACM <7mm in soil] (%w/w)	Mass FA (g)	Mass Asbestos in FA (g)	[Asbestos from FA in soil] (%w/w)	Lab Report Number	Sample reference	Sample Depth	Sample Mass (g)	Asbestos ID in soil (AS4964) >0.1g/kg	Trace Analysis	Total Asbestos (g/kg)	Asbestos ID in soil <0.1g/kg	ACM >7mm Estimation (g)	FA and AF Estimation (g)	ACM >7mm Estimation % (w/w)	FA and AF Estimation % (w/w)
SAC		No		0.01		0.001		0.001		0.01												0.001				
12/05/2020	TP1	0.0-0.1	No	10	8,800	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP1	0.1-0.7	NA	10	12,630	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP1	0.7-1.3	NA	10	12,660	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP3	0.0-0.1	No	10	11,750	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP3	0.1-0.9	NA	10	12,480	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP3	0.9-1.8	NA	10	12,210	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP5	0.0-0.1	No	10	10,230	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	242855	TP5	0.0-0.1	612.47	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12/05/2020	TP5	0.1-1.1	NA	10	13,550	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP5	1.1-2.0	NA	10	12,260	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP7	0.0-0.3	No	10	9,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	242855	TP7	0.0-0.1	522.51	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12/05/2020	TP7	0.3-1.2	NA	10	10,640	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP7	1.2-1.5	NA	10	12,310	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP9	0.0-0.1	No	10	12,260	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP9	0.1-1.0	NA	10	13,040	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP9	1.0-2.0	NA	10	11,960	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP11	0.0-0.1	No	10	9,020	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP11	0.1-1.1	NA	10	14,520	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	242855	TP11	0.3-0.4	737.46	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12/05/2020	TP11	1.1-1.8	NA	10	12,790	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP13	0.0-0.1	No	10	11,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP13	0.1-0.6	NA	10	12,280	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP13	0.6-1.6	NA	10	13,460	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP13	1.6-1.8	NA	10	10,650	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP15	0.0-0.1	No	10	12,680	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	242855	TP15	0.0-0.1	802.62	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12/05/2020	TP15	0.1-1.1	NA	10	12,260	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP15	1.1-1.5	NA	10	11,780	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP17	0.0-0.1	No	10	10,200	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP17	0.1-1.1	NA	10	10,120	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP17	1.1-1.8	NA	10	10,940	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP19	0.0-0.1	No	10	13,240	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--
12/05/2020	TP19	0.1-1.1	NA	10	13,040	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	242855	TP19	0.3-0.5	685.77	No asbestos detected at reporting limit of 0.1g/kg: Organic fibres detected	No asbestos detected	<0.1	No visible asbestos detected	--	--	<0.01	<0.001
12/05/2020	TP19	1.1-2.0	NA	10	12,860	No ACM observed	--	--	No ACM <7mm observed	--	--	No FA observed	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Concentration above the SAC

VALUE

TABLE S6 SOIL LABORATORY RESULTS COMPARED TO NEPM 2013 EILs AND ESLs All data in mg/kg unless stated otherwise																								
Land Use Category				URBAN RESIDENTIAL AND PUBLIC OPEN SPACE																				
				pH	CEC (cmolc/kg)	Clay Content (% clay)	AGED HEAVY METALS-EILs						EILs		ESLs									
							Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P	
PQL - Envirolab Services				-	1	-	4	1	1	1	1	1	1	0.1	25	50	100	100	0.2	0.5	1	1	0.05	
Ambient Background Concentration (ABC)				-	-	-	NSL	9	11	17	5	24	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	NSL	
Sample Reference	Sample Depth	Sample Description	Soil Texture																					
TP1	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	6	8	24	16	10	50	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP1 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	6	9	27	16	10	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH2	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	5	9	36	16	19	75	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP3	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	9	32	18	14	55	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH4	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	8	11	30	16	14	55	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP5	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	9	33	19	15	61	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH6	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	13	24	13	16	57	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP7	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	<4	4	10	6	2	10	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP7	1.3-1.4	Fill: Silty Clay	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	NA	
BH8	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	5	8	18	12	7	30	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP9	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	11	23	15	9	36	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH10	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	6	10	29	15	12	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH10 - [LAB_DUP]	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	<1	NA	<25	NA	NA	NA	<0.2	<0.5	<1	<3	NA	
TP11	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	6	10	26	17	11	45	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP11	0.3-0.4	Fill: Silty Gravelly Clay	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH12	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	6	12	25	17	10	38	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP13	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	8	10	29	17	12	47	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH14	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	5	10	24	15	10	39	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP15	0.0-0.1	Fill: Silty Gravelly Clay	Fine	NA	NA	NA	<4	7	27	13	11	42	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH16	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	6	12	41	26	14	62	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP17	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	9	33	17	13	71	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP17 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	6	8	30	16	26	77	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
BH18	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	8	9	32	21	14	54	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP19	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	7	7	27	19	12	51	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP19	0.3-0.5	Fill: Silty Clay	Fine	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
BH20	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	8	10	32	15	14	61	<1	<0.1	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
TP17 - [TRIPLICATE]	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	6	9	28	12	14	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
SDUP1	-	-	Fine	NA	NA	NA	8	12	27	22	11	48	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
SDUP5	-	-	Fine	NA	NA	NA	9	12	28	22	14	58	<1	NA	<25	<50	<100	<100	<0.2	<0.5	<1	<3	<0.05	
Total Number of Samples				0	0	0	25	25	25	25	25	25	26	12	26	25	25	25	26	26	26	26	24	
Maximum Value				NA	NA	NA	9	13	41	26	26	77	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	
Concentration above the SAC				VALUE																				
Concentration above the PQL				Bold																				
The guideline corresponding to the elevated value is highlighted in grey in the EIL and ESL Assessment Criteria Table below																								

EIL AND ESL ASSESSMENT CRITERIA																								
Sample Reference	Sample Depth	Sample Description	Soil Texture	pH	CEC (cmolc/kg)	Clay Content (% clay)	Arsenic	Chromium	Copper	Lead	Nickel	Zinc	Naphthalene	DDT	C ₆ -C ₁₀ (F1)	>C ₁₀ -C ₁₆ (F2) plus naphthalene	>C ₁₆ -C ₃₄ (F3)	>C ₃₄ -C ₄₀ (F4)	Benzene	Toluene	Ethylbenzene	Total Xylenes	B(a)P	
TP1 - [LAB_DUP]	TP1	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
		0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	BH2	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP3	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
BH10 - [LAB_DUP]	BH4	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP5	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	BH6	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP7	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	TP7	1.3-1.4	Fill: Silty Clay	Fine	NA	NA	NA	--	--	--	--	--	--	170	--	180	120	1300	5600	65	105	125	45	--
	BH8	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP9	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	BH10	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
		0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	--	--	--	--	--	--	170	--	180	--	--	--	65	105	125	45	--
		TP11	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45
TP17 - [LAB_DUP]	TP11	0.3-0.4	Fill: Silty Gravelly Clay	Fine	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	BH12	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP13	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	BH14	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP15	0.0-0.1	Fill: Silty Gravelly Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	BH16	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP17	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
		0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
	BH18	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	TP19	0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
TP17 - [TRIPLICATE]	TP19	0.3-0.5	Fill: Silty Clay	Fine	NA	NA	NA	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	BH20	0.0-0.2	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	170	180	180	120	1300	5600	65	105	125	45	20
		0.0-0.1	Fill: Silty Clay	Fine	NA	NA	NA	100	200	70	1100	35	95	--	--	--	--	--	--	--	--	--	--	--
	SDUP1	-	-	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20
	SDUP5	-	-	Fine	NA	NA	NA	100	200	70	1100	35	95	170	--	180	120	1300	5600	65	105	125	45	20

TABLE S7																											
SOIL LABORATORY RESULTS COMPARED TO WASTE CLASSIFICATION GUIDELINES																											
All data in mg/kg unless stated otherwise																											
			HEAVY METALS							PAHs		OC/OP PESTICIDES				Total PCBs	TRH					BTEX COMPOUNDS				ASBESTOS FIBRES	
			Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Nickel	Zinc	Total PAHs	B(a)P	Total Endosulfans	Chloropyrifos	Total Moderately Harmful		Total Scheduled	C ₆ -C ₉	C ₁₀ -C ₁₄	C ₁₅ -C ₂₈	C ₂₉ -C ₃₆	Total C ₁₀ -C ₃₆	Benzene	Toluene	Ethyl benzene		Total Xylenes
PQL - Envirolab Services			4	0.4	1	1	1	0.1	1	1	-	0.05	0.1	0.1	0.1	0.1	0.1	25	50	100	100	50	0.2	0.5	1	1	100
General Solid Waste CT1			100	20	100	NSL	100	4	40	NSL	200	0.8	60	4	250	50	50	650		NSL	10,000	10	288	600	1,000	-	
General Solid Waste SCC1			500	100	1900	NSL	1500	50	1050	NSL	200	10	108	7.5	250	50	50	650		NSL	10,000	18	518	1,080	1,800	-	
Restricted Solid Waste CT2			400	80	400	NSL	400	16	160	NSL	800	3.2	240	16	1000	50	50	2600		NSL	40,000	40	1,152	2,400	4,000	-	
Restricted Solid Waste SCC2			2000	400	7600	NSL	6000	200	4200	NSL	800	23	432	30	1000	50	50	2600		NSL	40,000	72	2,073	4,320	7,200	-	
Sample Reference	Sample Depth	Sample Description																									
TP1	0.0-0.1	Fill: Silty Clay	6	<0.4	8	24	16	<0.1	10	50	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP1 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	6	<0.4	9	27	16	<0.1	10	47	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH2	0.0-0.2	Fill: Silty Clay	5	<0.4	9	36	16	<0.1	19	75	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP3	0.0-0.1	Fill: Silty Clay	7	<0.4	9	32	18	<0.1	14	55	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH4	0.0-0.2	Fill: Silty Clay	8	<0.4	11	30	16	<0.1	14	55	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP5	0.0-0.1	Fill: Silty Clay	7	<0.4	9	33	19	<0.1	15	61	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH6	0.0-0.1	Fill: Silty Clay	7	<0.4	13	24	13	<0.1	16	57	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP7	0.0-0.1	Fill: Silty Clay	<4	<0.4	4	10	6	<0.1	2	10	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
TP7	1.3-1.4	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH8	0.0-0.2	Fill: Silty Clay	5	<0.4	8	18	12	<0.1	7	30	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP9	0.0-0.1	Fill: Silty Clay	7	<0.4	11	23	15	<0.1	9	36	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH10	0.0-0.2	Fill: Silty Clay	6	<0.4	10	29	15	<0.1	12	47	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH10 - [LAB_DUP]	0.0-0.2	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	<25	NA	NA	NA	NA	<0.2	<0.5	<1	<3	NA
TP11	0.0-0.1	Fill: Silty Clay	6	<0.4	10	26	17	<0.1	11	45	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP11	0.3-0.4	Fill: Silty Gravelly Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH12	0.0-0.2	Fill: Silty Clay	6	<0.4	12	25	17	<0.1	10	38	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP13	0.0-0.1	Fill: Silty Clay	8	<0.4	10	29	17	<0.1	12	47	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH14	0.0-0.2	Fill: Silty Clay	5	<0.4	10	24	15	<0.1	10	39	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP15	0.0-0.1	Fill: Silty Gravelly Clay	<4	<0.4	7	27	13	<0.1	11	42	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH16	0.0-0.2	Fill: Silty Clay	6	<0.4	12	41	26	<0.1	14	62	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP17	0.0-0.1	Fill: Silty Clay	7	<0.4	9	33	17	<0.1	13	71	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP17 - [LAB_DUP]	0.0-0.1	Fill: Silty Clay	6	<0.4	8	30	16	<0.1	26	77	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH18	0.0-0.2	Fill: Silty Clay	8	<0.4	9	32	21	<0.1	14	54	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP19	0.0-0.1	Fill: Silty Clay	7	<0.4	7	27	19	<0.1	12	51	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP19	0.3-0.5	Fill: Silty Clay	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	Not Detected
BH20	0.0-0.2	Fill: Silty Clay	8	<0.4	10	32	15	<0.1	14	61	<0.05	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
TP17 - [TRIPLICATE]	0.0-0.1	Fill: Silty Clay	6	<0.4	9	28	12	<0.1	14	48	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDUP1	-	-	8	<0.4	12	27	22	<0.1	11	48	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
SDUP5	-	-	9	<0.4	12	28	22	<0.1	14	58	0.3	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
Total Number of Samples			25	25	25	25	25	25	25	25	24	24	12	12	12	12	12	26	25	25	25	25	26	26	26	26	5
Maximum Value			9	<PQL	13	41	26	<PQL	26	77	0.3	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected
Statistical Analysis on Fill Samples																											
Number of Fill Samples			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Mean Value			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Standard Deviation			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
% UCL			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
UCL Value			NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Concentration above the CT1			VALUE																								
Concentration above SCC1			VALUE																								
Concentration above the SCC2			VALUE																								
Concentration above PQL			Bold																								

[illegible]

ABBREVIATIONS AND EXPLANATIONS

Abbreviations used in the Tables:

ADWG:	Australian Drinking Water Guidelines	PCBs:	Polychlorinated Biphenyls
ANZG	Australian and New Zealand Guidelines	PCE:	Perchloroethylene (Tetrachloroethylene or Tetrachloroethene)
B(a)P:	Benzo(a)pyrene	PQL:	Practical Quantitation Limit
CRC:	Cooperative Research Centre	RS:	Rinsate Sample
ESLs:	Ecological Screening Levels	RSL:	Regional Screening Levels
GIL:	Groundwater Investigation Levels	SAC:	Site Assessment Criteria
HILs:	Health Investigation Levels	SSA:	Site Specific Assessment
HSLs:	Health Screening Levels	SSHSLs:	Site Specific Health Screening Levels
HSL-SSA:	Health Screening Level-Site Specific Assessment	TB:	Trip Blank
NA:	Not Analysed	TCA:	1,1,1 Trichloroethane (methyl chloroform)
NC:	Not Calculated	TCE:	Trichloroethylene (Trichloroethene)
NEPM:	National Environmental Protection Measure	TS:	Trip Spike
NHMRC:	National Health and Medical Research Council	TRH:	Total Recoverable Hydrocarbons
NL:	Not Limiting	UCL:	Upper Level Confidence Limit on Mean Value
NSL:	No Set Limit	USEPA	United States Environmental Protection Agency
OCP:	Organochlorine Pesticides	VOCC:	Volatile Organic Chlorinated Compounds
OPP:	Organophosphorus Pesticides	WHO:	World Health Organisation
PAHs:	Polycyclic Aromatic Hydrocarbons		
ppm:	Parts per million		

TABLE G1 SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO ECOLOGICAL GILs SAC All results in µg/L unless stated otherwise.				
	PQL EnviroLab Services	ANZG 2018 Fresh Waters	SAMPLES	
			MW8	WDUP1
Inorganic Compounds and Parameters				
pH		6.5 - 8.5	7.1	NA
Electrical Conductivity (µS/cm)	1	NSL	6100	NA
Turbidity (NTU)		NSL	NA	NA
Metals and Metalloids				
Arsenic (As III)	1	24	48	47
Cadmium	0.1	0.2	<0.1	<0.1
Chromium (SAC for Cr III adopted)	1	3.3	<1	<1
Copper	1	1.4	<1	<1
Lead	1	3.4	<1	<1
Total Mercury (inorganic)	0.05	0.06	<0.05	<0.05
Nickel	1	11	25	25
Zinc	1	8	9	11
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)				
Benzene	1	950	<1	<1
Toluene	1	180	<1	<1
Ethylbenzene	1	80	<1	<1
m+p-xylene	2	75	<2	<2
o-xylene	1	350	<1	<1
Total xylenes	2	NSL	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs				
Dichlorodifluoromethane	10	NSL	<10	NA
Chloromethane	10	NSL	<10	NA
Vinyl Chloride	10	100	<10	NA
Bromomethane	10	NSL	<10	NA
Chloroethane	10	NSL	<10	NA
Trichlorofluoromethane	10	NSL	<10	NA
1,1-Dichloroethene	1	700	<1	NA
Trans-1,2-dichloroethene	1	NSL	<1	NA
1,1-dichloroethane	1	90	<1	NA
Cis-1,2-dichloroethene	1	NSL	<1	NA
Bromochloromethane	1	NSL	<1	NA
Chloroform	1	370	<1	NA
2,2-dichloropropane	1	NSL	<1	NA
1,2-dichloroethane	1	1900	<1	NA
1,1,1-trichloroethane	1	270	<1	NA
1,1-dichloropropene	1	NSL	<1	NA
Cyclohexane	1	NSL	<1	NA
Carbon tetrachloride	1	240	<1	NA
Benzene	1	950	<1	NA
Dibromomethane	1	NSL	<1	NA
1,2-dichloropropane	1	900	<1	NA
Trichloroethene	1	330	<1	NA
Bromodichloromethane	1	NSL	<1	NA
trans-1,3-dichloropropene	1	NSL	<1	NA
cis-1,3-dichloropropene	1	NSL	<1	NA
1,1,2-trichloroethane	1	6500	<1	NA
Toluene	1	180	<1	NA
1,3-dichloropropane	1	1100	<1	NA
Dibromochloromethane	1	NSL	<1	NA
1,2-dibromoethane	1	NSL	<1	NA
Tetrachloroethene	1	70	<1	NA
1,1,1,2-tetrachloroethane	1	NSL	<1	NA
Chlorobenzene	1	55	<1	NA
Ethylbenzene	1	80	<1	NA
Bromoform	1	NSL	<1	NA
m+p-xylene	2	75	<2	NA
Styrene	1	NSL	<1	NA
1,1,2,2-tetrachloroethane	1	400	<1	NA
o-xylene	1	350	<1	NA
1,2,3-trichloropropane	1	NSL	<1	NA
Isopropylbenzene	1	30	<1	NA
Bromobenzene	1	NSL	<1	NA
n-propyl benzene	1	NSL	<1	NA
2-chlorotoluene	1	NSL	<1	NA
4-chlorotoluene	1	NSL	<1	NA
1,3,5-trimethyl benzene	1	NSL	<1	NA
Tert-butyl benzene	1	NSL	<1	NA
1,2,4-trimethyl benzene	1	NSL	<1	NA
1,3-dichlorobenzene	1	260	<1	NA
Sec-butyl benzene	1	NSL	<1	NA
1,4-dichlorobenzene	1	60	<1	NA
4-isopropyl toluene	1	NSL	<1	NA
1,2-dichlorobenzene	1	160	<1	NA
n-butyl benzene	1	NSL	<1	NA
1,2-dibromo-3-chloropropane	1	NSL	<1	NA
1,2,4-trichlorobenzene	1	85	<1	NA
Hexachlorobutadiene	1	NSL	<1	NA
1,2,3-trichlorobenzene	1	3	<1	NA
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	0.2	16	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1
Phenanthrene	0.1	0.6	<0.1	<0.1
Anthracene	0.1	0.01	<0.1	<0.1
Fluoranthene	0.1	1	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1
Concentration above the SAC	VALUE			
Concentration above the PQL	Bold			
GIL >PQL	Red			



TABLE G2 GROUNDWATER LABORATORY RESULTS COMPARED TO SITE SPECIFIC HSLs - RISK ASSESSMENT All results in µg/L unless stated otherwise.						
	PQL	NHMRC	WHO 2008	USEPA RSL	SAMPLES	
	Envirolab	ADWG 2011		Tapwater	MW8	WDUP1
	Services	(v3.5 2018)		2017		
Total Recoverable Hydrocarbons (TRH)						
C ₆ -C ₉ Aliphatics (assessed using F1)	10	-	15000	-	<10	<10
>C ₉ -C ₁₄ Aliphatics (assessed using F2)	50	-	100	-	<50	<50
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)						
Benzene	1	1	-	-	<1	<1
Toluene	1	800	-	-	<1	<1
Ethylbenzene	1	300	-	-	<1	<1
Total xylenes	2	600	-	-	<2	<2
Polycyclic Aromatic Hydrocarbons (PAHs)						
Naphthalene	1	-	-	6.1	<1	<1
Volatile Organic Compounds (VOCs), including chlorinated VOCs						
Dichlorodifluoromethane	10	-	-	-	<10	NA
Chloromethane	10	-	-	-	<10	NA
Vinyl Chloride	10	0.3	-	-	<10	NA
Bromomethane	10	-	-	-	<10	NA
Chloroethane	10	-	-	-	<10	NA
Trichlorofluoromethane	10	-	-	-	<10	NA
1,1-Dichloroethene	1	30	-	-	<1	NA
Trans-1,2-dichloroethene	1	60	-	-	<1	NA
1,1-dichloroethane	1	-	-	-	<1	NA
Cis-1,2-dichloroethene	1	60	-	-	<1	NA
Bromochloromethane	1	250	-	-	<1	NA
Chloroform	1		-	-	<1	NA
2,2-dichloropropane	1	-	-	-	<1	NA
1,2-dichloroethane	1	3	-	-	<1	NA
1,1,1-trichloroethane	1	-	-	-	<1	NA
1,1-dichloropropene	1	-	-	-	<1	NA
Cyclohexane	1	-	-	-	<1	NA
Carbon tetrachloride	1	3	-	-	<1	NA
Benzene	1	1	-	-	<1	NA
Dibromomethane	1	-	-	-	<1	NA
1,2-dichloropropane	1	-	-	-	<1	NA
Trichloroethene	1	-	-	-	<1	NA
Bromodichloromethane	1	-	-	-	<1	NA
trans-1,3-dichloropropene	1	100	-	-	<1	NA
cis-1,3-dichloropropene	1	100	-	-	<1	NA
1,1,2-trichloroethane	1	-	-	-	<1	NA
Toluene	1	800	-	-	<1	NA
1,3-dichloropropane	1	-	-	-	<1	NA
Dibromochloromethane	1	-	-	-	<1	NA
1,2-dibromoethane	1	-	-	-	<1	NA
Tetrachloroethene	1	50	-	-	<1	NA
1,1,1,2-tetrachloroethane	1	-	-	-	<1	NA
Chlorobenzene	1	300	-	-	<1	NA
Ethylbenzene	1	300	-	-	<1	NA
Bromoform	1	-	-	-	<1	NA
m+p-xylene	2	-	-	-	<2	NA
Styrene	1	30	-	-	<1	NA
1,1,2,2-tetrachloroethane	1	-	-	-	<1	NA
o-xylene	1	-	-	-	<1	NA
1,2,3-trichloropropane	1	-	-	-	<1	NA
Isopropylbenzene	1	-	-	-	<1	NA
Bromobenzene	1	-	-	-	<1	NA
n-propyl benzene	1	-	-	-	<1	NA
2-chlorotoluene	1	-	-	-	<1	NA
4-chlorotoluene	1	-	-	-	<1	NA
1,3,5-trimethyl benzene	1	-	-	-	<1	NA
Tert-butyl benzene	1	-	-	-	<1	NA
1,2,4-trimethyl benzene	1	-	-	-	<1	NA
1,3-dichlorobenzene	1	20	-	-	<1	NA
Sec-butyl benzene	1	-	-	-	<1	NA
1,4-dichlorobenzene	1	40	-	-	<1	NA
4-isopropyl toluene	1	-	-	-	<1	NA
1,2-dichlorobenzene	1	1500	-	-	<1	NA
n-butyl benzene	1	-	-	-	<1	NA
1,2-dibromo-3-chloropropane	1	-	-	-	<1	NA
1,2,4-trichlorobenzene	1	30	-	-	<1	NA
1,2,3-trichlorobenzene	1		-	-	<1	NA
Hexachlorobutadiene	1	7	-	-	<1	NA
Concentration above the SAC						
Concentration above the PQL						
GIL >PQL						
VALUE						
Bold						
Red						



TABLE G3 SUMMARY OF GROUNDWATER LABORATORY RESULTS COMPARED TO HUMAN CONTACT GILS All results in µg/L unless stated otherwise.				
	PQL Envirolab Services	Recreational (10 x NHMRC ADWG)	SAMPLES	
			MW8	WDUP1
Inorganic Compounds and Parameters				
pH		6.5 - 8.5	7.1	NA
Electrical Conductivity (µS/cm)	1	NSL	6100	NA
Turbidity (NTU)		NSL	NA	NA
Metals and Metalloids				
Arsenic (As III)	1	100	48	47
Cadmium	0.1	20	<0.1	<0.1
Chromium (total)	1	500	<1	<1
Copper	1	20000	<1	<1
Lead	1	100	<1	<1
Total Mercury (inorganic)	0.05	10	<0.05	<0.05
Nickel	1	200	25	25
Zinc	1	30000	9	11
Monocyclic Aromatic Hydrocarbons (BTEX Compounds)				
Benzene	1	10	<1	<1
Toluene	1	8000	<1	<1
Ethylbenzene	1	3000	<1	<1
m+p-xylene	2	NSL	<2	<2
o-xylene	1	NSL	<1	<1
Total xylenes	2	6000	<2	<2
Volatile Organic Compounds (VOCs), including chlorinated VOCs				
Dichlorodifluoromethane	10	NSL	<10	NA
Chloromethane	10	NSL	<10	NA
Vinyl Chloride	10	3	<10	NA
Bromomethane	10	NSL	<10	NA
Chloroethane	10	NSL	<10	NA
Trichlorofluoromethane	10	NSL	<10	NA
1,1-Dichloroethene	1	300	<1	NA
Trans-1,2-dichloroethene	1	600	<1	NA
1,1-dichloroethane	1	NSL	<1	NA
Cis-1,2-dichloroethene	1	600	<1	NA
Bromochloromethane	1	2500	<1	NA
Chloroform	1		<1	NA
2,2-dichloropropane	1	NSL	<1	NA
1,2-dichloroethane	1	30	<1	NA
1,1,1-trichloroethane	1	NSL	<1	NA
1,1-dichloropropene	1	NSL	<1	NA
Cyclohexane	1	NSL	<1	NA
Carbon tetrachloride	1	30	<1	NA
Benzene	1	10	<1	NA
Dibromomethane	1	NSL	<1	NA
1,2-dichloropropane	1	NSL	<1	NA
Trichloroethene	1	NSL	<1	NA
Bromodichloromethane	1	NSL	<1	NA
trans-1,3-dichloropropene	1	1000	<1	NA
cis-1,3-dichloropropene	1	1000	<1	NA
1,1,2-trichloroethane	1	NSL	<1	NA
Toluene	1	8000	<1	NA
1,3-dichloropropane	1	NSL	<1	NA
Dibromochloromethane	1	NSL	<1	NA
1,2-dibromoethane	1	NSL	<1	NA
Tetrachloroethene	1	500	<1	NA
1,1,1,2-tetrachloroethane	1	NSL	<1	NA
Chlorobenzene	1	3000	<1	NA
Ethylbenzene	1	3000	<1	NA
Bromoform	1	NSL	<1	NA
m+p-xylene	2	NSL	<2	NA
Styrene	1	300	<1	NA
1,1,2,2-tetrachloroethane	1	NSL	<1	NA
o-xylene	1	NSL	<1	NA
1,2,3-trichloropropane	1	NSL	<1	NA
Isopropylbenzene	1	NSL	<1	NA
Bromobenzene	1	NSL	<1	NA
n-propyl benzene	1	NSL	<1	NA
2-chlorotoluene	1	NSL	<1	NA
4-chlorotoluene	1	NSL	<1	NA
1,3,5-trimethyl benzene	1	NSL	<1	NA
Tert-butyl benzene	1	NSL	<1	NA
1,2,4-trimethyl benzene	1	NSL	<1	NA
1,3-dichlorobenzene	1	200	<1	NA
Sec-butyl benzene	1	NSL	<1	NA
1,4-dichlorobenzene	1	400	<1	NA
4-isopropyl toluene	1	NSL	<1	NA
1,2-dichlorobenzene	1	15000	<1	NA
n-butyl benzene	1	NSL	<1	NA
1,2-dibromo-3-chloropropane	1	NSL	<1	NA
1,2,4-trichlorobenzene	1	300	<1	NA
1,2,3-trichlorobenzene	1		<1	NA
Hexachlorobutadiene	1		<1	NA
Polycyclic Aromatic Hydrocarbons (PAHs)				
Naphthalene	0.2	NSL	<0.2	<0.2
Acenaphthylene	0.1	NSL	<0.1	<0.1
Acenaphthene	0.1	NSL	<0.1	<0.1
Fluorene	0.1	NSL	<0.1	<0.1
Phenanthrene	0.1	NSL	<0.1	<0.1
Anthracene	0.1	NSL	<0.1	<0.1
Fluoranthene	0.1	NSL	<0.1	<0.1
Pyrene	0.1	NSL	<0.1	<0.1
Benzo(a)anthracene	0.1	NSL	<0.1	<0.1
Chrysene	0.1	NSL	<0.1	<0.1
Benzo(b,j+k)fluoranthene	0.2	NSL	<0.2	<0.2
Benzo(a)pyrene	0.1	0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	0.1	NSL	<0.1	<0.1
Dibenzo(a,h)anthracene	0.1	NSL	<0.1	<0.1
Benzo(g,h,i)perylene	0.1	NSL	<0.1	<0.1
Concentration above the SAC Concentration above the PQL GIL >PQL				
VALUE Bold Red				



TABLE G4 GROUNDWATER QA/QC SUMMARY																																			
			TRH C6 - C10	TRH >C10-C16	TRH >C16-C34	TRH >C34-C40	Benzene	Toluene	Ethylbenzene	m-p-xylene	o-Xylene	Naphthalene	Acenaphthylene	Acenaph-thene	Fluorene	Phenanthrene	Anthracene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b,i,k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-c,d)pyrene	Dibenzo(a,h)anthra-cene	Benzo(g,h,i)perylene	Arsenic	Cadmium	Chromium VI	Copper	Lead	Mercury	Nickel	Zinc	
	PQL Envirolab SYD	10	50	100	100	1	1	1	2	1		0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1	
	PQL Envirolab VIC	10	50	100	100	1.0	1.0	1.0	2.0	1.0		0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	1	0.1	1	1	1	0.05	1	1	
Intra laboratory duplicate	MW8	2.07	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	48	<0.1	<1	<1	<1	<1	<0.05	25	9
	WDUP1	2.07	<10	<50	<100	<100	<1	<1	<1	<2	<1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	47	<0.1	<1	<1	<1	<1	<0.05	25	11	
	MEAN		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	47.5	nc	nc	nc	nc	nc	nc	25	10
	RPD %		nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	nc	2%	nc	nc	nc	nc	nc	nc	0%
Field Blank	TB-W1 20/05/2020		NA	NA	NA	NA	<1	<1	<1	<2	<1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Trip Spike	TS-W1 20/05/2020		-	-	-	-	127%	117%	105%	106%	110%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Result outside of QA/QC acceptance criteria																																			
Value																																			



Appendix D: Borehole & Test Pit Logs

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown, trace of igneous gravel, ash and root fibres.	w<PL			SCREEN: (11.5kg) 0-0.2m NO FCF
						1		FILL: Silty clay, low to medium plasticity, brown mottled red brown and grey, trace of igneous and siltstone gravel, and terracotta fragments.	SCREEN: (11.1kg) 0.2-0.8m NO FCF				
						2		FILL: Silty clay, low to medium plasticity, grey, with siltstone gravel.	SCREEN: (12.1kg) 0.8-1.8m NO FCF				
								END OF TEST PIT AT 2.4m			SCREEN: (12.31kg) 1.8-2.4m NO FCF		
						3							REFUSAL
						4							
						5							
						6							
						7							

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW															
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.															
Groundwater Record	ES	ASS	SAMPLES	ASB	SAL	DB	Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
DRY ON COMPLETION								0			FILL: Silty clay, low to medium plasticity, grey mottled red brown, trace of sandstone and siltstone gravel and root fibres.	w<PL			SCREEN: (12.3kg) 0-0.2m NO FCF
								1			FILL: Silty clay, low to medium plasticity, red brown mottled dark grey, trace of igneous, ironstone sandstone and siltstone gravel and ash.				SCREEN: (14.1kg) 0.9-1.9m NO FCF
								2			FILL: Silty clay, low to medium plasticity, brown and orange brown, trace of igneous, ironstone and siltstone gravel.				SCREEN: (12.6kg) 1.9-2.5m NO FCF
								3			END OF TEST PIT AT 2.5m				REFUSAL
								4							
								5							
								6							
								7							

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, grey brown mottled red brown, with siltstone gravel, trace of sandstone gravel.	w<PL			SCREEN: (10.7kg) 0-0.2m NO FCF
						1		SCREEN: (12.3kg) 0.2-1.0m NO FCF					
								SCREEN: (12.1kg) 1.0-2.0m NO FCF					
						2		FILL: Silty clay, low to medium plasticity, grey mottled red brown, yellow brown and brown.					SCREEN: (12.6kg) 2.0-2.6m NO FCF
						3			END OF TEST PIT AT 2.6m				REFUSAL
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown and red brown, trace of igneous and siltstone gravel and root fibres.	w<PL			SCREEN: (15.1kg) 0-0.2m NO FCF
						1		FILL: Silty gravelly clay, low to medium plasticity, grey, fine to medium grained siltstone gravel, trace of tile fragments.	SCREEN: (14.1kg) 0.2-1.2m NO FCF				
						2				SCREEN: (11.3kg) 1.2-2.2m NO FCF			
								FILL: Silty gravelly clay, low to medium plasticity, grey brown, fine to medium grained siltstone gravel.	w≈PL	SCREEN: (15.2kg) 2.2-2.7m NO FCF			
						3			END OF TEST PIT AT 2.7m				REFUSAL
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, trace of igneous and siltstone gravel, and brick fragments.	w<PL			SCREEN: (11.4kg) 0-0.2m NO FCF
						1					SCREEN: (10.9kg) 0.2-1.0m NO FCF		
						2			FILL: Silty clay, low to medium plasticity, with siltstone gravel.		SCREEN: (13.2kg) 1.0-2.0m NO FCF		
						3			END OF TEST PIT AT 2.4m		SCREEN: (14.2kg) 2.0-2.4m NO FCF REFUSAL		
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

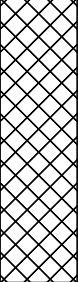
Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown and grey brown, trace of igneous and siltstone gravel and root fibres.	w<PL			SCREEN: (11.9kg) 0-0.2m NO FCF
						1		FILL: Silty clay, low to medium plasticity, brown mottled red brown and grey, trace of siltstone gravel.	SCREEN: (10.2kg) 0.2-0.9m NO FCF				
						2			SCREEN: (9.3kg) 0.9-1.9m NO FCF				
									SCREEN: (11.4kg) 1.9-2.5m NO FCF				
						3			FILL: Silty clay, low to medium plasticity, brown and grey brown, with siltstone gravel, trace of igneous gravel.				SCREEN: (8.7kg) 2.5-2.8m NO FCF
									END OF TEST PIT AT 2.8m				REFUSAL
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW															
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.															
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks		
	ES	ASS	ASB	SAL										DB	
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown, trace of igneous and siltstone gravel and root fibres.	w<PL			SCREEN: (8.3kg) 0-0.2m NO FCF SCREEN: (12.4kg) 0.2-1.0m NO FCF		
						1								SCREEN: (8.4kg) 1.0-1.5m NO FCF	
						2								FILL: Silty clay, low to medium plasticity, brown mottled grey, trace of igneous and siltstone gravel and root fibres.	SCREEN: (10.8kg) 1.5-2.4m NO FCF
														FILL: Silty clay, low to medium plasticity, grey mottled brown, with siltstone gravel, trace of root fibres.	SCREEN: (10.4kg) 2.4-2.8m NO FCF
						3			END OF TEST PIT AT 2.8m				REFUSAL		
						4									
						5									
						6									
						7									

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown mottled red brown, trace of igneous and siltstone gravel, ash and root fibres.	w<PL			SCREEN: (9.8kg) 0-0.2m NO FCF
						1		FILL: Silty gravelly clay, low to medium plasticity, grey, fine to medium grained siltstone gravel.	SCREEN: (11.6kg) 0.2-0.8m NO FCF				
						2			END OF TEST PIT AT 1.5m				REFUSAL
						3							
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Date: 12/10/20 Plant Type: 5T EXCAVATOR			Method: TEST PIT Logged/Checked by: C.R./B.P.				R.L. Surface: N/A Datum: -						
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLE- TION						0			FILL: Silty clay, low to medium plasticity, brown, trace of igneous and ironstone gravel, steel, brick fragments and root fibres.	w<PL			SCREEN: (9.3kg) 0-0.2m NO FCF SCREEN: (11.2kg) 0.2-1.0m NO FCF SCREEN: (10.8kg) 1.0-1.5m NO FCF SCREEN: (10.4kg) 1.5-2.1m NO FCF SCREEN: (10.7kg) 2.1-2.3kg NO FCF REFUSAL
						1							
						2		FILL: Silty clay, low to medium plasticity, brown mottled red brown and grey, trace of igneous and siltstone gravel.					
						2		FILL: Silty clay, low to medium plasticity, red brown. END OF TEST PIT AT 2.3m					
						3							
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: TEST PIT R.L. Surface: N/A Date: 12/10/20 Datum: - Plant Type: 5T EXCAVATOR Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, medium plasticity, grey brown, trace of igneous and siltstone gravel and root fibres.	w<PL			SCREEN: (9.9kg) 0-0.2m NO FCF
						1			FILL: Silty clay, low to medium plasticity, brown mottled red brown and grey, trace of igneous and siltstone gravel and ash.	w≈PL			SCREEN: (9.3kg) 0.2-0.8m NO FCF
						2			FILL: Silty gravelly clay, low to medium plasticity, dark grey and brown, fine to medium grained siltstone gravel.				SCREEN: (12.6kg) 0.8-1.7m NO FCF
									END OF TEST PIT AT 2.2m				
						3							
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG



Log No.
BH311
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP308: 0-0.2m

Client: NSW DEPARTMENT OF EDUCATION		Project: PROPOSED PUBLIC SCHOOL		Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Job No.: E33177P		Method: SPIRAL AUGER		R.L. Surface: N/A	
Date: 13/10/20		Datum: -			
Plant Type: JK500		Logged/Checked by: C.R./B.P.			

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	ASS	ASB	SAL										DB
5 MINS AFTER COMPLETION OF AUGERING 						0			FILL: Clayey silt, low to medium plasticity, brown, trace of igneous gravel and root fibres.	w<PL				
						N = 27 8,12,15			1					FILL: Silty clay, low to medium plasticity, dark brown mottled orange and red brown, trace of siltstone gravel.
						N = 17 18,16,11			2					FILL: Silty clay, low to medium plasticity, dark grey and dark orange brown, trace of siltstone gravel.
						N = 14 3,7,7			3					FILL: Silty clay, low to medium plasticity, light grey, trace of siltstone gravel.
									4					FILL: Silty clay, low to medium plasticity, dark brown and orange brown, trace of siltstone gravel.
						5			FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel and brick fragments.	w≈PL				GROUNDWATER MONITORING WELL INSTALLED TO 5.0m. CLASS 18 MACHINE
						5			END OF BOREHOLE AT 5.0m					SLOTTED 50mm DIA. PVC STANDPIPE 2.0m TO 5.0m. CASING 0.1m TO 2.0m. 2mm SAND FILTER PACK 1.5m TO 5.0m. BENTONITE SEAL 0.1m TO 1.5m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.
						6								
						7								

JKEnvironments

ENVIRONMENTAL LOG



Log No.
BH312
1/1

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Date: 13/10/20 Plant Type: JK500			Method: SPIRAL AUGER Logged/Checked by: C.R./B.P.			R.L. Surface: N/A Datum: -							
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel and root fibres.	w<PL			
						N = 20 10,11,9			FILL: Silty clay, low to medium plasticity, grey mottled dark orange brown, with siltstone gravel.				
						N = 17 7,9,8			FILL: Silty clay, low to medium plasticity, brown and grey brown, trace of ironstone and siltstone gravel.				
						N = 12 4,5,7			FILL: Gravel, fine to coarse grained, angular, dark grey, siltstone.				
						4			FILL: Silty clay, low to medium plasticity, brown and grey brown, trace of siltstone gravel.				INSUFFICIENT RETURN
						4.45			END OF BOREHOLE AT 3.45m				INSUFFICIENT RETURN
						5							
						6							
						7							

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Method: SPIRAL AUGER R.L. Surface: N/A Date: 13/10/20 Datum: - Plant Type: JK500 Logged/Checked by: C.R./B.P.													
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, grey brown and orange brown, trace of igneous and siltstone gravel and brick fragments.	w<PL			
						N = 16 7,8,8		1					
						N = 27 7,10,17		2					
						N = 34 6,15,19		3					
						4		END OF BOREHOLE AT 3.45m					
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION

Project: PROPOSED PUBLIC SCHOOL

Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: E33177P

Date: 13/10/20

Plant Type: JK500

Method: SPIRAL AUGER

Logged/Checked by: C.R./B.P.

R.L. Surface: N/A

Datum: -

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	ASS	ASB	SAL DB										
DRY ON COMPLETION						0			FILL: Silty gravelly clay, low to medium plasticity, brown, fine to medium grained ironstone gravel, trace of root fibres.	w<PL				
					N = 29 14,14,15	1		FILL: Silty clay, low to medium plasticity, brown and red brown, trace of siltstone gravel.						
					N = 12 3,5,7	2		FILL: Silty clay, low to medium plasticity, brown and dark brown, trace of siltstone gravel, and plastic fragments.						
						3								
					N = 18 6,7,11									
						4			FILL: Clayey gravel, fine to coarse grained, angular, grey, siltstone.	D				
						5			END OF BOREHOLE AT 3.45m					
						6								
						7								

JKEnvironments

ENVIRONMENTAL LOG



Log No.
BH315
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP310: 0-0.2m

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW													
Job No.: E33177P Date: 13/10/20 Plant Type: JK500			Method: SPIRAL AUGER Logged/Checked by: C.R./B.P.			R.L. Surface: N/A Datum: -							
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL									
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel and root fibres.	w<PL			
						N = 26 5,9,17			FILL: Silty clay, low to medium plasticity, light grey and brown, trace of igneous and siltstone gravel.				
						N = 18 11,11,7			FILL: Silty clay, low to medium plasticity, dark orange brown mottled red brown and grey, trace of ironstone and siltstone gravel and root fibres.				
						2							
						3			FILL: Silty clay, medium plasticity, brown and grey brown, trace of siltstone gravel. FILL: Silty clay, medium plasticity, grey brown, trace of siltstone gravel.	w≈PL			
					N = 16 10,6,10		END OF BOREHOLE AT 3.45m						
						4							
						5							
						6							
						7							

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW														
Job No.: E33177P Method: SPIRAL AUGER R.L. Surface: N/A Date: 13/10/20 Datum: - Plant Type: JK500 Logged/Checked by: C.R./B.P.														
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	ASS	ASB	SAL										DB
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, light brown and grey, trace of siltstone gravel and root fibres.	w<PL			INSUFFICIENT RETURN	
						N = 14 6,7,7			FILL: Silty clay, low to medium plasticity, light brown and grey brown, trace of siltstone gravel.					
								1						FILL: Silty clay, low to medium plasticity, brown and orange brown, trace of ironstone gravel.
						N = 23 8,9,14								FILL: Silty clay, low to medium plasticity, brown mottled red brown and orange brown, trace of siltstone gravel.
						2								
								3						FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel.
								FILL: Silty clay, low to medium plasticity, light grey, with siltstone gravel.						
									END OF BOREHOLE AT 3.45m					
						4								
						5								
						6								
						7								

JKEnvironments

ENVIRONMENTAL LOG



Log No.
BH317
1/1

Environmental logs are not to be used for geotechnical purposes

SDUP307: 0-0.2m

Client: NSW DEPARTMENT OF EDUCATION		Project: PROPOSED PUBLIC SCHOOL		Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Job No.: E33177P		Method: SPIRAL AUGER		R.L. Surface: N/A	
Date: 13/10/20		Datum: -			
Plant Type: JK500		Logged/Checked by: C.R./B.P.			

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks			
	ES	ASS	ASB	SAL										DB		
▼ ON COMPLETION OF AUGERING						0			FILL: Silty clay, low to medium plasticity, red brown and grey brown, trace of igneous and siltstone gravel.	w<PL			POSSIBLE ROADBASE GROUNDWATER MONITORING WELL INSTALLED TO 6.0m. CLASS 18 MACHINE SLOTTED 50mm DIA. PVC STANDPIPE 2.0m TO 6.0m. CASING 0.1m TO 2.0m. 2mm SAND FILTER PACK 1.5m TO 6.0m. BENTONITE SEAL 0.1m TO 1.5m. BACKFILLED WITH SAND TO THE SURFACE. COMPLETED WITH A CONCRETED GATIC COVER.			
						N = 12 4,5,7		1	FILL: Silty clay, low to medium plasticity, red brown and dark orange brown, trace of siltstone gravel.							
						N = 16 4,6,10		2	FILL: Silty clay, low to medium plasticity, dark brown and dark grey, with siltstone gravel.	D						
						N = 13 4,5,8		3	FILL: Gravelly sand, fine to medium grained, light grey, fine to medium grained igneous gravel.	w<PL						
					4			FILL: Silty clay, low to medium plasticity, grey brown, trace of igneous, ironstone and siltstone gravel.								
					5			FILL: Silty clay, low to medium plasticity, red brown, trace of siltstone gravel.								
								6	FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel.	D					MODERATE 'TC' BIT RESISTANCE	
								7	FILL: Sandstone cobbles, yellow brown.							
										FILL: Silty gravelly clay, low to medium plasticity, dark brown and dark grey, fine to medium grained siltstone gravel.	w≈PL					
								6		END OF BOREHOLE AT 6.0m						
						7										

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW														
Job No.: E33177P Method: SPIRAL AUGER R.L. Surface: N/A Date: 13/10/20 Datum: - Plant Type: JK500 Logged/Checked by: C.R./B.P.														
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	ASS	ASB	SAL										DB
DRY ON COMPLETION						0			FILL: Silty clay, low to medium plasticity, orange brown mottled grey, trace of siltstone gravel.	w<PL				
						N = 11 6,5,6		1	FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel.					
						N = 26 5,9,17		2	FILL: Silty clay, low to medium plasticity, grey and grey brown, with siltstone gravel.					
						N > 11 9,11/ 150mm		3						
					REFUSAL				END OF BOREHOLE AT 3.45m					
						4								
						5								
						6								
						7								

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION Project: PROPOSED PUBLIC SCHOOL Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW														
Job No.: E33177P Method: SPIRAL AUGER R.L. Surface: N/A Date: 13/10/20 Datum: - Plant Type: JK500 Logged/Checked by: C.R./B.P.														
Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks	
	ES	ASS	ASB	SAL										DB
DRY ON COMPLETION						0			FILL: Silty gravelly clay, low to medium plasticity, brown, fine to medium grained siltstone gravel.	w<PL				
						N = 22 6,12,10			FILL: Silty clay, low to medium plasticity, brown and grey, with siltstone gravel.					
								1						FILL: Silty clay, low to medium plasticity, brown, with sandstone gravel, trace of siltstone gravel.
						N = 22 6,8,14			FILL: Silty clay, low to medium plasticity, brown mottled red brown and grey, trace of siltstone gravel.					
								2						FILL: Silty clay, low to medium plasticity, brown and grey brown, trace of siltstone gravel.
						3								
									FILL: Silty clay, low to medium plasticity, orange brown mottled grey, with siltstone gravel.					
						4			END OF BOREHOLE AT 3.45m					INSUFFICIENT RETURN
						5								
						6								
						7								

JKEnvironments

ENVIRONMENTAL LOG

Environmental logs are not to be used for geotechnical purposes

Client: NSW DEPARTMENT OF EDUCATION

Project: PROPOSED PUBLIC SCHOOL

Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: E33177P

Date: 14/10/20

Plant Type: JK500

Method: SPIRAL AUGER

Logged/Checked by: C.R./B.P.

R.L. Surface: N/A

Datum: -

Groundwater Record	SAMPLES				Field Tests	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel. Density	Hand Penetrometer Readings (kPa.)	Remarks
	ES	ASS	ASB	SAL DB									
DRY ON COMPLETION						0			FILL: Silty gravelly clay, low to medium plasticity, brown, fine to medium grained siltstone gravel.	w<PL			
					N = 30 2,11,19	1		FILL: Silty clay, low to medium plasticity, brown, trace of siltstone gravel.					
					N = 27 6,14,13	2		FILL: Silty clay, low to medium plasticity, grey brown, trace of ironstone and siltstone gravel.					
								FILL: Silty clay, low to medium plasticity, grey brown, trace of siltstone gravel.					
					N = 31 8,12,19	3							
						4		FILL: Silty clay, low to medium plasticity, grey, with siltstone gravel.					INSUFFICIENT RETURN
						5							
						6							
						7							

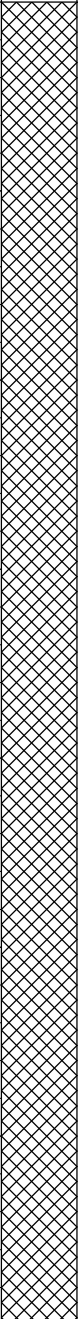
Borehole No.
8
1 / 1

Client: NSW DEPARTMENT OF EDUCATION														
Project: PROPOSED PUBLIC SCHOOL														
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW														
Job No.: 33177PN				Method: SPIRAL AUGER				R.L. Surface: ~60 m						
Date: 11/5/20				Datum: ASSUMED										
Plant Type: JK500				Logged/Checked By: J.L./N.E.S.										
Groundwater Record	SAMPLES				Field Tests	RL (m ASSUMED)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
DRY ON COMPLETION AFTER 1 HR ON 7 DAYS	█				N = 20 3,10,10	59	1			FILL: Silty clay, medium plasticity, brown mottled red brown, trace of medium to coarse grained igneous and siltstone gravel, roots and root fibres.	w<PL		>600 >600 >600	GRASS COVER TOP 100mm ROOT AFFECTED APPEARS WELL COMPACTED
	█													
	█				N = 25 8,8,17	58	2							
	█													
	█				N = 15 9,8,7	57	3			FILL: Gravelly silty clay, medium plasticity, grey, medium to coarse grained siltstone gravel.	150 160		APPEARS MODERATELY COMPACTED	
	█													
█				N = 12 2,5,7	56	4	55	5						
█														
█				N = 5 2,2,3	54	6	END OF BOREHOLE AT 6.45 m							
█														

BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER / ROTARY WASHBORE **R.L. Surface:** 60.93 m
Date: 6/10/20 **Datum:** AHD
Plant Type: JK300 **Logged/Checked By:** S.D./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
ON COMPLETION OF AUGERING					N > 7 6,7/ 100mm REFUSAL	60	1			FILL: Silty clay, medium plasticity, brown, grey, orange brown and red brown, with fine to medium grained igneous, ironstone and siltstone gravel, trace of ash.	w<PL		480 >600 >600 450 580 550	GRASS COVER APPEARS POORLY TO MODERATELY COMPACTED
					N = 7 2,2,5	59	2			FILL: Gravelly silty clay, medium plasticity, grey, fine to coarse grained siltstone gravel.	w>PL			APPEARS WELL COMPACTED
					N = 13 2,5,8	58	3						370 400 350	
					N = 9 0,4,5	57	4			FILL: Silty clay, medium plasticity, red brown mottled light grey and grey, trace of fine to medium grained ironstone gravel.			350 290 320	
					N = 8 5,5,3	56	5			FILL: Silty gravelly clay, medium plasticity, grey, fine to coarse grained siltstone gravel.			150 200 170	
						55	6							
						54								

JK 9.024.LB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 D:\gel Lab and In Situ Tool - DGD Lib JK 9.024.2019-05-31 Proj JK 9.01.0.2018-03-20

BOREHOLE LOG

Borehole No.
101
2 / 3

EASTING: 285298.30
NORTHING: 6257342.21

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER / ROTARY WASHBORE **R.L. Surface:** 60.93 m
Date: 6/10/20 **Datum:** AHD
Plant Type: JK300 **Logged/Checked By:** S.D./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
					N=SPT 10/ 100mm REFUSAL	53	8			FILL: Silty gravelly clay, medium plasticity, grey, fine to coarse grained siltstone gravel. (continued)	w>PL		210	
					N = 10 5,5,5	52	9						300 300 260	HIGH 'TC' BIT RESISTANCE 'TC' BIT REFUSAL COMMENCE WASHBORING
					N = 15 0,5,10	50	11						280 350 350	
					N > 4 4,4/ 50mm REFUSAL	49	12							HIGH WASHBORING RESISTANCE
						48	13			REFER TO CORED BOREHOLE LOG				
						47								

Borehole No.

101

3 / 3

EASTING: 285298.30
NORTHING: 6257342.21

CORED BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Core Size:** **R.L. Surface:** 60.93 m
Date: 6/10/20 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK300 **Bearing:** N/A **Logged/Checked By:** S.D./N.E.S.

Water Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	SPACING (mm)	DEFECT DETAILS		Formation
										DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness	General	
			48		START CORING AT 12.96m							
			13		NO CORE 0.48m							
			47		SILTSTONE: dark grey, with occasional fine grained light grey sandstone laminae, bedded at 0-5°.	FR	M					
			14									
			46									
			15									
			45		SANDSTONE: fine to medium grained, grey, bedded at 0-5°.		H					
			16									
			44		SILTSTONE: dark grey, with fine grained light grey sandstone laminae, bedded at 0-5°.							
			17									
			43		SANDSTONE: fine to medium grained, grey, with dark grey siltstone laminae, bedded at 0-5°.							
			18									
			42		END OF BOREHOLE AT 18.62 m							

JK 9.02.4 LIB GLB Log JK CORED BOREHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 Datagel Lib and In Situ Tool DGD Lib JK 9.02.4 2019-05-31 Proj JK 9.01.0 2018-03-20

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FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

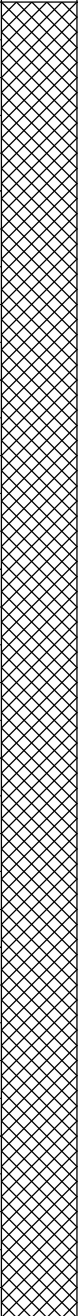
Borehole No.
102
1 / 4

EASTING: 285310.17
NORTHING: 6257309.56

BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 60.70 m
Date: 8/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
ON COMPLETION OF AUGERING					N > 32 11,19,13/ 50mm REFUSAL	60	1			FILL: Silty clay, medium plasticity, grey brown, with fine to medium grained siltstone gravel, trace of fine to medium grained ironstone and sandstone gravel.	w<PL		>600 >600 >600	APPEARS WELL COMPACTED
					N = 16 8,8,8	59	2						400 400	
					N = 8 3,4,4	58	3				w>PL		220 150 280	APPEARS MODERATELY COMPACTED
					N = 24 3,9,15	57	4			as above, but trace of brick fragments.			175	APPEARS WELL COMPACTED
					N = 18 9,10,8	56	5							
						55	6			FILL: Silty clay, medium plasticity, grey brown, with fine to medium grained siltstone gravel.				TOO FRIABLE FOR HP TESTING
						54								

JK 9.02.4 LIB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 08/11/2020 17:01 10.01.00.01 D:\geol\lib and in situ\Tool - DGD Lib JK 9.02.4 2019-05-31 Proj JK 9.01.0 2018-03-20

Borehole No.
102
2 / 4

EASTING: 285310.17
NORTHING: 6257309.56

BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 60.70 m
Date: 8/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
										FILL: Silty clayey gravel, fine to medium grained, siltstone, grey.	W			
					N = 7 4,4,3	53	8							APPEARS MODERATELY COMPACTED
						52	9			FILL: Gravelly silty clay, medium plasticity, grey brown, fine to medium grained siltstone gravel.	w~PL			
					N = 14 3,6,8	51	10							TOO FRIABLE FOR HP TESTING
						50	11			FILL: Silty clay, medium plasticity, grey brown, with fine to medium grained siltstone gravel.	w>PL	220 150		
					N = 13 4,3,10	49	12							BANDED SOIL STRENGTH TO MODERATE 'TC' BIT RESISTANCE
						48	13			FILL: Gravelly silty clay, medium plasticity, grey, fine to medium grained siltstone gravel.				
						47								TOO FRIABLE FOR HP TESTING
					N = 13 0,4,9									

JK 9.02.4 LIB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 D:\geol\lib and in situ\Tool_DGD\Lib JK 9.02.4 2019-05-31 Proj JK 9.01.0 2018-03-20

Borehole No.
102
3 / 4

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 60.70 m
Date: 8/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
						46			-	Interbedded SILTSTONE and SANDSTONE: fine grained, dark grey and light grey.	SW	M		BRINGELLY SHALE MODERATE TO HIGH RESISTANCE
						46				REFER TO CORED BOREHOLE LOG				
						15								
						45								
						16								
						44								
						17								
						43								
						18								
						42								
						19								
						41								
						20								
						40								

CORED BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Core Size:** **R.L. Surface:** 60.70 m
Date: 8/10/20 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK500 **Bearing:** N/A **Logged/Checked By:** A.C.K./N.E.S.

Water Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	SPACING (mm)	DEFECT DETAILS		Formation
										DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness	General	
					START CORING AT 14.71m							
		46	15		SILTSTONE: dark grey, with light grey laminae, bedded at 0-5°.	SW	M	0.70		(14.96m) XWS, 0°, 7 mm.t (15.03m) J, 60°, P, R, Cn (15.08m) XWS, 5°, 8 mm.t (15.21m) J, 65°, Un, R, Cn		
					SANDSTONE: fine grained, light grey, bedded at 0-10°.		H	3.5				
		45	16		NO CORE 0.10m	XW	Hd			(15.79m) J, 65°, Un, R, Cn		
					LAMINITE: fine grained sandstone and siltstone, dark grey and light grey, bedded at 0-5°.	FR	M - H	1.8		(16.01m) J, 25°, Un, S, Cn		
								3.0				
		44	17					1.2		(16.97m) XWS, 15°, 2 mm.t (16.99m) XWS, 0°, 5 mm.t		
								0.70				
		43	18					1.1		(17.84m) XWS, 0°, 1 mm.t (17.86m) XWS, 0°, 1 mm.t		
								1.9		(18.16m) XWS, 0°, 1 mm.t (18.26m) XWS, 0°, 1 mm.t		
		42	19		SANDSTONE: fine grained, light grey, bedded at 0-10°.			3.0				
					SILTSTONE: dark grey, with light grey laminae, bedded at 0-5°.			1.1		(18.98m) Cr, 5°, 40 mm.t (19.03m) XWS, 0°, 15 mm.t		
		41	20					0.80		(19.48m) J, 85°, C, R, Cn		
								0.90		(19.83m) XWS, 10°, 5 mm.t (19.90m) Cr, 0°, 30 mm.t, (COAL)		
		40			SANDSTONE: fine grained, light grey, with siltstone laminae, bedded at 0-5°.			3.0		(20.28m) J, 10°, P, S, Cn		
					END OF BOREHOLE AT 20.68 m							

BOREHOLE LOG

Borehole No.

103

1 / 3

EASTING: 285444.36
NORTHING: 6257324.75

Client: NSW DEPARTMENT OF EDUCATION

Project: PROPOSED PUBLIC SCHOOL

Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN

Method: SPIRAL AUGER

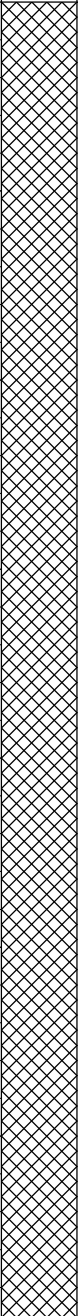
R.L. Surface: 58.97 m

Date: 7/10/20

Datum: AHD

Plant Type: JK500

Logged/Checked By: A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
ON COMPLETION OF AUGERING					N = 24 3,11,13	58	1			FILL: Silty clay, medium plasticity, grey brown, with fine to medium grained siltstone gravel, trace of fine to medium grained ironstone and sandstone gravel.	w<PL		>600 >600 >600	APPEARS WELL COMPACTED
					N = 17 5,7,10	57	2						480 330 >600	
					N = 17 4,7,10	56	3						>600 350 >600	
					N = 15 5,7,8	54	5							
					N = 15 5,7,8	53	6						470 470	TOO GRAVELLY FOR HP TESTING

BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 58.97 m
Date: 7/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
										FILL: Silty clay, medium plasticity, grey brown, with fine to medium grained siltstone gravel, trace of fine to medium grained ironstone and sandstone gravel. (continued)	w-PL			APPEARS MODERATELY COMPACTED
					N = 8 4,4,4	51	8						500 250 300	
					N = 8 3,3,5	50	9			FILL Gravelly clay, medium plasticity, grey, fine to medium grained siltstone gravel.	w>PL		370 170	
						49	10							
					N = 11 4,5,6	48	11		-	SILTSTONE: dark grey, with extremely weathered bands.	SW	H		BRINGELLY SHALE MODERATE TO HIGH 'TC' BIT RESISTANCE WITH LOW BANDS
						47	12							
						46	13			REFER TO CORED BOREHOLE LOG				

JK 9.024.LIB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 D:\gel Lib and In Situ Tool - DGD Lib JK 9.024.2019-05-31 Proj JK 9.01.0.2018-03-20

CORED BOREHOLE LOG

Borehole No.
103
3 / 3

EASTING: 285444.36
NORTHING: 6257324.75

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Core Size:** **R.L. Surface:** 58.97 m
Date: 7/10/20 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK500 **Bearing:** N/A **Logged/Checked By:** A.C.K./N.E.S.

Water Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components START CORING AT 12.13m	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$ VL-0.1 L-0.3 M-1 H-3 VH-10 EH	SPACING (mm) 600 200 60 20	DEFECT DETAILS		Formation
										DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness	General	
			46	13	LAMINITE: fine grained sandstone and siltstone, dark grey and light grey, bedded at 0-5°.	FR	H	1.2		(12.15m) XWS, 0°, 2 mm.t		Bringelly Shale
					SANDSTONE: fine grained, light grey, with dark grey laminae, bedded at 0-5°.			1.7				
								4.5				
								2.8				
			45	14	LAMINITE: fine grained sandstone and siltstone, dark grey and light grey, bedded at 0-5°.			1.4		(13.46m) J, 55°, P, R, Cn		
								3.6				
			44	15		SW	L - M	0.70		(15.04m) XWS, 0°, 3 mm.t (15.08m) XWS, 0°, 8 mm.t (15.10m) XWS, 0°, 4 mm.t (15.14m) XWS, 0°, 2 mm.t (15.19m) XWS, 0°, 15 mm.t (15.22m) XWS, 0°, 2 mm.t (15.30m) XWS, 0°, 20 mm.t (15.34m) XWS, 0°, 1 mm.t (15.52m) XWS, 0°, 30 mm.t (15.56m) XWS, 0°, 1 mm.t (15.67m) XWS, 5°, 2 mm.t (15.84m) Cr, 0°, 30 mm.t		
								0.50				
			43	16	SANDSTONE: fine to medium grained, light grey, irregular bedding.	FR	H	2.0				
					LAMINITE: fine grained sandstone and siltstone, dark grey and light grey, bedded at 0-5°.			1.8				
			42	17		SW	M	0.60		(17.52m) J, 40°, Ir, R, Cn		
						FR	H					
			41	18						(17.99m) J, 40°, P, S, Cn (18.02m) J, 40°, P, S, Cn		
					END OF BOREHOLE AT 18.04 m							

BOREHOLE LOG

Borehole No.
104
1 / 5

EASTING: 285329.23
NORTHING: 6257234.71

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 62.41 m
Date: 6/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
ON COMPLETION OF AUGERING						62				FILL: Silty clay, medium plasticity, orange brown and grey brown, with fine to medium grained ironstone and siltstone gravel.	w<PL		270 490 450	APPEARS MODERATELY COMPACTED
					N = 8 3,4,4		1			as above, but grey brown.				
						61							485 >600 >600	APPEARS WELL COMPACTED
					N = 13 5,6,7		2							
						60								
						59							>600 >600 >600	
					N = 15 5,6,9		3							
						58				FILL: Silty clay, medium plasticity, grey, with fine to medium grained siltstone gravel.				
					N=SPT 8/ 150mm REFUSAL		4							TOO FRIABLE FOR HP TESTING
						57								
					N=SPT 10/ 150mm REFUSAL		5							SOIL STRENGTH 'TC' BIT RESISTANCE WITH MODERATE TO HIGH BANDS

JK 9.024.LIB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 D:\gel Lab and In Situ Tool- DGD Lib JK 9.024.2019-05-31 Proj JK 9.01.0 2018-03-20

BOREHOLE LOG

Borehole No.
104
2 / 5

EASTING: 285329.23
NORTHING: 6257234.71

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 62.41 m
Date: 6/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
										FILL: Silty clay, medium plasticity, grey, with fine to medium grained siltstone gravel. (continued)	w<PL			
					N = 19 2,9,10		55							
							8							
							54				w>PL			
					N = 15 3,6,9		9						170 230	
							53							
							10			FILL: Gravelly silty clay, medium plasticity, grey, fine to medium grained siltstone gravel.				
					N = 17 5,9,8		52							
							11							TOO GRAVELLY FOR HP TESTING
							51							
					N = 12 4,5,7		12							
							50							
							13							
					N = 17 4,6,11		49			as above, but trace of fine to medium grained sandstone gravel.				

JK 9.02.4.LB.GLB Log JK AUGERHOLE - MASTER 33177PN GLENMOREPARK.GPJ <<DrawingFile>> 03/11/2020 17:01 10.01.00.01 D:\geol\lab and in situ\Tool_DGD\Lib JK 9.02.4.2019-05-31 Proj JK 9.01.0.2018-03-20

Borehole No.
104
3 / 5

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Method:** SPIRAL AUGER **R.L. Surface:** 62.41 m
Date: 6/10/20 **Datum:** AHD
Plant Type: JK500 **Logged/Checked By:** A.C.K./N.E.S.

Groundwater Record	SAMPLES				Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
	ES	U50	DB	DS										
						48			-	SILTSTONE: dark grey.	w>PL SW	H		HIGH RESISTANCE
						15				REFER TO CORED BOREHOLE LOG				
						47								
						16								
						46								
						17								
						45								
						18								
						44								
						19								
						43								
						20								
						42								

CORED BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Core Size:** **R.L. Surface:** 62.41 m
Date: 6/10/20 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK500 **Bearing:** N/A **Logged/Checked By:** A.C.K./N.E.S.

Water Loss/Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	SPACING (mm)	DEFECT DETAILS		Formation
										DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness	General	
		48										
		15			START CORING AT 15.03m							
		47			SILTSTONE: dark grey, with light grey fine grained sandstone seams, bedded at 0-5°.	FR	M - H	0.80		(15.52m) J, 85°, C, R, Cn		
		16						1.0		(15.86m) Cr, 15°, 20 mm.t		
		46			NO CORE 0.12m			2.0		(16.02m) XWS, 10°, 5 mm.t		
		17			SILTSTONE: dark grey, with light grey fine grained sandstone seams, bedded at 0-5°.	XW	Hd	0.50		(16.32m) XWS, 5°, 10 mm.t		
		45				FR	M	0.30		(16.69m) XWS, 5°, 2 mm.t		
		18			SANDSTONE: fine grained, light grey, with grey laminae, bedded at 0-5°.		H - VH	1.0				
		44						4.4				
		19			LAMINITE: fine grained sandstone and siltstone, light grey and dark grey, bedded at 0-5°.		M	0.50				
		43						0.80		(19.43m) XWS, 5°, 3 mm.t		
		20					H - VH	1.1				
		42						1.9				

Borehole No.

104

5 / 5

EASTING: 285329.23
NORTHING: 6257234.71

CORED BOREHOLE LOG

Client: NSW DEPARTMENT OF EDUCATION
Project: PROPOSED PUBLIC SCHOOL
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Job No.: 33177PN **Core Size:** **R.L. Surface:** 62.41 m
Date: 6/10/20 **Inclination:** VERTICAL **Datum:** AHD
Plant Type: JK500 **Bearing:** N/A **Logged/Checked By:** A.C.K./N.E.S.

Water Loss/Level	Barrel Lift	RL (m AHD)	Depth (m)	Graphic Log	CORE DESCRIPTION Rock Type, grain characteristics, colour, texture and fabric, features, inclusions and minor components	Weathering	Strength	POINT LOAD STRENGTH INDEX $I_p(50)$	DEFECT DETAILS		Formation
									SPACING (mm)	DESCRIPTION Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness	
								VL-0.1 L-0.3 M-1 H-3 VH-10 EH	600 200 60 20	Specific General	
					SANDSTONE: fine to medium grained, light grey. (continued) END OF BOREHOLE AT 21.16 m	FR	H	3.6			
		41									
			22								
		40									
			23								
		39									
			24								
		38							600 200 60 20		
			25								
		37									
			26								
		36									
			27								
		35									

ENVIRONMENTAL LOGS EXPLANATION NOTES

INTRODUCTION

These notes have been provided to amplify the environmental report in regard to classification methods, field procedures and certain matters relating to the logging of soil and rock. Not all notes are necessarily relevant to all reports.

Where geotechnical borehole logs are utilised for environmental purpose, reference should also be made to the explanatory notes included in the geotechnical report. Environmental logs are not suitable for geotechnical purposes.

The ground is a product of continuing natural and man-made processes and therefore exhibits a variety of characteristics and properties which vary from place to place and can change with time. Environmental studies include gathering and assimilating limited facts about these characteristics and properties in order to understand or predict the behaviour of the ground on a particular site under certain conditions. This report may contain such facts obtained by inspection, excavation, probing, sampling, testing or other means of investigation. If so, they are directly relevant only to the ground at the place where and time when the investigation was carried out.

DESCRIPTION AND CLASSIFICATION METHODS

The methods of description and classification of soils and rocks used in this report are based on Australian Standard 1726:2017 'Geotechnical Site Investigations'. In general, descriptions cover the following properties – soil or rock type, colour, structure, strength or density, and inclusions. Identification and classification of soil and rock involves judgement and the Company infers accuracy only to the extent that is common in current geoenvironmental practice.

Soil types are described according to the predominating particle size and behaviour as set out in the attached soil classification table qualified by the grading of other particles present (eg. sandy clay) as set out below:

Soil Classification	Particle Size
Clay	< 0.002mm
Silt	0.002 to 0.075mm
Sand	0.075 to 2.36mm
Gravel	2.36 to 63mm
Cobbles	63 to 200mm
Boulders	> 200mm

Non-cohesive soils are classified on the basis of relative density, generally from the results of Standard Penetration Test (SPT) as below:

Relative Density	SPT 'N' Value (blows/300mm)
Very loose (VL)	< 4
Loose (L)	4 to 10
Medium dense (MD)	10 to 30
Dense (D)	30 to 50
Very Dense (VD)	> 50

Cohesive soils are classified on the basis of strength (consistency) either by use of a hand penetrometer, vane shear, laboratory testing and/or tactile engineering examination. The strength terms are defined as follows.

Classification	Unconfined Compressive Strength (kPa)	Indicative Undrained Shear Strength (kPa)
Very Soft (VS)	≤ 25	≤ 12
Soft (S)	> 25 and ≤ 50	> 12 and ≤ 25
Firm (F)	> 50 and ≤ 100	> 25 and ≤ 50
Stiff (St)	> 100 and ≤ 200	> 50 and ≤ 100
Very Stiff (VSt)	> 200 and ≤ 400	> 100 and ≤ 200
Hard (Hd)	> 400	> 200
Friable (Fr)	Strength not attainable – soil crumbles	

Rock types are classified by their geological names, together with descriptive terms regarding weathering, strength, defects, etc. Where relevant, further information regarding rock classification is given in the text of the report. In the Sydney Basin, 'shale' is used to describe fissile mudstone, with a weakness parallel to bedding. Rocks with alternating inter-laminations of different grain size (eg. siltstone/claystone and siltstone/fine grained sandstone) are referred to as 'laminite'.

INVESTIGATION METHODS

The following is a brief summary of investigation methods currently adopted by the Company and some comments on their use and application. All methods except test pits, hand auger drilling and portable Dynamic Cone Penetrometers require the use of a mechanical rig which is commonly mounted on a truck chassis or track base.

Test Pits: These are normally excavated with a backhoe or a tracked excavator, allowing close examination of the insitu soils and 'weaker' bedrock if it is safe to descend into the pit. The depth of penetration is limited to about 3m for a backhoe and up to 6m for a large excavator. Limitations of test pits are the problems associated with disturbance and difficulty of reinstatement and the consequent effects on close-by structures. Care must be taken if construction is to be carried out near test pit locations to either properly recompact the backfill during construction or to design and construct the

structure so as not to be adversely affected by poorly compacted backfill at the test pit location.

Hand Auger Drilling: A borehole of 50mm to 100mm diameter is advanced by manually operated equipment. Refusal of the hand auger can occur on a variety of materials such as obstructions within any fill, tree roots, hard clay, gravel or ironstone, cobbles and boulders, and does not necessarily indicate rock level.

Continuous Spiral Flight Augers: The borehole is advanced using 75mm to 115mm diameter continuous spiral flight augers, which are withdrawn at intervals to allow sampling and insitu testing. This is a relatively economical means of drilling in clays and in sands above the water table. Samples are returned to the surface by the flights or may be collected after withdrawal of the auger flights, but they can be very disturbed and layers may become mixed. Information from the auger sampling (as distinct from specific sampling by SPTs or undisturbed samples) is of limited reliability due to mixing or softening of samples by groundwater, or uncertainties as to the original depth of the samples. Augering below the groundwater table is of even lesser reliability than augering above the water table.

Rock Augering: Use can be made of a Tungsten Carbide (TC) bit for auger drilling into rock to indicate rock quality and continuity by variation in drilling resistance and from examination of recovered rock cuttings. This method of investigation is quick and relatively inexpensive but provides only an indication of the likely rock strength and predicted values may be in error by a strength order. Where rock strengths may have a significant impact on construction feasibility or costs, then further investigation by means of cored boreholes may be warranted.

Wash Boring: The borehole is usually advanced by a rotary bit, with water being pumped down the drill rods and returned up the annulus, carrying the drill cuttings. Only major changes in stratification can be assessed from the cuttings, together with some information from “feel” and rate of penetration.

Mud Stabilised Drilling: Either Wash Boring or Continuous Core Drilling can use drilling mud as a circulating fluid to stabilise the borehole. The term ‘mud’ encompasses a range of products ranging from bentonite to polymers. The mud tends to mask the cuttings and reliable identification is only possible from intermittent intact sampling (eg. from SPT and U50 samples) or from rock coring, etc.

Continuous Core Drilling: A continuous core sample is obtained using a diamond tipped core barrel. Provided full core recovery is achieved (which is not always possible in very low strength rocks and granular soils), this technique provides a very reliable (but relatively expensive) method of investigation. In rocks, NMLC or HQ triple tube core barrels, which give a core of about 50mm and 61mm diameter, respectively, is usually used with water flush. The length of core recovered is compared to the length drilled and any length not recovered is shown as NO CORE. The location of NO CORE recovery is determined on site by the supervising engineer; where the location is uncertain, the loss is placed at the bottom of the drill run.

Standard Penetration Tests: Standard Penetration Tests (SPT) are used mainly in non-cohesive soils, but can also be used in cohesive soils, as a means of indicating density or strength and also of obtaining a relatively undisturbed sample. The test procedure is

described in Australian Standard 1289.6.3.1–2004 (R2016) ‘*Methods of Testing Soils for Engineering Purposes, Soil Strength and Consolidation Tests – Determination of the Penetration Resistance of a Soil – Standard Penetration Test (SPT)*’.

The test is carried out in a borehole by driving a 50mm diameter split sample tube with a tapered shoe, under the impact of a 63.5kg hammer with a free fall of 760mm. It is normal for the tube to be driven in three successive 150mm increments and the ‘N’ value is taken as the number of blows for the last 300mm. In dense sands, very hard clays or weak rock, the full 450mm penetration may not be practicable and the test is discontinued.

The test results are reported in the following form:

- In the case where full penetration is obtained with successive blow counts for each 150mm of, say, 4, 6 and 7 blows, as

N = 13
4, 6, 7

- In a case where the test is discontinued short of full penetration, say after 15 blows for the first 150mm and 30 blows for the next 40mm, as

N > 30
15, 30/40mm

The results of the test can be related empirically to the engineering properties of the soil.

A modification to the SPT is where the same driving system is used with a solid 60° tipped steel cone of the same diameter as the SPT hollow sampler. The solid cone can be continuously driven for some distance in soft clays or loose sands, or may be used where damage would otherwise occur to the SPT. The results of this Solid Cone Penetration Test (SCPT) are shown as ‘N_c’ on the borehole logs, together with the number of blows per 150mm penetration.

LOGS

The borehole or test pit logs presented herein are an interpretation of the subsurface conditions, and their reliability will depend to some extent on the frequency of sampling and the method of drilling or excavation. Ideally, continuous undisturbed sampling or core drilling will enable the most reliable assessment, but is not always practicable or possible to justify on economic grounds. In any case, the boreholes or test pits represent only a very small sample of the total subsurface conditions.

The terms and symbols used in preparation of the logs are defined in the following pages.

Interpretation of the information shown on the logs, and its application to design and construction, should therefore take into account the spacing of boreholes or test pits, the method of drilling or excavation, the frequency of sampling and testing and the possibility of other than ‘straight line’ variations between the boreholes or test pits. Subsurface conditions between boreholes or test pits may vary significantly from conditions encountered at the borehole or test pit locations.

GROUNDWATER

Where groundwater levels are measured in boreholes, there are several potential problems:

- Although groundwater may be present, in low permeability soils it may enter the hole slowly or perhaps not at all during the time it is left open.
- A localised perched water table may lead to an erroneous indication of the true water table.
- Water table levels will vary from time to time with seasons or recent weather changes and may not be the same at the time of construction.
- The use of water or mud as a drilling fluid will mask any groundwater inflow. Water has to be blown out of the hole and drilling mud must be washed out of the hole or 'reverted' chemically if reliable water observations are to be made.

More reliable measurements can be made by installing standpipes which are read after the groundwater level has stabilised at intervals ranging from several days to perhaps weeks for low permeability soils. Piezometers, sealed in a particular stratum, may be advisable in low permeability soils or where there may be interference from perched water tables or surface water.

FILL

The presence of fill materials can often be determined only by the inclusion of foreign objects (eg. bricks, steel, etc) or by distinctly unusual colour, texture or fabric. Identification of the extent of fill materials will also depend on investigation methods and frequency. Where natural soils similar to those at the site are used for fill, it may be difficult with limited testing and sampling to reliably assess the extent of the fill.

The presence of fill materials is usually regarded with caution as the possible variation in density and material type is much greater than with natural soil deposits. Consequently, there is an increased risk of adverse environmental characteristics or behaviour. If the volume and nature of fill is of importance to a project, then frequent test pit excavations are preferable to boreholes.

LABORATORY TESTING

Laboratory testing has not been undertaken to confirm the soil classification and rock strengths indicated on the environmental logs unless noted in the report.

SYMBOL LEGENDS

SOIL



FILL



TOPSOIL



CLAY (CL, CI, CH)



SILT (ML, MH)



SAND (SP, SW)



GRAVEL (GP, GW)



SANDY CLAY (CL, CI, CH)



SILTY CLAY (CL, CI, CH)



CLAYEY SAND (SC)



SILTY SAND (SM)



GRAVELLY CLAY (CL, CI, CH)



CLAYEY GRAVEL (GC)



SANDY SILT (ML, MH)



PEAT AND HIGHLY ORGANIC SOILS (Pt)

ROCK



CONGLOMERATE



SANDSTONE



SHALE/MUDSTONE



SILTSTONE



CLAYSTONE



COAL



LAMINITE



LIMESTONE



PHYLLITE, SCHIST



TUFF



GRANITE, GABBRO



DOLERITE, DIORITE



BASALT, ANDESITE



QUARTZITE

OTHER MATERIALS



BRICKS OR PAVERS



CONCRETE



ASPHALTIC CONCRETE

CLASSIFICATION OF COARSE AND FINE GRAINED SOILS

Major Divisions		Group Symbol	Typical Names	Field Classification of Sand and Gravel	Laboratory Classification	
Coarse grained soil (more than 60% of soil excluding oversize fraction is greater than 0.075mm)	GRAVEL (more than half of coarse fraction is larger than 2.36mm)	GW	Gravel and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 4$ $1 < C_c < 3$
		GP	Gravel and gravel-sand mixtures, little or no fines, uniform gravels	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		GM	Gravel-silt mixtures and gravel-sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	Fines behave as silt
		GC	Gravel-clay mixtures and gravel-sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	Fines behave as clay
	SAND (more than half of coarse fraction is smaller than 2.36mm)	SW	Sand and gravel-sand mixtures, little or no fines	Wide range in grain size and substantial amounts of all intermediate sizes, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	$C_u > 6$ $1 < C_c < 3$
		SP	Sand and gravel-sand mixtures, little or no fines	Predominantly one size or range of sizes with some intermediate sizes missing, not enough fines to bind coarse grains, no dry strength	≤ 5% fines	Fails to comply with above
		SM	Sand-silt mixtures	'Dirty' materials with excess of non-plastic fines, zero to medium dry strength	≥ 12% fines, fines are silty	N/A
		SC	Sand-clay mixtures	'Dirty' materials with excess of plastic fines, medium to high dry strength	≥ 12% fines, fines are clayey	

Laboratory Classification Criteria

A well graded coarse grained soil is one for which the coefficient of uniformity $C_u > 4$ and the coefficient of curvature $1 < C_c < 3$. Otherwise, the soil is poorly graded. These coefficients are given by:

$$C_u = \frac{D_{60}}{D_{10}} \quad \text{and} \quad C_c = \frac{(D_{30})^2}{D_{10} D_{60}}$$

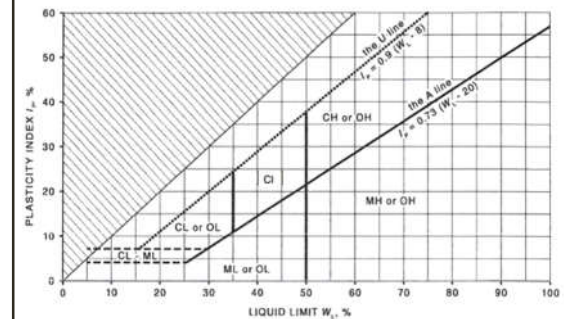
Where D_{10} , D_{30} and D_{60} are those grain sizes for which 10%, 30% and 60% of the soil grains, respectively, are smaller.

NOTES:

- For a coarse grained soil with a fines content between 5% and 12%, the soil is given a dual classification comprising the two group symbols separated by a dash; for example, for a poorly graded gravel with between 5% and 12% silt fines, the classification is GP-GM.
- Where the grading is determined from laboratory tests, it is defined by coefficients of curvature (C_c) and uniformity (C_u) derived from the particle size distribution curve.
- Clay soils with liquid limits $> 35\%$ and $\leq 50\%$ may be classified as being of medium plasticity.
- The U line on the Modified Casagrande Chart is an approximate upper bound for most natural soils.

Major Divisions		Group Symbol	Typical Names	Field Classification of Silt and Clay			Laboratory Classification
				Dry Strength	Dilatancy	Toughness	% < 0.075mm
fine grained soils (more than 35% of soil excluding oversize fraction is less than 0.075mm)	SILT and CLAY (low to medium plasticity)	ML	Inorganic silt and very fine sand, rock flour, silty or clayey fine sand or silt with low plasticity	None to low	Slow to rapid	Low	Below A line
		CL, CI	Inorganic clay of low to medium plasticity, gravelly clay, sandy clay	Medium to high	None to slow	Medium	Above A line
		OL	Organic silt	Low to medium	Slow	Low	Below A line
	SILT and CLAY (high plasticity)	MH	Inorganic silt	Low to medium	None to slow	Low to medium	Below A line
		CH	Inorganic clay of high plasticity	High to very high	None	High	Above A line
		OH	Organic clay of medium to high plasticity, organic silt	Medium to high	None to very slow	Low to medium	Below A line
	Highly organic soil	Pt	Peat, highly organic soil	–	–	–	–

Modified Casagrande Chart for Classifying Silts and Clays according to their Behaviour





LOG SYMBOLS

Log Column	Symbol	Definition
Groundwater Record		Standing water level. Time delay following completion of drilling/excavation may be shown.
		Extent of borehole/test pit collapse shortly after drilling/excavation.
		Groundwater seepage into borehole or test pit noted during drilling or excavation.
Samples	ES	Sample taken over depth indicated, for environmental analysis.
	U50	Undisturbed 50mm diameter tube sample taken over depth indicated.
	DB	Bulk disturbed sample taken over depth indicated.
	DS	Small disturbed bag sample taken over depth indicated.
	ASB	Soil sample taken over depth indicated, for asbestos analysis.
	ASS	Soil sample taken over depth indicated, for acid sulfate soil analysis.
	SAL	Soil sample taken over depth indicated, for salinity analysis.
Field Tests	N = 17 4, 7, 10	Standard Penetration Test (SPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration. 'Refusal' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	N _c = 5 7 3R	Solid Cone Penetration Test (SCPT) performed between depths indicated by lines. Individual figures show blows per 150mm penetration for 60° solid cone driven by SPT hammer. 'R' refers to apparent hammer refusal within the corresponding 150mm depth increment.
	VNS = 25 PID = 100	Vane shear reading in kPa of undrained shear strength. Photoionisation detector reading in ppm (soil sample headspace test).
Moisture Condition (Fine Grained Soils)	w > PL	Moisture content estimated to be greater than plastic limit.
	w ≈ PL	Moisture content estimated to be approximately equal to plastic limit.
	w < PL	Moisture content estimated to be less than plastic limit.
	w ≈ LL	Moisture content estimated to be near liquid limit.
	w > LL	Moisture content estimated to be wet of liquid limit.
(Coarse Grained Soils)	D	DRY – runs freely through fingers.
	M	MOIST – does not run freely but no free water visible on soil surface.
	W	WET – free water visible on soil surface.
Strength (Consistency) Cohesive Soils	VS	VERY SOFT – unconfined compressive strength ≤ 25kPa.
	S	SOFT – unconfined compressive strength > 25kPa and ≤ 50kPa.
	F	FIRM – unconfined compressive strength > 50kPa and ≤ 100kPa.
	St	STIFF – unconfined compressive strength > 100kPa and ≤ 200kPa.
	VSt	VERY STIFF – unconfined compressive strength > 200kPa and ≤ 400kPa.
	Hd	HARD – unconfined compressive strength > 400kPa.
	Fr	FRIABLE – strength not attainable, soil crumbles.
	()	Bracketed symbol indicates estimated consistency based on tactile examination or other assessment.
Density Index/ Relative Density (Cohesionless Soils)	VL	VERY LOOSE
	L	LOOSE
	MD	MEDIUM DENSE
	D	DENSE
	VD	VERY DENSE
	()	Bracketed symbol indicates estimated density based on ease of drilling or other assessment.
Hand Penetrometer Readings	300	Measures reading in kPa of unconfined compressive strength. Numbers indicate individual test results on representative undisturbed material unless noted otherwise.
	250	



Log Column	Symbol	Definition
Remarks	'V' bit	Hardened steel 'V' shaped bit.
	'TC' bit	Twin pronged tungsten carbide bit.
	T ₆₀	Penetration of auger string in mm under static load of rig applied by drill head hydraulics without rotation of augers.
	Soil Origin	The geological origin of the soil can generally be described as:
	RESIDUAL	– soil formed directly from insitu weathering of the underlying rock. No visible structure or fabric of the parent rock.
	EXTREMELY WEATHERED	– soil formed directly from insitu weathering of the underlying rock. Material is of soil strength but retains the structure and/or fabric of the parent rock.
	ALLUVIAL	– soil deposited by creeks and rivers.
	ESTUARINE	– soil deposited in coastal estuaries, including sediments caused by inflowing creeks and rivers, and tidal currents.
	MARINE	– soil deposited in a marine environment.
	AEOLIAN	– soil carried and deposited by wind.
	COLLUVIAL	– soil and rock debris transported downslope by gravity, with or without the assistance of flowing water. Colluvium is usually a thick deposit formed from a landslide. The description 'slopewash' is used for thinner surficial deposits.
	LITTORAL	– beach deposited soil.

Classification of Material Weathering

Term		Abbreviation		Definition
Residual Soil		RS		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are no longer visible, but the soil has not been significantly transported.
Extremely Weathered		XW		Material is weathered to such an extent that it has soil properties. Mass structure and material texture and fabric of original rock are still visible.
Highly Weathered	Distinctly Weathered (Note 1)	HW	DW	The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable. Rock strength is significantly changed by weathering. Some primary minerals have weathered to clay minerals. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores.
Moderately Weathered		MW		The whole of the rock material is discoloured, usually by iron staining or bleaching to the extent that the colour of the original rock is not recognisable, but shows little or no change of strength from fresh rock.
Slightly Weathered		SW		Rock is partially discoloured with staining or bleaching along joints but shows little or no change of strength from fresh rock.
Fresh		FR		Rock shows no sign of decomposition of individual minerals or colour changes.

NOTE 1: The term 'Distinctly Weathered' is used where it is not practicable to distinguish between 'Highly Weathered' and 'Moderately Weathered' rock. 'Distinctly Weathered' is defined as follows: 'Rock strength usually changed by weathering. The rock may be highly discoloured, usually by iron staining. Porosity may be increased by leaching, or may be decreased due to deposition of weathering products in pores'. There is some change in rock strength.

Rock Material Strength Classification

Term	Abbreviation	Uniaxial Compressive Strength (MPa)	Guide to Strength	
			Point Load Strength Index $Is_{(50)}$ (MPa)	Field Assessment
Very Low Strength	VL	0.6 to 2	0.03 to 0.1	Material crumbles under firm blows with sharp end of pick; can be peeled with knife; too hard to cut a triaxial sample by hand. Pieces up to 30mm thick can be broken by finger pressure.
Low Strength	L	2 to 6	0.1 to 0.3	Easily scored with a knife; indentations 1mm to 3mm show in the specimen with firm blows of the pick point; has dull sound under hammer. A piece of core 150mm long by 50mm diameter may be broken by hand. Sharp edges of core may be friable and break during handling.
Medium Strength	M	6 to 20	0.3 to 1	Scored with a knife; a piece of core 150mm long by 50mm diameter can be broken by hand with difficulty.
High Strength	H	20 to 60	1 to 3	A piece of core 150mm long by 50mm diameter cannot be broken by hand but can be broken by a pick with a single firm blow; rock rings under hammer.
Very High Strength	VH	60 to 200	3 to 10	Hand specimen breaks with pick after more than one blow; rock rings under hammer.
Extremely High Strength	EH	> 200	> 10	Specimen requires many blows with geological pick to break through intact material; rock rings under hammer.



Appendix E: Laboratory Reports & COC Documents

CERTIFICATE OF ANALYSIS 253071

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	<u>E33177P, Glenmore Park</u>
Number of Samples	21 Soil
Date samples received	09/10/2020
Date completed instructions received	09/10/2020

Analysis Details

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

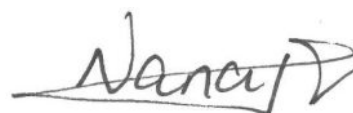
Report Details

Date results requested by	16/10/2020
Date of Issue	14/10/2020
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
 Hannah Nguyen, Senior Chemist
 Manju Dewendrage, Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253071-1	253071-2	253071-3	253071-4	253071-5
Your Reference	UNITS	BH102	BH102	BH102	BH102	BH102
Depth		3-3.45	4.5-4.95	6-6.45	7.5-7.95	9-9.45
Date Sampled		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	83	110	113	109	86

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253071-6	253071-7	253071-8	253071-9	253071-10
Your Reference	UNITS	BH102	BH102	BH103	BH103	BH103
Depth		10.5-10.95	13.5-13.95	3-3.45	4.5-4.95	6-6.45
Date Sampled		08/10/2020	08/10/2020	07/10/2020	07/10/2020	07/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	127	125	113	108	104

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253071-11	253071-12	253071-13	253071-14	253071-15
Your Reference	UNITS	BH103	BH103	BH103	BH104	BH104
Depth		7.5-7.95	9-9.45	10.5-10.95	3-3.45	4.5-4.65
Date Sampled		07/10/2020	07/10/2020	07/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	109	97	102	119	119

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253071-16	253071-17	253071-18	253071-19	253071-20
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		6-6.15	7.5-7.95	9-9.45	10.5-10.95	12-12.45
Date Sampled		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	113	130	92	95	124

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		253071-21
Your Reference	UNITS	BH104
Depth		13.5-13.95
Date Sampled		06/10/2020
Type of sample		Soil
Date extracted	-	12/10/2020
Date analysed	-	12/10/2020
TRH C ₆ - C ₉	mg/kg	<25
TRH C ₆ - C ₁₀	mg/kg	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25
Benzene	mg/kg	<0.2
Toluene	mg/kg	<0.5
Ethylbenzene	mg/kg	<1
m+p-xylene	mg/kg	<2
o-Xylene	mg/kg	<1
naphthalene	mg/kg	<1
Total +ve Xylenes	mg/kg	<3
Surrogate aaa-Trifluorotoluene	%	123

svTRH (C10-C40) in Soil						
Our Reference	UNITS	253071-1	253071-2	253071-3	253071-4	253071-5
Your Reference		BH102	BH102	BH102	BH102	BH102
Depth		3-3.45	4.5-4.95	6-6.45	7.5-7.95	9-9.45
Date Sampled		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	110	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	160	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	160	<50	<50	<50
Surrogate o-Terphenyl	%	97	108	91	94	94

svTRH (C10-C40) in Soil						
Our Reference	UNITS	253071-6	253071-7	253071-8	253071-9	253071-10
Your Reference		BH102	BH102	BH103	BH103	BH103
Depth		10.5-10.95	13.5-13.95	3-3.45	4.5-4.95	6-6.45
Date Sampled		08/10/2020	08/10/2020	07/10/2020	07/10/2020	07/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	75	86	93	92

svTRH (C10-C40) in Soil

Our Reference		253071-11	253071-12	253071-13	253071-14	253071-15
Your Reference	UNITS	BH103	BH103	BH103	BH104	BH104
Depth		7.5-7.95	9-9.45	10.5-10.95	3-3.45	4.5-4.65
Date Sampled		07/10/2020	07/10/2020	07/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	91	88	96	91	93

svTRH (C10-C40) in Soil

Our Reference		253071-16	253071-17	253071-18	253071-19	253071-20
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		6-6.15	7.5-7.95	9-9.45	10.5-10.95	12-12.45
Date Sampled		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	92	92	100	96	94

svTRH (C10-C40) in Soil		
Our Reference		253071-21
Your Reference	UNITS	BH104
Depth		13.5-13.95
Date Sampled		06/10/2020
Type of sample		Soil
Date extracted	-	12/10/2020
Date analysed	-	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	92

PAHs in Soil						
Our Reference		253071-1	253071-2	253071-3	253071-4	253071-5
Your Reference	UNITS	BH102	BH102	BH102	BH102	BH102
Depth		3-3.45	4.5-4.95	6-6.45	7.5-7.95	9-9.45
Date Sampled		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Naphthalene	mg/kg	<0.1	0.2	0.3	0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	0.2	<0.1	0.3
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.4	0.50	0.1	0.56
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	94	92	92	95	91

PAHs in Soil						
Our Reference		253071-6	253071-7	253071-8	253071-9	253071-10
Your Reference	UNITS	BH102	BH102	BH103	BH103	BH103
Depth		10.5-10.95	13.5-13.95	3-3.45	4.5-4.95	6-6.45
Date Sampled		08/10/2020	08/10/2020	07/10/2020	07/10/2020	07/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Naphthalene	mg/kg	<0.1	0.2	<0.1	0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.3	0.1	0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.5	0.1	0.2	0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	90	94	93	89

PAHs in Soil						
Our Reference		253071-11	253071-12	253071-13	253071-14	253071-15
Your Reference	UNITS	BH103	BH103	BH103	BH104	BH104
Depth		7.5-7.95	9-9.45	10.5-10.95	3-3.45	4.5-4.65
Date Sampled		07/10/2020	07/10/2020	07/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Naphthalene	mg/kg	0.1	<0.1	0.4	0.2	0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	0.3	0.2	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.3	<0.05	0.71	0.4	0.2
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	93	97	93	121	94

PAHs in Soil						
Our Reference		253071-16	253071-17	253071-18	253071-19	253071-20
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		6-6.15	7.5-7.95	9-9.45	10.5-10.95	12-12.45
Date Sampled		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Naphthalene	mg/kg	0.3	0.2	<0.1	0.3	0.2
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	0.2	0.7	0.2	0.3
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	0.06
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.51	0.4	1.1	0.5	0.57
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	94	94	94	94	97

PAHs in Soil		
Our Reference		253071-21
Your Reference	UNITS	BH104
Depth		13.5-13.95
Date Sampled		06/10/2020
Type of sample		Soil
Date extracted	-	12/10/2020
Date analysed	-	12/10/2020
Naphthalene	mg/kg	0.4
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	0.2
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	0.56
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	92

Acid Extractable metals in soil

Our Reference		253071-1	253071-2	253071-3	253071-4	253071-5
Your Reference	UNITS	BH102	BH102	BH102	BH102	BH102
Depth		3-3.45	4.5-4.95	6-6.45	7.5-7.95	9-9.45
Date Sampled		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Arsenic	mg/kg	<4	<4	5	<4	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	7	9	8	5
Copper	mg/kg	22	31	39	31	40
Lead	mg/kg	9	11	12	10	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	12	15	14	22
Zinc	mg/kg	31	78	64	51	57

Acid Extractable metals in soil

Our Reference		253071-6	253071-7	253071-8	253071-9	253071-10
Your Reference	UNITS	BH102	BH102	BH103	BH103	BH103
Depth		10.5-10.95	13.5-13.95	3-3.45	4.5-4.95	6-6.45
Date Sampled		08/10/2020	08/10/2020	07/10/2020	07/10/2020	07/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Arsenic	mg/kg	8	6	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	4	4	7	6
Copper	mg/kg	33	33	23	23	35
Lead	mg/kg	12	12	9	10	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	17	14	10	10	14
Zinc	mg/kg	59	58	41	38	50

Acid Extractable metals in soil

Our Reference		253071-11	253071-12	253071-13	253071-14	253071-15
Your Reference	UNITS	BH103	BH103	BH103	BH104	BH104
Depth		7.5-7.95	9-9.45	10.5-10.95	3-3.45	4.5-4.65
Date Sampled		07/10/2020	07/10/2020	07/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Arsenic	mg/kg	<4	<4	5	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	7	4	5	7	6
Copper	mg/kg	33	27	41	38	26
Lead	mg/kg	12	13	13	14	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	14	20	15	10
Zinc	mg/kg	56	31	90	64	43

Acid Extractable metals in soil

Our Reference		253071-16	253071-17	253071-18	253071-19	253071-20
Your Reference	UNITS	BH104	BH104	BH104	BH104	BH104
Depth		6-6.15	7.5-7.95	9-9.45	10.5-10.95	12-12.45
Date Sampled		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Arsenic	mg/kg	8	<4	<4	<4	4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	4	4	4	5
Copper	mg/kg	25	24	25	39	37
Lead	mg/kg	8	9	11	13	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	11	10	10	18	19
Zinc	mg/kg	44	39	36	75	58

Acid Extractable metals in soil			
Our Reference		253071-21	253071-22
Your Reference	UNITS	BH104	BH102 - [TRIPLICATE]
Depth		13.5-13.95	3-3.45
Date Sampled		06/10/2020	08/10/2020
Type of sample		Soil	Soil
Date prepared	-	12/10/2020	12/10/2020
Date analysed	-	12/10/2020	12/10/2020
Arsenic	mg/kg	<4	4
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	3	8
Copper	mg/kg	28	31
Lead	mg/kg	13	17
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	11	13
Zinc	mg/kg	62	42

Moisture						
Our Reference	UNITS	253071-1	253071-2	253071-3	253071-4	253071-5
Your Reference		BH102	BH102	BH102	BH102	BH102
Depth		3-3.45	4.5-4.95	6-6.45	7.5-7.95	9-9.45
Date Sampled		08/10/2020	08/10/2020	08/10/2020	08/10/2020	08/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Moisture	%	20	10	13	15	12

Moisture						
Our Reference	UNITS	253071-6	253071-7	253071-8	253071-9	253071-10
Your Reference		BH102	BH102	BH103	BH103	BH103
Depth		10.5-10.95	13.5-13.95	3-3.45	4.5-4.95	6-6.45
Date Sampled		08/10/2020	08/10/2020	07/10/2020	07/10/2020	07/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Moisture	%	14	14	12	12	13

Moisture						
Our Reference	UNITS	253071-11	253071-12	253071-13	253071-14	253071-15
Your Reference		BH103	BH103	BH103	BH104	BH104
Depth		7.5-7.95	9-9.45	10.5-10.95	3-3.45	4.5-4.65
Date Sampled		07/10/2020	07/10/2020	07/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Moisture	%	9.0	5.5	12	14	10

Moisture						
Our Reference	UNITS	253071-16	253071-17	253071-18	253071-19	253071-20
Your Reference		BH104	BH104	BH104	BH104	BH104
Depth		6-6.15	7.5-7.95	9-9.45	10.5-10.95	12-12.45
Date Sampled		06/10/2020	06/10/2020	06/10/2020	06/10/2020	06/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Date analysed	-	13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Moisture	%	7.7	7.9	13	9.2	14

Moisture		
Our Reference		253071-21
Your Reference	UNITS	BH104
Depth		13.5-13.95
Date Sampled		06/10/2020
Type of sample		Soil
Date prepared	-	12/10/2020
Date analysed	-	13/10/2020
Moisture	%	9.2

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

Method ID	Methodology Summary
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	253071-2
Date extracted	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	1	<25	<25	0	90	78
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	1	<25	<25	0	90	78
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	75	71
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	99	81
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	83	73
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	96	83
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	96	83
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	95	1	83	103	22	94	97

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	253071-21
Date extracted	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	11	<25	<25	0	90	99
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	11	<25	<25	0	90	99
Benzene	mg/kg	0.2	Org-023	[NT]	11	<0.2	<0.2	0	78	82
Toluene	mg/kg	0.5	Org-023	[NT]	11	<0.5	<0.5	0	98	110
Ethylbenzene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	84	91
m+p-xylene	mg/kg	2	Org-023	[NT]	11	<2	<2	0	96	106
o-Xylene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	96	103
naphthalene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	11	109	112	3	99	121

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Date analysed	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	20	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	20	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	20	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	20	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	20	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	20	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	20	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	20	124	96	25	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	253071-2
Date extracted	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			13/10/2020	1	13/10/2020	13/10/2020		12/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	1	<50	<50	0	130	122
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	1	<100	<100	0	93	77
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	1	<100	<100	0	92	119
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	1	<50	<50	0	130	122
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	1	<100	<100	0	93	77
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	1	<100	<100	0	92	119
Surrogate o-Terphenyl	%		Org-020	99	1	97	109	12	98	102

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	253071-21
Date extracted	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			[NT]	11	13/10/2020	13/10/2020		12/10/2020	13/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	11	<50	<50	0	116	125
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	11	<100	<100	0	102	134
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	11	<100	<100	0	92	105
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	11	<50	<50	0	116	125
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	11	<100	<100	0	102	134
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	11	<100	<100	0	92	105
Surrogate o-Terphenyl	%		Org-020	[NT]	11	91	93	2	110	72

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Date analysed	-			[NT]	20	13/10/2020	13/10/2020		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	20	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	20	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	20	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	20	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	20	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	20	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	20	94	96	2	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	253071-2
Date extracted	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	88
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	87
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	88
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	81
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	88
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	89
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	94	88
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	93	90
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	98	1	94	97	3	96	90

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	253071-21
Date extracted	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	11	0.1	0.1	0	86	118
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	89	108
Fluorene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	91	109
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	11	0.2	0.2	0	91	108
Anthracene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	93	114
Pyrene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	93	113
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	96	116
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	11	<0.05	<0.05	0	95	114
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	11	93	96	3	98	104

QUALITY CONTROL: PAHs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Date analysed	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	20	0.2	0.2	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	20	0.3	0.3	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	20	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	20	0.06	<0.05	18	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	20	97	91	6	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	253071-2
Date prepared	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			12/10/2020	1	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Arsenic	mg/kg	4	Metals-020	<4	1	<4	5	22	104	87
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	105	79
Chromium	mg/kg	1	Metals-020	<1	1	6	7	15	105	81
Copper	mg/kg	1	Metals-020	<1	1	22	29	27	104	89
Lead	mg/kg	1	Metals-020	<1	1	9	13	36	104	80
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	106	83
Nickel	mg/kg	1	Metals-020	<1	1	7	12	53	105	84
Zinc	mg/kg	1	Metals-020	<1	1	31	40	25	105	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	253071-21
Date prepared	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Date analysed	-			[NT]	11	12/10/2020	12/10/2020		12/10/2020	12/10/2020
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	102	92
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	103	87
Chromium	mg/kg	1	Metals-020	[NT]	11	7	6	15	103	96
Copper	mg/kg	1	Metals-020	[NT]	11	33	27	20	101	115
Lead	mg/kg	1	Metals-020	[NT]	11	12	10	18	102	91
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	105	97
Nickel	mg/kg	1	Metals-020	[NT]	11	15	14	7	104	90
Zinc	mg/kg	1	Metals-020	[NT]	11	56	48	15	104	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Date analysed	-			[NT]	20	12/10/2020	12/10/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	20	4	4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	20	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	20	5	5	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	20	37	36	3	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	20	14	13	7	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	20	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	20	19	19	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	20	58	54	7	[NT]	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

Acid Extractable Metals in Soil:

-The laboratory RPD acceptance criteria has been exceeded for 253071-1 for Ni. Therefore a triplicate result has been issued as laboratory sample number 253071-22.

-# Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page

Sample Login Details

Your reference	E33177P, Glenmore Park
Envirolab Reference	253071
Date Sample Received	09/10/2020
Date Instructions Received	09/10/2020
Date Results Expected to be Reported	16/10/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	21 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	4.6
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolab.com.au	Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



Sample ID	VTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Acid Extractable metals in soil
BH102-3-3.45	✓	✓	✓	✓
BH102-4.5-4.95	✓	✓	✓	✓
BH102-6-6.45	✓	✓	✓	✓
BH102-7.5-7.95	✓	✓	✓	✓
BH102-9-9.45	✓	✓	✓	✓
BH102-10.5-10.95	✓	✓	✓	✓
BH102-13.5-13.95	✓	✓	✓	✓
BH103-3-3.45	✓	✓	✓	✓
BH103-4.5-4.95	✓	✓	✓	✓
BH103-6-6.45	✓	✓	✓	✓
BH103-7.5-7.95	✓	✓	✓	✓
BH103-9-9.45	✓	✓	✓	✓
BH103-10.5-10.95	✓	✓	✓	✓
BH104-3-3.45	✓	✓	✓	✓
BH104-4.5-4.65	✓	✓	✓	✓
BH104-6-6.15	✓	✓	✓	✓
BH104-7.5-7.95	✓	✓	✓	✓
BH104-9-9.45	✓	✓	✓	✓
BH104-10.5-10.95	✓	✓	✓	✓
BH104-12-12.45	✓	✓	✓	✓
BH104-13.5-13.95	✓	✓	✓	✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen	EIS Job E33177P Number: Date Results STANDARD Required: Page: 1 of 1	FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bpage@jkenvironments.com.au

Location: Glenmore Park							Sample Preserved in Esky on Ice											
Sampler: SD							Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3a	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos	Combo 3		
8.10.20	1	BH102	3-3.45	G	0.3	F: Silty clay										X		
8.10.20	2	BH102	4.5-4.95	G, A	0.2	F: Silty clay										X		
8.10.20	3	BH102	6-6.45	G, A	0.6	F: Silty clay										X		
8.10.20	4	BH102	7.5-7.95	G, A	1.6	F: Silty clayey gravel										X		
8.10.20	5	BH102	9-9.45	G, A	0	F: Gravelly silty clay										X		
8.10.20	6	BH102	10.5-10.95	G	0.1	F: Silty clay										X		
8.10.20	7	BH102	13.5-13.95	G, A	0	F: Gravelly silty clay										X		
7.10.20	8	BH103	3-3.45	G	0	F: Silty clay										X		
7.10.20	9	BH103	4.5-4.95	G, A	0.1	F: Silty clay										X		
7.10.20	10	BH103	6-6.45	G, A	0	F: Silty clay										X		
7.10.20	11	BH103	7.5-7.95	G, A	0	F: Silty clay										X		
7.10.20	12	BH103	9-9.45	G, A	0	F: Silty clay										X		
7.10.20	13	BH103	10.5-10.95	G, A	0	F: Gravelly clay										X		
6.10.20	14	BH104	3-3.45	G, A	0.1	F: Silty clay										X		
6.10.20	15	BH104	4.5-4.65	G, A	0	F: Silty clay										X		
6.10.20	16	BH104	6-6.15	G	0	F: Silty clay										X		
6.10.20	17	BH104	7.5-7.95	G, A	0	F: Silty clay										X		
6.10.20	18	BH104	9-9.45	G, A	0	F: Silty clay										X		
6.10.20	19	BH104	10.5-10.95	G, A	0	F: Gravelly silty clay										X		
6.10.20	20	BH104	12-12.45	G, A	0	F: Gravelly silty clay										X		
6.10.20	21	BH104	13.5-13.95	G, A	0.1	F: Gravelly silty clay										X		


Envirolab Services
12 Ashley St
Chatswood NSW 2067
PH: (02) 9910 6200
Job No: 25307
Date Received: 09/10/2020
Time Received: 14:40
Received By: RL
Temp: Cool/Ambient
Cooling: Ice/icepack
Security: Intact/Broken/None

Remarks (comments/detection limits required): 		Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag	
Relinquished By: 	Date: 9/10/20	Time: 1230pm	Received By: RLhaleen GLS syt.

Date: 14.40
 09/10/2020
 4-6°C

CERTIFICATE OF ANALYSIS 253565

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	<u>E33177P, Glenmore Park</u>
Number of Samples	102 Soil, 1 Water
Date samples received	16/10/2020
Date completed instructions received	16/10/2020

Analysis Details

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

Report Details

Date results requested by	23/10/2020
Date of Issue	22/10/2020
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

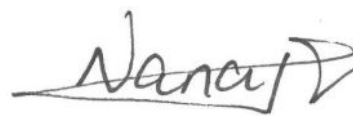
Asbestos Approved By

Analysed by Asbestos Approved Identifier: Lucy Zhu
 Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By

Diego Bigolin, Team Leader, Inorganics
 Dragana Tomas, Senior Chemist
 Hannah Nguyen, Senior Chemist
 Jaimie Loa-Kum-Cheung, Metals Supervisor
 Josh Williams, Senior Chemist
 Lucy Zhu, Asbestos Supervisor
 Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference	UNITS	TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	119	104	116	120	101

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-8	253565-9	253565-10	253565-12	253565-13
Your Reference	UNITS	TP302	TP303	TP303	TP303	TP304
Depth		1.9-2.1	0-0.2	0.8-1	2.2-2.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	119	120	118	104	118

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-14	253565-15	253565-16	253565-17	253565-18
Your Reference	UNITS	TP304	TP304	TP304	TP305	TP305
Depth		0.2-0.4	1.2-1.4	2.2-2.4	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	117	110	118	116	116

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-20	253565-21	253565-23	253565-26	253565-27
Your Reference	UNITS	TP305	TP306	TP306	TP307	TP307
Depth		2.2-2.4	0-0.2	0.9-1.1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	116	114	121	115	125

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-29	253565-31	253565-33	253565-34	253565-35
Your Reference	UNITS	TP307	TP308	TP308	TP309	TP309
Depth		1.5-1.7	0-0.2	0.8-1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	112	111	113	121	111

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-36	253565-37	253565-38	253565-39	253565-40
Your Reference	UNITS	TP309	TP309	TP310	TP310	TP310
Depth		1.5-1.7	2.1-2.3	0-0.2	0.8-1	1.7-1.9
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	112	127	112	125	112

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-41	253565-42	253565-43	253565-44	253565-46
Your Reference	UNITS	TP310	BH311	BH311	BH311	BH311
Depth		1.9-2.1	0-0.2	0.7-0.95	1.7-1.95	3.2-3.45
Date Sampled		12/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	118	114	113	122	111

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-47	253565-48	253565-49	253565-51	253565-52
Your Reference	UNITS	BH312	BH312	BH312	BH313	BH313
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.7-0.95
Date Sampled		14/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	129	117	117	117	110

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-53	253565-56	253565-57	253565-58	253565-60
Your Reference	UNITS	BH313	BH314	BH314	BH314	BH315
Depth		1.7-1.95	0-0.2	0.7-0.95	1.7-1.95	0-0.2
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	118	120	124	115	126

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-61	253565-62	253565-65	253565-66	253565-67
Your Reference	UNITS	BH315	BH315	BH316	BH316	BH316
Depth		0.7-0.95	1.7-1.95	0-0.2	0.7-0.95	1.7-1.95
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	124	115	118	113	114

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-70	253565-71	253565-72	253565-77	253565-78
Your Reference	UNITS	BH317	BH317	BH317	BH318	BH318
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.5-0.7
Date Sampled		13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	20/10/2020	20/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	21/10/2020	21/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	121	116	119	113	107

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-81	253565-82	253565-87	253565-88	253565-93
Your Reference	UNITS	BH319	BH319	BH320	BH320	SDUP301
Depth		0-0.2	0.5-0.7	0-0.2	0.7-0.95	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	116	124	123	115	114

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-94	253565-95	253565-96	253565-97	253565-98
Your Reference	UNITS	SDUP304	SDUP305	SDUP307	SDUP309	SDUO310
Depth		-	-	-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
TRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25	<25
TRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25	<25
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1	<1
naphthalene	mg/kg	<1	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<3	<3	<3	<3	<3
Surrogate aaa-Trifluorotoluene	%	112	120	103	113	119

vTRH(C6-C10)/BTEXN in Soil

Our Reference		253565-102	253565-103
Your Reference	UNITS	TB-S1	TS-S1
Depth		-	-
Date Sampled		14/10/2020	14/10/2020
Type of sample		Soil	Soil
Date extracted	-	20/10/2020	19/10/2020
Date analysed	-	21/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	<25	[NA]
TRH C ₆ - C ₁₀	mg/kg	<25	[NA]
vTPH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	[NA]
Benzene	mg/kg	<0.2	101%
Toluene	mg/kg	<0.5	102%
Ethylbenzene	mg/kg	<1	99%
m+p-xylene	mg/kg	<2	99%
o-Xylene	mg/kg	<1	99%
naphthalene	mg/kg	<1	[NT]
Total +ve Xylenes	mg/kg	<3	[NT]
Surrogate aaa-Trifluorotoluene	%	120	112

svTRH (C10-C40) in Soil						
Our Reference	UNITS	253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference		TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	80	81	81	80

svTRH (C10-C40) in Soil						
Our Reference	UNITS	253565-8	253565-9	253565-10	253565-12	253565-13
Your Reference		TP302	TP303	TP303	TP303	TP304
Depth		1.9-2.1	0-0.2	0.8-1	2.2-2.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	89	81	79	80

svTRH (C10-C40) in Soil

Our Reference		253565-14	253565-15	253565-16	253565-17	253565-18
Your Reference	UNITS	TP304	TP304	TP304	TP305	TP305
Depth		0.2-0.4	1.2-1.4	2.2-2.4	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	20/10/2020	19/10/2020	19/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	85	80	92	81	79

svTRH (C10-C40) in Soil

Our Reference		253565-20	253565-21	253565-23	253565-26	253565-27
Your Reference	UNITS	TP305	TP306	TP306	TP307	TP307
Depth		2.2-2.4	0-0.2	0.9-1.1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	81	83	83	82

svTRH (C10-C40) in Soil

Our Reference		253565-29	253565-31	253565-33	253565-34	253565-35
Your Reference	UNITS	TP307	TP308	TP308	TP309	TP309
Depth		1.5-1.7	0-0.2	0.8-1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	82	82	86	90	81

svTRH (C10-C40) in Soil

Our Reference		253565-36	253565-37	253565-38	253565-39	253565-40
Your Reference	UNITS	TP309	TP309	TP310	TP310	TP310
Depth		1.5-1.7	2.1-2.3	0-0.2	0.8-1	1.7-1.9
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	82	82	82	82

svTRH (C10-C40) in Soil

Our Reference		253565-41	253565-42	253565-43	253565-44	253565-46
Your Reference	UNITS	TP310	BH311	BH311	BH311	BH311
Depth		1.9-2.1	0-0.2	0.7-0.95	1.7-1.95	3.2-3.45
Date Sampled		12/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	81	80	80	80	80

svTRH (C10-C40) in Soil

Our Reference		253565-47	253565-48	253565-49	253565-51	253565-52
Your Reference	UNITS	BH312	BH312	BH312	BH313	BH313
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.7-0.95
Date Sampled		14/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	80	81	81	81	89

svTRH (C10-C40) in Soil

Our Reference		253565-53	253565-56	253565-57	253565-58	253565-60
Your Reference	UNITS	BH313	BH314	BH314	BH314	BH315
Depth		1.7-1.95	0-0.2	0.7-0.95	1.7-1.95	0-0.2
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	82	79	77	79

svTRH (C10-C40) in Soil

Our Reference		253565-61	253565-62	253565-65	253565-66	253565-67
Your Reference	UNITS	BH315	BH315	BH316	BH316	BH316
Depth		0.7-0.95	1.7-1.95	0-0.2	0.7-0.95	1.7-1.95
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	79	80	79	78	84

svTRH (C10-C40) in Soil

Our Reference		253565-70	253565-71	253565-72	253565-77	253565-78
Your Reference	UNITS	BH317	BH317	BH317	BH318	BH318
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.5-0.7
Date Sampled		13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	84	80	83	83	88

svTRH (C10-C40) in Soil

Our Reference		253565-81	253565-82	253565-87	253565-88	253565-93
Your Reference	UNITS	BH319	BH319	BH320	BH320	SDUP301
Depth		0-0.2	0.5-0.7	0-0.2	0.7-0.95	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	98	96	93	95	95

svTRH (C10-C40) in Soil

Our Reference		253565-94	253565-95	253565-96	253565-97	253565-98
Your Reference	UNITS	SDUP304	SDUP305	SDUP307	SDUP309	SDUO310
Depth		-	-	-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50	<50
Surrogate o-Terphenyl	%	96	96	97	96	95

svTRH (C10-C40) in Soil

Our Reference		253565-102
Your Reference	UNITS	TB-S1
Depth		-
Date Sampled		14/10/2020
Type of sample		Soil
Date extracted	-	19/10/2020
Date analysed	-	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100
TRH >C ₁₀ -C ₁₆	mg/kg	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100
Total +ve TRH (>C10-C40)	mg/kg	<50
Surrogate o-Terphenyl	%	96

PAHs in Soil						
Our Reference		253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference	UNITS	TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.1	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	101	98	101	100

PAHs in Soil						
Our Reference		253565-8	253565-9	253565-10	253565-12	253565-13
Your Reference	UNITS	TP302	TP303	TP303	TP303	TP304
Depth		1.9-2.1	0-0.2	0.8-1	2.2-2.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.2
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	0.3
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	97	99	102	100	99

PAHs in Soil						
Our Reference		253565-14	253565-15	253565-16	253565-17	253565-18
Your Reference	UNITS	TP304	TP304	TP304	TP305	TP305
Depth		0.2-0.4	1.2-1.4	2.2-2.4	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	100	100	97	98	100

PAHs in Soil						
Our Reference		253565-20	253565-21	253565-23	253565-26	253565-27
Your Reference	UNITS	TP305	TP306	TP306	TP307	TP307
Depth		2.2-2.4	0-0.2	0.9-1.1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.1	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	101	91	104	106

PAHs in Soil						
Our Reference		253565-29	253565-31	253565-33	253565-34	253565-35
Your Reference	UNITS	TP307	TP308	TP308	TP309	TP309
Depth		1.5-1.7	0-0.2	0.8-1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	0.2	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.3	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.4	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	100	100	102	100	96

PAHs in Soil						
Our Reference		253565-36	253565-37	253565-38	253565-39	253565-40
Your Reference	UNITS	TP309	TP309	TP310	TP310	TP310
Depth		1.5-1.7	2.1-2.3	0-0.2	0.8-1	1.7-1.9
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	104	101	99	97

PAHs in Soil						
Our Reference		253565-41	253565-42	253565-43	253565-44	253565-46
Your Reference	UNITS	TP310	BH311	BH311	BH311	BH311
Depth		1.9-2.1	0-0.2	0.7-0.95	1.7-1.95	3.2-3.45
Date Sampled		12/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	0.1	<0.1	<0.1	0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	<0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.3	<0.05	<0.05	0.3	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	101	106	99	103	103

PAHs in Soil						
Our Reference		253565-47	253565-48	253565-49	253565-51	253565-52
Your Reference	UNITS	BH312	BH312	BH312	BH313	BH313
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.7-0.95
Date Sampled		14/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	0.2	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	109	103	100	103	100

PAHs in Soil						
Our Reference		253565-53	253565-56	253565-57	253565-58	253565-60
Your Reference	UNITS	BH313	BH314	BH314	BH314	BH315
Depth		1.7-1.95	0-0.2	0.7-0.95	1.7-1.95	0-0.2
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	0.2	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	0.2	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.1	0.54	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	100	102	97	103

PAHs in Soil						
Our Reference		253565-61	253565-62	253565-65	253565-66	253565-67
Your Reference	UNITS	BH315	BH315	BH316	BH316	BH316
Depth		0.7-0.95	1.7-1.95	0-0.2	0.7-0.95	1.7-1.95
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	95	99	104	103	102

PAHs in Soil						
Our Reference		253565-70	253565-71	253565-72	253565-77	253565-78
Your Reference	UNITS	BH317	BH317	BH317	BH318	BH318
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.5-0.7
Date Sampled		13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.2	<0.1	0.2	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	<0.05	0.2	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	102	101	101	100	99

PAHs in Soil						
Our Reference		253565-81	253565-82	253565-87	253565-88	253565-93
Your Reference	UNITS	BH319	BH319	BH320	BH320	SDUP301
Depth		0-0.2	0.5-0.7	0-0.2	0.7-0.95	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.1	<0.05	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	100	101	102	97

PAHs in Soil						
Our Reference		253565-94	253565-95	253565-96	253565-97	253565-98
Your Reference	UNITS	SDUP304	SDUP305	SDUP307	SDUP309	SDUO310
Depth		-	-	-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Naphthalene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05	0.1	<0.05	0.1
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	99	102	97	95	103

PAHs in Soil		
Our Reference		253565-102
Your Reference	UNITS	TB-S1
Depth		-
Date Sampled		14/10/2020
Type of sample		Soil
Date extracted	-	19/10/2020
Date analysed	-	19/10/2020
Naphthalene	mg/kg	<0.1
Acenaphthylene	mg/kg	<0.1
Acenaphthene	mg/kg	<0.1
Fluorene	mg/kg	<0.1
Phenanthrene	mg/kg	<0.1
Anthracene	mg/kg	<0.1
Fluoranthene	mg/kg	<0.1
Pyrene	mg/kg	<0.1
Benzo(a)anthracene	mg/kg	<0.1
Chrysene	mg/kg	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2
Benzo(a)pyrene	mg/kg	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1
Total +ve PAH's	mg/kg	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5
Surrogate <i>p</i> -Terphenyl-d14	%	99

Organochlorine Pesticides in soil						
Our Reference		253565-1	253565-5	253565-9	253565-13	253565-17
Your Reference	UNITS	TP301	TP302	TP303	TP304	TP305
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	94	94	92	94	92

Organochlorine Pesticides in soil						
Our Reference		253565-21	253565-26	253565-31	253565-34	253565-38
Your Reference	UNITS	TP306	TP307	TP308	TP309	TP310
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	19/10/2020	19/10/2020	19/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	96	97	92	95

Organochlorine Pesticides in soil						
Our Reference		253565-43	253565-48	253565-52	253565-57	253565-61
Your Reference	UNITS	BH311	BH312	BH313	BH314	BH315
Depth		0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95
Date Sampled		13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	97	95	96	91

Organochlorine Pesticides in soil						
Our Reference		253565-66	253565-71	253565-78	253565-82	253565-88
Your Reference	UNITS	BH316	BH317	BH318	BH319	BH320
Depth		0.7-0.95	0.7-0.95	0.5-0.7	0.5-0.7	0.7-0.95
Date Sampled		13/10/2020	13/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	99	98	96	99

Organochlorine Pesticides in soil				
Our Reference		253565-93	253565-94	253565-95
Your Reference	UNITS	SDUP301	SDUP304	SDUP305
Depth		-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020
alpha-BHC	mg/kg	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	95	98

Organophosphorus Pesticides in Soil						
Our Reference		253565-1	253565-5	253565-9	253565-13	253565-17
Your Reference	UNITS	TP301	TP302	TP303	TP304	TP305
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	94	94	92	94	92

Organophosphorus Pesticides in Soil

Our Reference		253565-21	253565-26	253565-31	253565-34	253565-38
Your Reference	UNITS	TP306	TP307	TP308	TP309	TP310
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	19/10/2020	19/10/2020	19/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	96	97	92	95

Organophosphorus Pesticides in Soil

Our Reference		253565-43	253565-48	253565-52	253565-57	253565-61
Your Reference	UNITS	BH311	BH312	BH313	BH314	BH315
Depth		0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95
Date Sampled		13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	97	95	96	91

Organophosphorus Pesticides in Soil

Our Reference		253565-66	253565-71	253565-78	253565-82	253565-88
Your Reference	UNITS	BH316	BH317	BH318	BH319	BH320
Depth		0.7-0.95	0.7-0.95	0.5-0.7	0.5-0.7	0.7-0.95
Date Sampled		13/10/2020	13/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	99	98	96	99

Organophosphorus Pesticides in Soil				
Our Reference		253565-93	253565-94	253565-95
Your Reference	UNITS	SDUP301	SDUP304	SDUP305
Depth		-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020
Dichlorvos	mg/kg	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	95	98

PCBs in Soil						
Our Reference	UNITS	253565-1	253565-5	253565-9	253565-13	253565-17
Your Reference		TP301	TP302	TP303	TP304	TP305
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	94	94	92	94	92

PCBs in Soil						
Our Reference	UNITS	253565-21	253565-26	253565-31	253565-34	253565-38
Your Reference		TP306	TP307	TP308	TP309	TP310
Depth		0-0.2	0-0.2	0-0.2	0-0.2	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	19/10/2020	19/10/2020	19/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	96	97	92	95

PCBs in Soil						
Our Reference	UNITS	253565-43	253565-48	253565-52	253565-57	253565-61
Your Reference		BH311	BH312	BH313	BH314	BH315
Depth		0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95	0.7-0.95
Date Sampled		13/10/2020	14/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	97	95	96	91

PCBs in Soil						
Our Reference	UNITS	253565-66	253565-71	253565-78	253565-82	253565-88
Your Reference		BH316	BH317	BH318	BH319	BH320
Depth		0.7-0.95	0.7-0.95	0.5-0.7	0.5-0.7	0.7-0.95
Date Sampled		13/10/2020	13/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	98	99	98	96	99

PCBs in Soil				
Our Reference		253565-93	253565-94	253565-95
Your Reference	UNITS	SDUP301	SDUP304	SDUP305
Depth		-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil
Date extracted	-	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1
Surrogate TCMX	%	93	95	98

Acid Extractable metals in soil

Our Reference		253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference	UNITS	TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	6	6	5	5	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	10	8	8	11	10
Copper	mg/kg	20	30	38	15	25
Lead	mg/kg	14	15	15	11	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	13	17	7	10
Zinc	mg/kg	38	50	66	34	40

Acid Extractable metals in soil

Our Reference		253565-8	253565-9	253565-10	253565-12	253565-13
Your Reference	UNITS	TP302	TP303	TP303	TP303	TP304
Depth		1.9-2.1	0-0.2	0.8-1	2.2-2.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	7	5	6	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	8	5	8	10
Copper	mg/kg	33	29	35	29	20
Lead	mg/kg	15	32	19	14	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	16	10	17	13	8
Zinc	mg/kg	58	42	67	52	31

Acid Extractable metals in soil

Our Reference		253565-14	253565-15	253565-16	253565-17	253565-18
Your Reference	UNITS	TP304	TP304	TP304	TP305	TP305
Depth		0.2-0.4	1.2-1.4	2.2-2.4	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	10	9	8	5	6
Cadmium	mg/kg	<0.4	<0.4	0.5	<0.4	<0.4
Chromium	mg/kg	6	6	4	7	9
Copper	mg/kg	37	25	31	22	34
Lead	mg/kg	15	10	28	12	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	14	12	9	16
Zinc	mg/kg	61	54	50	35	56

Acid Extractable metals in soil

Our Reference		253565-20	253565-21	253565-23	253565-26	253565-27
Your Reference	UNITS	TP305	TP306	TP306	TP307	TP307
Depth		2.2-2.4	0-0.2	0.9-1.1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	4	5	5	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	9	7	10	8
Copper	mg/kg	36	25	32	29	33
Lead	mg/kg	14	15	13	15	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	18	11	15	12	11
Zinc	mg/kg	57	45	58	55	47

Acid Extractable metals in soil

Our Reference		253565-29	253565-31	253565-33	253565-34	253565-35
Your Reference	UNITS	TP307	TP308	TP308	TP309	TP309
Depth		1.5-1.7	0-0.2	0.8-1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	6	5	4	7	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	9	6	9	11
Copper	mg/kg	27	16	40	23	22
Lead	mg/kg	14	11	15	14	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	5	17	10	9
Zinc	mg/kg	46	22	65	39	35

Acid Extractable metals in soil

Our Reference		253565-36	253565-37	253565-38	253565-39	253565-40
Your Reference	UNITS	TP309	TP309	TP310	TP310	TP310
Depth		1.5-1.7	2.1-2.3	0-0.2	0.8-1	1.7-1.9
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	<4	<4	5	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	7	7	10	10
Copper	mg/kg	26	12	25	31	27
Lead	mg/kg	12	10	16	16	15
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	3	11	12	11
Zinc	mg/kg	40	11	46	49	120

Acid Extractable metals in soil

Our Reference		253565-41	253565-42	253565-43	253565-44	253565-46
Your Reference	UNITS	TP310	BH311	BH311	BH311	BH311
Depth		1.9-2.1	0-0.2	0.7-0.95	1.7-1.95	3.2-3.45
Date Sampled		12/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	<4	5	6	7	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	1	<0.4
Chromium	mg/kg	6	9	12	4	7
Copper	mg/kg	33	31	25	35	20
Lead	mg/kg	14	15	15	37	10
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	10	10	11	11
Zinc	mg/kg	55	42	41	74	37

Acid Extractable metals in soil

Our Reference		253565-47	253565-48	253565-49	253565-51	253565-52
Your Reference	UNITS	BH312	BH312	BH312	BH313	BH313
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.7-0.95
Date Sampled		14/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	5	9	6	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	6	10	8	8
Copper	mg/kg	35	34	22	24	30
Lead	mg/kg	17	15	15	12	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	14	10	11	15
Zinc	mg/kg	58	66	38	45	53

Acid Extractable metals in soil

Our Reference		253565-53	253565-56	253565-57	253565-58	253565-60
Your Reference	UNITS	BH313	BH314	BH314	BH314	BH315
Depth		1.7-1.95	0-0.2	0.7-0.95	1.7-1.95	0-0.2
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	7	5	10	11	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	2	<0.4
Chromium	mg/kg	8	8	6	6	8
Copper	mg/kg	28	34	34	55	30
Lead	mg/kg	14	14	14	100	17
Mercury	mg/kg	<0.1	<0.1	<0.1	0.1	<0.1
Nickel	mg/kg	12	16	13	14	15
Zinc	mg/kg	43	59	54	79	53

Acid Extractable metals in soil

Our Reference		253565-61	253565-62	253565-65	253565-66	253565-67
Your Reference	UNITS	BH315	BH315	BH316	BH316	BH316
Depth		0.7-0.95	1.7-1.95	0-0.2	0.7-0.95	1.7-1.95
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	5	16	5	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	6	8	10	10	8
Copper	mg/kg	32	49	25	32	21
Lead	mg/kg	12	17	14	18	12
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	10	15	14	16	8
Zinc	mg/kg	44	50	53	56	30

Acid Extractable metals in soil

Our Reference		253565-70	253565-71	253565-72	253565-77	253565-78
Your Reference	UNITS	BH317	BH317	BH317	BH318	BH318
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.5-0.7
Date Sampled		13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	8	5	<4	6	8
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	8	6	10	10
Copper	mg/kg	35	26	39	24	27
Lead	mg/kg	19	13	17	14	14
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	15	12	17	9	12
Zinc	mg/kg	55	42	72	38	54

Acid Extractable metals in soil

Our Reference		253565-81	253565-82	253565-87	253565-88	253565-93
Your Reference	UNITS	BH319	BH319	BH320	BH320	SDUP301
Depth		0-0.2	0.5-0.7	0-0.2	0.7-0.95	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	6	5	5	6	5
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	19	9	9	9
Copper	mg/kg	29	33	22	30	20
Lead	mg/kg	15	15	14	15	11
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	13	11	10	12	6
Zinc	mg/kg	50	43	39	51	31

Acid Extractable metals in soil

Our Reference		253565-94	253565-95	253565-96	253565-97	253565-98
Your Reference	UNITS	SDUP304	SDUP305	SDUP307	SDUP309	SDUO310
Depth		-	-	-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Arsenic	mg/kg	5	5	5	9	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	9	9	5	10	7
Copper	mg/kg	18	27	26	21	28
Lead	mg/kg	15	24	15	15	17
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	9	11	11	9	13
Zinc	mg/kg	39	45	44	35	49

Acid Extractable metals in soil

Our Reference		253565-102	253565-104
Your Reference	UNITS	TB-S1	SDUP305 - [TRIPLICATE]
Depth		-	-
Date Sampled		14/10/2020	14/10/2020
Type of sample		Soil	Soil
Date prepared	-	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020
Arsenic	mg/kg	<4	5
Cadmium	mg/kg	<0.4	<0.4
Chromium	mg/kg	2	9
Copper	mg/kg	<1	28
Lead	mg/kg	2	32
Mercury	mg/kg	<0.1	<0.1
Nickel	mg/kg	<1	11
Zinc	mg/kg	3	46

Moisture						
Our Reference	UNITS	253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference		TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	7.9	11	11	10	15

Moisture						
Our Reference	UNITS	253565-8	253565-9	253565-10	253565-12	253565-13
Your Reference		TP302	TP303	TP303	TP303	TP304
Depth		1.9-2.1	0-0.2	0.8-1	2.2-2.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	16	9.7	7.3	11	5.0

Moisture						
Our Reference	UNITS	253565-14	253565-15	253565-16	253565-17	253565-18
Your Reference		TP304	TP304	TP304	TP305	TP305
Depth		0.2-0.4	1.2-1.4	2.2-2.4	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	7.7	9.3	11	8.1	7.0

Moisture						
Our Reference	UNITS	253565-20	253565-21	253565-23	253565-26	253565-27
Your Reference		TP305	TP306	TP306	TP307	TP307
Depth		2.2-2.4	0-0.2	0.9-1.1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	8.4	5.8	12	9.0	16

Moisture						
Our Reference	UNITS	253565-29	253565-31	253565-33	253565-34	253565-35
Your Reference		TP307	TP308	TP308	TP309	TP309
Depth		1.5-1.7	0-0.2	0.8-1	0-0.2	0.8-1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	9.2	11	7.4	11	13

Moisture						
Our Reference	UNITS	253565-36	253565-37	253565-38	253565-39	253565-40
Your Reference		TP309	TP309	TP310	TP310	TP310
Depth		1.5-1.7	2.1-2.3	0-0.2	0.8-1	1.7-1.9
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	11	13	3.0	12	13

Moisture						
Our Reference	UNITS	253565-41	253565-42	253565-43	253565-44	253565-46
Your Reference		TP310	BH311	BH311	BH311	BH311
Depth		1.9-2.1	0-0.2	0.7-0.95	1.7-1.95	3.2-3.45
Date Sampled		12/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	12	8.0	11	6.0	12

Moisture						
Our Reference	UNITS	253565-47	253565-48	253565-49	253565-51	253565-52
Your Reference		BH312	BH312	BH312	BH313	BH313
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.7-0.95
Date Sampled		14/10/2020	14/10/2020	14/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	6.6	5.1	10	3.1	7.3

Moisture						
Our Reference	UNITS	253565-53	253565-56	253565-57	253565-58	253565-60
Your Reference		BH313	BH314	BH314	BH314	BH315
Depth		1.7-1.95	0-0.2	0.7-0.95	1.7-1.95	0-0.2
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	10	10	4.6	6.7	8.8

Moisture						
Our Reference	UNITS	253565-61	253565-62	253565-65	253565-66	253565-67
Your Reference		BH315	BH315	BH316	BH316	BH316
Depth		0.7-0.95	1.7-1.95	0-0.2	0.7-0.95	1.7-1.95
Date Sampled		13/10/2020	13/10/2020	13/10/2020	13/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	11	12	6.2	1.2	12

Moisture						
Our Reference	UNITS	253565-70	253565-71	253565-72	253565-77	253565-78
Your Reference		BH317	BH317	BH317	BH318	BH318
Depth		0-0.2	0.7-0.95	1.7-1.95	0-0.2	0.5-0.7
Date Sampled		13/10/2020	13/10/2020	13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	2.7	12	9.9	7.6	11

Moisture						
Our Reference	UNITS	253565-81	253565-82	253565-87	253565-88	253565-93
Your Reference		BH319	BH319	BH320	BH320	SDUP301
Depth		0-0.2	0.5-0.7	0-0.2	0.7-0.95	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	6.8	7.5	7.1	10	4.7

Moisture						
Our Reference	UNITS	253565-94	253565-95	253565-96	253565-97	253565-98
Your Reference		SDUP304	SDUP305	SDUP307	SDUP309	SDUO310
Depth		-	-	-	-	-
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020	20/10/2020	20/10/2020
Moisture	%	6.9	6.0	2.2	5.7	6.2

Moisture		
Our Reference	UNITS	253565-102
Your Reference		TB-S1
Depth		-
Date Sampled		14/10/2020
Type of sample		Soil
Date prepared	-	19/10/2020
Date analysed	-	20/10/2020
Moisture	%	0.3

Asbestos ID - soils NEPM - ASB-001

Our Reference		253565-2	253565-5	253565-13	253565-15	253565-17
Your Reference	UNITS	TP301	TP302	TP304	TP304	TP305
Depth		0.6-0.8	0-0.2	0-0.2	1.2-1.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Sample mass tested	g	739.24	724.41	800.46	700.01	705.29
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg	No asbestos detected at reporting limit of 0.1g/kg
		Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected	Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—	—	—
FA and AF Estimation*	g	—	—	—	—	—
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001

Our Reference		253565-18	253565-21	253565-34	253565-35	253565-51
Your Reference	UNITS	TP305	TP306	TP309	TP309	BH313
Depth		0.8-1	0-0.2	0-0.2	0.8-1	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	13/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Sample mass tested	g	789.09	817.87	682.1	746.7	644.59
Sample Description	-	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks	Brown coarse-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—	—	—
FA and AF Estimation*	g	—	—	—	—	—
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001	<0.001	<0.001

Asbestos ID - soils NEPM - ASB-001

Our Reference		253565-52	253565-77	253565-81
Your Reference	UNITS	BH313	BH318	BH319
Depth		0.7-0.95	0-0.2	0-0.2
Date Sampled		13/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil
Date analysed	-	21/10/2020	21/10/2020	21/10/2020
Sample mass tested	g	1,012.13	922.31	796.7
Sample Description	-	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks	Brown fine-grained soil & rocks
Asbestos ID in soil (AS4964) >0.1g/kg	-	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected	No asbestos detected at reporting limit of 0.1g/kg Organic fibres detected
Trace Analysis	-	No asbestos detected	No asbestos detected	No asbestos detected
Total Asbestos ^{#1}	g/kg	<0.1	<0.1	<0.1
Asbestos ID in soil <0.1g/kg*	-	No visible asbestos detected	No visible asbestos detected	No visible asbestos detected
ACM >7mm Estimation*	g	—	—	—
FA and AF Estimation*	g	—	—	—
ACM >7mm Estimation*	%(w/w)	<0.01	<0.01	<0.01
FA and AF Estimation*#2	%(w/w)	<0.001	<0.001	<0.001

Misc Inorg - Soil

Our Reference		253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference	UNITS	TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
pH 1:5 soil:water	pH Units	8.4	8.5	9.6	7.9	7.5
Electrical Conductivity 1:5 soil:water	µS/cm	190	910	300	180	670

Misc Inorg - Soil

Our Reference		253565-8	253565-9	253565-13	253565-14	253565-21
Your Reference	UNITS	TP302	TP303	TP304	TP304	TP306
Depth		1.9-2.1	0-0.2	0-0.2	0.2-0.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
pH 1:5 soil:water	pH Units	8.6	8.7	8.5	9.1	8.6
Electrical Conductivity 1:5 soil:water	µS/cm	740	220	430	270	270

RTA276 ENM* Foreign Material

Our Reference		253565-1	253565-2	253565-3	253565-5	253565-7
Your Reference	UNITS	TP301	TP301	TP301	TP302	TP302
Depth		0-0.2	0.6-0.8	1-1.2	0-0.2	0.9-1.1
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Sample Mass Tested	g	6,500	7,800	6,900	5,600	5,800
Foreign Material	%	<0.05	<0.05	<0.05	<0.05	<0.05

RTA276 ENM* Foreign Material

Our Reference		253565-8	253565-9	253565-13	253565-14	253565-21
Your Reference	UNITS	TP302	TP303	TP304	TP304	TP306
Depth		1.9-2.1	0-0.2	0-0.2	0.2-0.4	0-0.2
Date Sampled		12/10/2020	12/10/2020	12/10/2020	12/10/2020	12/10/2020
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Date analysed	-	19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Sample Mass Tested	g	5,800	3,700	6,900	7,500	6,100
Foreign Material	%	<0.05	<0.05	<0.05	<0.05	<0.05

vTRH(C6-C10)/BTEXN in Water		
Our Reference		253565-101
Your Reference	UNITS	FR1
Depth		-
Date Sampled		13/10/2020
Type of sample		Water
Date extracted	-	19/10/2020
Date analysed	-	20/10/2020
TRH C ₆ - C ₉	µg/L	<10
TRH C ₆ - C ₁₀	µg/L	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10
Benzene	µg/L	<1
Toluene	µg/L	1
Ethylbenzene	µg/L	<1
m+p-xylene	µg/L	<2
o-xylene	µg/L	<1
Naphthalene	µg/L	<1
Surrogate Dibromofluoromethane	%	121
Surrogate toluene-d8	%	102
Surrogate 4-BFB	%	110

svTRH (C10-C40) in Water		
Our Reference		253565-101
Your Reference	UNITS	FR1
Depth		-
Date Sampled		13/10/2020
Type of sample		Water
Date extracted	-	19/10/2020
Date analysed	-	20/10/2020
TRH C ₁₀ - C ₁₄	µg/L	<50
TRH C ₁₅ - C ₂₈	µg/L	190
TRH C ₂₉ - C ₃₆	µg/L	<100
TRH >C ₁₀ - C ₁₆	µg/L	200
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	200
TRH >C ₁₆ - C ₃₄	µg/L	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100
Surrogate o-Terphenyl	%	75

PAHs in Water		
Our Reference		253565-101
Your Reference	UNITS	FR1
Depth		-
Date Sampled		13/10/2020
Type of sample		Water
Date extracted	-	19/10/2020
Date analysed	-	20/10/2020
Naphthalene	µg/L	<1
Acenaphthylene	µg/L	<1
Acenaphthene	µg/L	<1
Fluorene	µg/L	<1
Phenanthrene	µg/L	<1
Anthracene	µg/L	<1
Fluoranthene	µg/L	<1
Pyrene	µg/L	<1
Benzo(a)anthracene	µg/L	<1
Chrysene	µg/L	<1
Benzo(b,j+k)fluoranthene	µg/L	<2
Benzo(a)pyrene	µg/L	<1
Indeno(1,2,3-c,d)pyrene	µg/L	<1
Dibenzo(a,h)anthracene	µg/L	<1
Benzo(g,h,i)perylene	µg/L	<1
Benzo(a)pyrene TEQ	µg/L	<5
Total +ve PAH's	µg/L	NIL (+)VE
Surrogate <i>p</i> -Terphenyl-d14	%	71

Metals in Water - Dissolved		
Our Reference		253565-101
Your Reference	UNITS	FR1
Depth		-
Date Sampled		13/10/2020
Type of sample		Water
Date digested	-	19/10/2020
Date analysed	-	19/10/2020
Arsenic - Dissolved	mg/L	<0.05
Cadmium - Dissolved	mg/L	<0.01
Chromium - Dissolved	mg/L	<0.01
Copper - Dissolved	mg/L	<0.01
Lead - Dissolved	mg/L	<0.03
Mercury - Dissolved	mg/L	<0.0005
Nickel - Dissolved	mg/L	<0.02
Zinc - Dissolved	mg/L	<0.02

Method ID	Methodology Summary
ASB-001	Asbestos ID - Qualitative identification of asbestos in bulk samples using Polarised Light Microscopy and Dispersion Staining Techniques including Synthetic Mineral Fibre and Organic Fibre as per Australian Standard 4964-2004.
ASB-001	Asbestos ID - Identification of asbestos in soil samples using Polarised Light Microscopy and Dispersion Staining Techniques. Minimum 500mL soil sample was analysed as recommended by "National Environment Protection (Assessment of site contamination) Measure, Schedule B1 and "The Guidelines from the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia - May 2009" with a reporting limit of 0.1g/kg (0.01% w/w) as per Australian Standard AS4964-2004. Results reported denoted with * are outside our scope of NATA accreditation. NOTE #1 Total Asbestos g/kg was analysed and reported as per Australian Standard AS4964 (This is the sum of ACM >7mm, <7mm and FA/AF) NOTE #2 The screening level of 0.001% w/w asbestos in soil for FA and AF only applies where the FA and AF are able to be quantified by gravimetric procedures. This screening level is not applicable to free fibres. Estimation = Estimated asbestos weight Results reported with "--" is equivalent to no visible asbestos identified using Polarised Light microscopy and Dispersion Staining Techniques.
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-008	Moisture content determined by heating at 105+/-5 °C for a minimum of 12 hours.
Inorg-080	This method is based on RTA T276 and as per NSW DECC Resource Recovery Exemption Guidelines. RTA T276 requires at least 6kg of sample for this test. Where foreign materials are found, more details may be available on the typesand/or quantities in the Comments section of the report.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.

Method ID	Methodology Summary
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD.
Org-021	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Determination of VOCs sampled onto coconut shell charcoal sorbent tubes, that can be desorbed using carbon disulphide, and analysed by GC-MS.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS.
Org-022/025	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-MS/GC-MSMS. Note, the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS and/or GC-MS/MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			20/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			21/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	<25	1	<25	<25	0	120	118
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	1	<25	<25	0	120	118
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	119	122
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	112	115
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	119	115
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	125	120
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	128	123
naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	128	1	119	112	6	119	122

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	17	<25	<25	0	118	107
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	17	<25	<25	0	118	107
Benzene	mg/kg	0.2	Org-023	[NT]	17	<0.2	<0.2	0	120	111
Toluene	mg/kg	0.5	Org-023	[NT]	17	<0.5	<0.5	0	112	102
Ethylbenzene	mg/kg	1	Org-023	[NT]	17	<1	<1	0	113	102
m+p-xylene	mg/kg	2	Org-023	[NT]	17	<2	<2	0	122	109
o-Xylene	mg/kg	1	Org-023	[NT]	17	<1	<1	0	116	104
naphthalene	mg/kg	1	Org-023	[NT]	17	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	17	116	119	3	121	123

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	34	<25	<25	0	117	98
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	34	<25	<25	0	117	98
Benzene	mg/kg	0.2	Org-023	[NT]	34	<0.2	<0.2	0	122	103
Toluene	mg/kg	0.5	Org-023	[NT]	34	<0.5	<0.5	0	111	94
Ethylbenzene	mg/kg	1	Org-023	[NT]	34	<1	<1	0	111	95
m+p-xylene	mg/kg	2	Org-023	[NT]	34	<2	<2	0	120	100
o-Xylene	mg/kg	1	Org-023	[NT]	34	<1	<1	0	114	97
naphthalene	mg/kg	1	Org-023	[NT]	34	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	34	121	116	4	122	116

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		20/10/2020	20/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		21/10/2020	21/10/2020
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	43	<25	<25	0	108	104
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	43	<25	<25	0	108	104
Benzene	mg/kg	0.2	Org-023	[NT]	43	<0.2	<0.2	0	113	106
Toluene	mg/kg	0.5	Org-023	[NT]	43	<0.5	<0.5	0	104	103
Ethylbenzene	mg/kg	1	Org-023	[NT]	43	<1	<1	0	105	99
m+p-xylene	mg/kg	2	Org-023	[NT]	43	<2	<2	0	108	105
o-Xylene	mg/kg	1	Org-023	[NT]	43	<1	<1	0	107	102
naphthalene	mg/kg	1	Org-023	[NT]	43	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	43	113	117	3	111	111

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	57	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	57	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	57	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	57	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	57	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	57	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	57	124	129	4	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	71	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	71	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	71	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	71	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	71	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	71	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	71	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	71	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	71	116	122	5	[NT]	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	20/10/2020	20/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	21/10/2020	21/10/2020		[NT]	[NT]
TRH C ₆ - C ₉	mg/kg	25	Org-023	[NT]	95	<25	<25	0	[NT]	[NT]
TRH C ₆ - C ₁₀	mg/kg	25	Org-023	[NT]	95	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	95	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	95	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	95	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	95	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	95	<1	<1	0	[NT]	[NT]
naphthalene	mg/kg	1	Org-023	[NT]	95	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	95	120	125	4	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			20/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	1	<50	<50	0	116	110
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	1	<100	<100	0	87	90
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	1	<100	<100	0	77	81
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	1	<50	<50	0	116	110
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	1	<100	<100	0	87	90
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	1	<100	<100	0	77	81
Surrogate o-Terphenyl	%		Org-020	86	1	81	81	0	100	81

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	17	<50	<50	0	86	91
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	17	<100	<100	0	73	99
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	17	<100	<100	0	92	130
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	17	<50	<50	0	86	91
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	17	<100	<100	0	73	99
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	17	<100	<100	0	92	130
Surrogate o-Terphenyl	%		Org-020	[NT]	17	81	81	0	124	82

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	20/10/2020	20/10/2020		20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	34	<50	<50	0	122	109
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	34	<100	<100	0	89	87
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	34	<100	<100	0	92	81
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	34	<50	<50	0	122	109
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	34	<100	<100	0	89	87
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	34	<100	<100	0	92	81
Surrogate o-Terphenyl	%		Org-020	[NT]	34	90	83	8	87	79

QUALITY CONTROL: svTRH (C10-C40) in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	20/10/2020	20/10/2020		20/10/2020	20/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	43	<50	<50	0	110	106
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	43	<100	<100	0	96	86
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	43	<100	<100	0	108	132
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	43	<50	<50	0	110	106
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	43	<100	<100	0	96	86
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	43	<100	<100	0	108	132
Surrogate o-Terphenyl	%		Org-020	[NT]	43	80	80	0	100	88

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	20/10/2020	20/10/2020		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	57	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	57	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	57	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	57	79	79	0	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	20/10/2020	20/10/2020		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	71	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	71	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	71	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	71	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	71	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	71	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	71	80	85	6	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	20/10/2020	20/10/2020		[NT]	[NT]
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	[NT]	95	<50	<50	0	[NT]	[NT]
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	[NT]	95	<100	<100	0	[NT]	[NT]
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	[NT]	95	<100	<100	0	[NT]	[NT]
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	[NT]	95	<50	<50	0	[NT]	[NT]
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	[NT]	95	<100	<100	0	[NT]	[NT]
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	[NT]	95	<100	<100	0	[NT]	[NT]
Surrogate o-Terphenyl	%		Org-020	[NT]	95	96	95	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	83
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	<0.1
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	95	86
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	79	72
Anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	102	92
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	88
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	106	106
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	1	<0.05	<0.05	0	93	80
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	102	1	102	98	4	94	100

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	20/10/2020	20/10/2020		19/10/2020	19/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	94	81
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	97	86
Fluorene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	98	88
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	105	90
Anthracene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	100	87
Pyrene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	98	86
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	102	86
Benzo(b,j,k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	17	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	17	<0.05	<0.05	0	83	86
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	17	98	103	5	98	100

QUALITY CONTROL: PAHs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	90	94
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	94	99
Fluorene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	95	100
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	101	101
Anthracene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	96	102
Pyrene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	95	100
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	98	99
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	34	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	34	<0.05	<0.05	0	78	87
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	34	100	102	2	97	103

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	86	87
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	91	92
Fluorene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	93	93
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	97	99
Anthracene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	93	95
Pyrene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	93	91
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	94	95
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	43	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	43	<0.05	<0.05	0	102	99
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	43	99	98	1	95	96

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	57	0.1	0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	57	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	57	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	57	102	103	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	71	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	71	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	[NT]	71	101	102	1	[NT]	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Anthracene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Pyrene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	[NT]	95	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	[NT]	95	<0.05	<0.05	0	[NT]	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Surrogate <i>p</i> -Terphenyl-d14	%		Org-022/025	[NT]	95	102	102	0	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	77
HCB	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	81	70
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	87	71
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	80
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	82
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	82
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	83	77
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	88	75
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	85	74
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	78
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	1	94	91	3	87	92

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	20/10/2020	20/10/2020		19/10/2020	19/10/2020
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	96	85
HCB	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	89	81
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	91	79
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	101	86
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	99	84
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	94	84
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	97	85
Endrin	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	86	86
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	81	74
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	91	80
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	17	92	94	2	96	93

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	94	97
HCB	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	87	89
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	87	95
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	99	105
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	95	99
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	92	96
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	95	91
Endrin	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	91	100
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	77	83
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	80	82
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	34	92	95	3	92	97

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	90	90
HCB	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	89	89
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	75	79
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	94	95
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	91	91
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	91	92
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	93	97
Endrin	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	89	89
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	95	97
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	88	88
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	43	93	93	0	90	90

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	57	96	97	1	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	71	99	101	2	[NT]	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
HCB	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Endrin	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	95	98	98	0	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	84	73
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	75
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	75	73
Malathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	112	94
Chlorpyrifos	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	91	80
Parathion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	76
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	89	83
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	93	1	94	91	3	87	92

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	20/10/2020	20/10/2020		19/10/2020	19/10/2020
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	86	86
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	95	82
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	75	73
Malathion	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	106	98
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	95	85
Parathion	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	75	75
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	87	79
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	17	92	94	2	96	93

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	80	80
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	89	95
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	73	75
Malathion	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	80	75
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	91	95
Parathion	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	73	80
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	83	91
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	34	92	95	3	92	97

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	82	76
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	95	93
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	87	81
Malathion	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	114	104
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	99	101
Parathion	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	90	88
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	105	105
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	43	93	93	0	90	90

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	57	96	97	1	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	71	99	101	2	[NT]	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Malathion	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	[NT]	95	98	98	0	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date extracted	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			20/10/2020	1	20/10/2020	20/10/2020		20/10/2020	20/10/2020
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	100	100
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	93	1	94	91	3	87	92

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date extracted	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	20/10/2020	20/10/2020		19/10/2020	19/10/2020
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	100	80
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	17	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	17	92	94	2	96	93

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date extracted	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	100	100
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	34	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	34	92	95	3	92	97

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date extracted	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	100	100
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	43	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	43	93	93	0	90	90

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	57	96	97	1	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	71	99	101	2	[NT]	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date extracted	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	[NT]	95	98	98	0	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-5	253565-5
Date prepared	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			19/10/2020	1	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Arsenic	mg/kg	4	Metals-020	<4	1	6	6	0	101	#
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	101	72
Chromium	mg/kg	1	Metals-020	<1	1	10	11	10	102	#
Copper	mg/kg	1	Metals-020	<1	1	20	21	5	103	87
Lead	mg/kg	1	Metals-020	<1	1	14	14	0	104	78
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	87	73
Nickel	mg/kg	1	Metals-020	<1	1	9	8	12	104	71
Zinc	mg/kg	1	Metals-020	<1	1	38	34	11	112	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-6	253565-38
Date prepared	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	17	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Arsenic	mg/kg	4	Metals-020	[NT]	17	5	6	18	98	75
Cadmium	mg/kg	0.4	Metals-020	[NT]	17	<0.4	<0.4	0	99	77
Chromium	mg/kg	1	Metals-020	[NT]	17	7	10	35	100	72
Copper	mg/kg	1	Metals-020	[NT]	17	22	24	9	102	93
Lead	mg/kg	1	Metals-020	[NT]	17	12	16	29	102	78
Mercury	mg/kg	0.1	Metals-021	[NT]	17	<0.1	<0.1	0	80	88
Nickel	mg/kg	1	Metals-020	[NT]	17	9	10	11	101	70
Zinc	mg/kg	1	Metals-020	[NT]	17	35	40	13	105	72

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-7	253565-61
Date prepared	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	34	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Arsenic	mg/kg	4	Metals-020	[NT]	34	7	6	15	97	77
Cadmium	mg/kg	0.4	Metals-020	[NT]	34	<0.4	<0.4	0	98	78
Chromium	mg/kg	1	Metals-020	[NT]	34	9	8	12	99	76
Copper	mg/kg	1	Metals-020	[NT]	34	23	27	16	101	79
Lead	mg/kg	1	Metals-020	[NT]	34	14	12	15	102	78
Mercury	mg/kg	0.1	Metals-021	[NT]	34	<0.1	<0.1	0	80	77
Nickel	mg/kg	1	Metals-020	[NT]	34	10	9	11	101	72
Zinc	mg/kg	1	Metals-020	[NT]	34	39	35	11	114	#

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	253565-78
Date prepared	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Date analysed	-			[NT]	43	19/10/2020	19/10/2020		19/10/2020	19/10/2020
Arsenic	mg/kg	4	Metals-020	[NT]	43	6	5	18	87	83
Cadmium	mg/kg	0.4	Metals-020	[NT]	43	<0.4	<0.4	0	89	76
Chromium	mg/kg	1	Metals-020	[NT]	43	12	11	9	89	80
Copper	mg/kg	1	Metals-020	[NT]	43	25	22	13	91	97
Lead	mg/kg	1	Metals-020	[NT]	43	15	14	7	92	81
Mercury	mg/kg	0.1	Metals-021	[NT]	43	<0.1	<0.1	0	84	89
Nickel	mg/kg	1	Metals-020	[NT]	43	10	10	0	91	76
Zinc	mg/kg	1	Metals-020	[NT]	43	41	34	19	100	71

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	57	19/10/2020	19/10/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	57	10	8	22	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	57	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	57	6	6	0	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	57	34	30	12	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	57	14	11	24	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	57	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	57	13	13	0	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	57	54	50	8	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	71	19/10/2020	19/10/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	71	5	5	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	71	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	71	8	7	13	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	71	26	24	8	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	71	13	13	0	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	71	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	71	12	10	18	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	71	42	40	5	[NT]	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Date analysed	-			[NT]	95	19/10/2020	19/10/2020		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	95	5	4	22	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	95	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	95	9	7	25	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	95	27	27	0	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	95	24	14	53	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	95	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	95	11	10	10	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	95	45	40	12	[NT]	[NT]

QUALITY CONTROL: Misc Inorg - Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date prepared	-			19/10/2020	2	19/10/2020	19/10/2020		19/10/2020	[NT]
Date analysed	-			19/10/2020	2	19/10/2020	19/10/2020		19/10/2020	[NT]
pH 1:5 soil:water	pH Units		Inorg-001	[NT]	2	8.5	8.5	0	101	[NT]
Electrical Conductivity 1:5 soil:water	µS/cm	1	Inorg-002	<1	2	910	860	6	101	[NT]

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			20/10/2020	101	19/10/2020	19/10/2020		19/10/2020	[NT]
Date analysed	-			21/10/2020	101	20/10/2020	20/10/2020		20/10/2020	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	101	<10	<10	0	123	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	101	<10	<10	0	123	[NT]
Benzene	µg/L	1	Org-023	<1	101	<1	<1	0	107	[NT]
Toluene	µg/L	1	Org-023	<1	101	1	1	0	124	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	101	<1	<1	0	125	[NT]
m+p-xylene	µg/L	2	Org-023	<2	101	<2	<2	0	130	[NT]
o-xylene	µg/L	1	Org-023	<1	101	<1	<1	0	126	[NT]
Naphthalene	µg/L	1	Org-023	<1	101	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	114	101	121	121	0	112	[NT]
Surrogate toluene-d8	%		Org-023	101	101	102	102	0	104	[NT]
Surrogate 4-BFB	%		Org-023	116	101	110	103	7	108	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			19/10/2020	101	19/10/2020	19/10/2020		19/10/2020	[NT]
Date analysed	-			20/10/2020	101	20/10/2020	20/10/2020		20/10/2020	[NT]
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	101	<50	<50	0	99	[NT]
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	101	190	200	5	88	[NT]
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	101	<100	<100	0	87	[NT]
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	101	200	220	10	99	[NT]
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	101	<100	<100	0	88	[NT]
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	101	<100	<100	0	87	[NT]
Surrogate o-Terphenyl	%		Org-020	97	101	75	84	11	75	[NT]

QUALITY CONTROL: PAHs in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			19/10/2020	101	19/10/2020	19/10/2020		19/10/2020	[NT]
Date analysed	-			20/10/2020	101	20/10/2020	20/10/2020		20/10/2020	[NT]
Naphthalene	µg/L	1	Org-022/025	<1	101	<1	<1	0	91	[NT]
Acenaphthylene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Acenaphthene	µg/L	1	Org-022/025	<1	101	<1	<1	0	80	[NT]
Fluorene	µg/L	1	Org-022/025	<1	101	<1	<1	0	98	[NT]
Phenanthrene	µg/L	1	Org-022/025	<1	101	<1	<1	0	78	[NT]
Anthracene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Fluoranthene	µg/L	1	Org-022/025	<1	101	<1	<1	0	102	[NT]
Pyrene	µg/L	1	Org-022/025	<1	101	<1	<1	0	100	[NT]
Benzo(a)anthracene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Chrysene	µg/L	1	Org-022/025	<1	101	<1	<1	0	96	[NT]
Benzo(b,j+k)fluoranthene	µg/L	2	Org-022/025	<2	101	<2	<2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	1	Org-022/025	<1	101	<1	<1	0	85	[NT]
Indeno(1,2,3-c,d)pyrene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	1	Org-022/025	<1	101	<1	<1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	88	101	71	78	9	101	[NT]

QUALITY CONTROL: Metals in Water - Dissolved					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			19/10/2020	[NT]	[NT]	[NT]	[NT]	19/10/2020	[NT]
Date analysed	-			19/10/2020	[NT]	[NT]	[NT]	[NT]	19/10/2020	[NT]
Arsenic - Dissolved	mg/L	0.05	Metals-020	<0.05	[NT]	[NT]	[NT]	[NT]	106	[NT]
Cadmium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	102	[NT]
Chromium - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper - Dissolved	mg/L	0.01	Metals-020	<0.01	[NT]	[NT]	[NT]	[NT]	104	[NT]
Lead - Dissolved	mg/L	0.03	Metals-020	<0.03	[NT]	[NT]	[NT]	[NT]	106	[NT]
Mercury - Dissolved	mg/L	0.0005	Metals-021	<0.0005	[NT]	[NT]	[NT]	[NT]	109	[NT]
Nickel - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	106	[NT]
Zinc - Dissolved	mg/L	0.02	Metals-020	<0.02	[NT]	[NT]	[NT]	[NT]	105	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

Report Comments

TRH in waters C10-C40 NEPM - The positive result in the rinsate sample is due to a single peak with no hydrocarbon profile that is consistent with the use of plastic containers.

Acid Extractable Metals in Soil:

- The laboratory RPD acceptance criteria has been exceeded for 253565-95 for Pb. Therefore a triplicate result has been issued as laboratory sample number 253565-104.
- # Percent recovery is not possible to report due to the inhomogeneous nature of the element/s in the sample/s. However an acceptable recovery was obtained for the LCS.

Asbestos-ID in soil: NEPM

This report is consistent with the reporting recommendations in the National Environment Protection (Assessment of Site Contamination) Measure, Schedule B1, May 2013. This is reported outside our scope of NATA accreditation.

SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page

Sample Login Details

Your reference	E33177P, Glenmore Park
Envirolab Reference	253565
Date Sample Received	16/10/2020
Date Instructions Received	16/10/2020
Date Results Expected to be Reported	23/10/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	102 Soil, 1 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	16.7
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Sample not received:
BH312 2.8-3

Please direct any queries to:

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Jacinta Hurst

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Analysis Underway, details on the following page:

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	RTA276 ENM*Foreign Material	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Water - Dissolved	On Hold
TP301-0-0.2	✓	✓	✓	✓	✓	✓	✓		✓	✓					
TP301-0.6-0.8	✓	✓	✓				✓	✓	✓	✓					
TP301-1-1.2	✓	✓	✓				✓		✓	✓					
TP301-2.2-2.4															✓
TP302-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
TP302-0.7-0.9															✓
TP302-0.9-1.1	✓	✓	✓				✓		✓	✓					
TP302-1.9-2.1	✓	✓	✓				✓		✓	✓					
TP303-0-0.2	✓	✓	✓	✓	✓	✓	✓		✓	✓					
TP303-0.8-1	✓	✓	✓				✓								
TP303-1.8-2															✓
TP303-2.2-2.4	✓	✓	✓				✓								
TP304-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
TP304-0.2-0.4	✓	✓	✓				✓		✓	✓					
TP304-1.2-1.4	✓	✓	✓				✓	✓							
TP304-2.2-2.4	✓	✓	✓				✓								
TP305-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓							
TP305-0.8-1	✓	✓	✓				✓	✓							
TP305-1.8-2															✓
TP305-2.2-2.4	✓	✓	✓				✓								
TP306-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓					
TP306-0.7-0.9															✓
TP306-0.9-1.1	✓	✓	✓				✓								
TP306-1.9-2.1															✓
TP306-2.6-2.8															✓
TP307-0-0.2	✓	✓	✓	✓	✓	✓	✓								
TP307-0.8-1	✓	✓	✓				✓								
TP307-1.3-1.5															✓
TP307-1.5-1.7	✓	✓	✓				✓								
TP307-2.4-2.6															✓
TP308-0-0.2	✓	✓	✓	✓	✓	✓	✓								
TP308-0.6-0.8															✓

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	RTA276 ENM*Foreign Material	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Water - Dissolved	On Hold
TP308-0.8-1	✓	✓	✓				✓								
TP309-0-0.2	✓	✓	✓	✓	✓	✓	✓	✓							
TP309-0.8-1	✓	✓	✓				✓	✓							
TP309-1.5-1.7	✓	✓	✓				✓								
TP309-2.1-2.3	✓	✓	✓				✓								
TP310-0-0.2	✓	✓	✓	✓	✓	✓	✓								
TP310-0.8-1	✓	✓	✓				✓								
TP310-1.7-1.9	✓	✓	✓				✓								
TP310-1.9-2.1	✓	✓	✓				✓								
BH311-0-0.2	✓	✓	✓				✓								
BH311-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH311-1.7-1.95	✓	✓	✓				✓								
BH311-2.5-2.7															✓
BH311-3.2-3.45	✓	✓	✓				✓								
BH312-0-0.2	✓	✓	✓				✓								
BH312-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH312-1.7-1.95	✓	✓	✓				✓								
BH312-3.1-3.2															✓
BH313-0-0.2	✓	✓	✓				✓	✓							
BH313-0.7-0.95	✓	✓	✓	✓	✓	✓	✓	✓							
BH313-1.7-1.95	✓	✓	✓				✓								
BH313-2.5-2.7															✓
BH313-3.2-3.4															✓
BH314-0-0.2	✓	✓	✓				✓								
BH314-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH314-1.7-1.95	✓	✓	✓				✓								
BH314-3-3.2															✓
BH315-0-0.2	✓	✓	✓				✓								
BH315-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH315-1.7-1.95	✓	✓	✓				✓								
BH315-2.8-3															✓
BH315-3.2-3.45															✓

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	RTA276 ENM*Foreign Material	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Water - Dissolved	On Hold
BH316-0-0.2	✓	✓	✓				✓								
BH316-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH316-1.7-1.95	✓	✓	✓				✓								
BH316-2.6-2.8															✓
BH316-3.2-3.45															✓
BH317-0-0.2	✓	✓	✓				✓								
BH317-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH317-1.7-1.95	✓	✓	✓				✓								
BH317-2-2.2															✓
BH317-2.4-2.6															✓
BH317-3.3-3.45															✓
BH317-4.2-4.6															✓
BH318-0-0.2	✓	✓	✓				✓	✓							
BH318-0.5-0.7	✓	✓	✓	✓	✓	✓	✓								
BH318-1.7-1.95															✓
BH318-3-3.3															✓
BH319-0-0.2	✓	✓	✓				✓	✓							
BH319-0.5-0.7	✓	✓	✓	✓	✓	✓	✓								
BH319-0.7-0.95															✓
BH319-1.5-1.7															✓
BH319-1.75-1.95															✓
BH319-3.2-3.4															✓
BH320-0-0.2	✓	✓	✓				✓								
BH320-0.7-0.95	✓	✓	✓	✓	✓	✓	✓								
BH320-1.5-1.7															✓
BH320-1.7-1.95															✓
BH320-2.2-2.4															✓
BH320-3.2-3.4															✓
SDUP301	✓	✓	✓	✓	✓	✓	✓								
SDUP304	✓	✓	✓	✓	✓	✓	✓								
SDUP305	✓	✓	✓	✓	✓	✓	✓								
SDUP307	✓	✓	✓				✓								

Sample ID	vTRH(C6-C10)/BTEXN in Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBs in Soil	Acid Extractable metals in soil	Asbestos ID - soils NEPM - ASB-001	Misc Inorg - Soil	RTA276 ENM*Foreign Material	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water	Metals in Water - Dissolved	On Hold
SDUP309	✓	✓	✓				✓								
SDUO310	✓	✓	✓				✓								
SDUP311															✓
SDUP312															✓
FR1											✓	✓	✓	✓	
TB-S1	✓	✓	✓				✓								
TS-S1	✓														

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job Number: E33177P Date Results Required: STANDARD Page: 1 of 5		FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bpage@jkenvironments.com.au	

Location: Glenmore Park							Sample Preserved in Esky on Ice											
Sampler: CR/MMP							Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM 500ml)	pH / EC	Foreign Materials	
12.10.20	1	TP301	0-0.2	G, A, P	0	F: Silty clay			X							X	X	
12.10.20	2	TP301	0.6-0.8	G, A, P	0	F: Silty clay		X							X	X	X	
12.10.20	3	TP301	1-1.2	G, A, P	0	F: Silty clay		X								X	X	
12.10.20	4	TP301	2.2-2.4	G, A	0	F: Silty clay												
12.10.20	5	TP302	0-0.2	G, A, P	0	F: Silty clay			X						X	X	X	
12.10.20	6	TP302	0.7-0.9	G, A	0	F: Silty clay												
12.10.20	7	TP302	0.9-1.1	G, A, P	0	F: Silty clay		X								X	X	
12.10.20	8	TP302	1.9-2.1	G, A, P	0	F: Silty clay		X								X	X	
12.10.20	9	TP303	0-0.2	G, A, P	0.1	F: Silty clay			X							X	X	
12.10.20	10	TP303	0.8-1	G, A	0	F: Silty clay		X										
12.10.20	11	TP303	1.8-2	G, A, P	0	F: Silty clay												
12.10.20	12	TP303	2.2-2.4	G, A, P	0	F: Silty clay		X										
12.10.20	13	TP304	0-0.2	G, A, P	0	F: Silty clay			X						X	X	X	
12.10.20	14	TP304	0.2-0.4	G, A, P	0	F: Silty gravelly clay		X								X	X	
12.10.20	15	TP304	1.2-1.4	G, A, P	0	F: Silty gravelly clay		X							X			
12.10.20	16	TP304	2.2-2.4	G, A, P	0	F: Silty gravelly clay		X										
12.10.20	17	TP305	0-0.2	G, A	0	F: Silty clay			X						X			
12.10.20	18	TP305	0.8-1	G, A	0	F: Silty clay		X							X			
12.10.20	19	TP305	1.8-2	G, A	0	F: Silty clay												
12.10.20	20	TP305	2.2-2.4	G, A	0	F: Silty clay		X										
12.10.20	21	TP306	0-0.2	G, A, P	0.1	F: Silty clay			X						X	X	X	
12.10.20	22	TP306	0.7-0.9	G, A	0	F: Silty clay												
12.10.20	23	TP306	0.9-1.1	G, A, P	0	F: Silty clay		X										
12.10.20	24	TP306	1.9-2.1	G, A, P	0	F: Silty clay												
12.10.20	25	TP306	2.6-2.8	G, A	0	F: Silty clay												

Remarks (comments/detection limits required):							Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag 5kg ENM											
Relinquished By: B. Page			Date: 15.10.20				Time: 445pm			Received By: ELS Syd K-Lone			Date: 15/10					



Envirolab Services
 12 Ashley St
 Chatswood NSW 2067
 Ph: (02) 9910 6200

Job No: 253565

Date Received: 15/10/2020

Time Received: 1550

Received By: K-L

Temp: Cool/Ambient

Cooling: Ice/Icepack

Security: Intact/Broken/None

15:50

COC: 0955-16/10

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job E33177P Number: Date Results STANDARD Required: Page: 2 of 5		FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bpage@jkenvironments.com.au	

Location: Glenmore Park							Sample Preserved in Esky on Ice											
Sampler: CR/MMP							Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM 500ml)			
12.10.20	26	TP307	0-0.2	G, A	0	F: Silty clay			X									
12.10.20	27	TP307	0.8-1	G, A	0	F: Silty clay		X										
12.10.20	28	TP307	1.3-1.5	G, A	0	F: Silty clay												
12.10.20	29	TP307	1.5-1.7	G, A	0	F: Silty clay		X										
12.10.20	30	TP307	2.4-2.6	G, A	0	F: Silty clay												
12.10.20	31	TP308	0-0.2	G, A	0	F: Silty clay			X									
12.10.20	32	TP308	0.6-0.8	G, A	0	F: Silty clay												
12.10.20	33	TP308	0.8-1	G, A	1	F: Silty gravelly clay		X										
12.10.20	34	TP309	0-0.2	G, A	0.2	F: Silty clay			X						X			
12.10.20	35	TP309	0.8-1	G, A	0	F: Silty clay		X							X			
12.10.20	36	TP309	1.5-1.7	G, A	0	F: Silty clay		X										
12.10.20	37	TP309	2.1-2.3	G, A	0	F: Silty clay		X										
12.10.20	38	TP310	0-0.2	G, A	0	F: Silty clay			X									
12.10.20	39	TP310	0.8-1	G, A	0	F: Silty clay		X										
12.10.20	40	TP310	1.7-1.9	G, A	0	F: Silty clay		X										
12.10.20	41	TP310	1.9-2.1	G, A	0	F: Silty gravelly clay		X										
13.10.20	42	BH311	0-0.2	G, A	0	F: Clayey silt		X										
13.10.20	43	BH311	0.7-0.95	G, A	0	F: Silty clay			X									
13.10.20	44	BH311	1.7-1.95	G, A	0	F: Silty clay		X										
13.10.20	45	BH311	2.5-2.7	G, A	0	F: Silty clay												
13.10.20	46	BH311	3.2-3.45	G, A	0	F: Silty clay		X										
14.10.20	47	BH312	0-0.2	G, A	0	F: Silty clay		X										
14.10.20	48	BH312	0.7-0.95	G, A	0	F: Silty clay			X									
14.10.20	49	BH312	1.7-1.95	G, A	0	F: Silty clay		X										
14.10.20	NR	BH312	2.8-3	G	0	F: Silty clay												
14.10.20	50	BH312	3.1-3.2	G, A	0	F: Silty clay												
Remarks (comments/detection limits required):							Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag											
							253565 Relinquished By: B. Page Date: 15.10.20 Time: 445pm Received By: ELS Sgd K. GOR Date: 15/10 1550											

COC = 16/10
0955

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job Number: E33177P Date Results Required: STANDARD Page: 3 of 5		FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bpage@jkenvironments.com.au	

Location: Glenmore Park							Sample Preserved in Esky on Ice											
Sampler: CR/MMP							Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM 500ml)			
13.10.20	51	BH313	0-0.2	G, A	0	F: Silty clay		X							X			
13.10.20	52	BH313	0.7-0.95	G, A	0	F: Silty clay			X						X			
13.10.20	53	BH313	1.7-1.95	G, A	0	F: Silty gravelly clay		X										
13.10.20	54	BH313	2.5-2.7	G, A	0.1	F: Silty clay												
13.10.20	55	BH313	3.2-3.4	G, A	0	F: Silty clay												
13.10.20	56	BH314	0-0.2	G, A	0	F: Silty gravelly clay		X										
13.10.20	57	BH314	0.7-0.95	G, A	0	F: Silty clay			X									
13.10.20	58	BH314	1.7-1.95	G, A	0	F: Silty clay		X										
13.10.20	59	BH314	3-3.2	G, A	0	F: Silty clay												
13.10.20	60	BH315	0-0.2	G, A	0.1	F: Silty clay		X										
13.10.20	61	BH315	0.7-0.95	G, A	0.1	F: Silty clay			X									
13.10.20	62	BH315	1.7-1.95	G, A	0	F: Silty clay		X										
13.10.20	63	BH315	2.8-3	G	0	F: Silty clay												
13.10.20	64	BH315	3.2-3.45	G, A	0	F: Silty clay												
13.10.20	65	BH316	0-0.2	G, A	0	F: Silty clay		X										
13.10.20	66	BH316	0.7-0.95	G, A	0	F: Silty clay			X									
13.10.20	67	BH316	1.7-1.95	G, A	0	F: Silty clay		X										
13.10.20	68	BH316	2.6-2.8	G, A	0	F: Silty clay												
13.10.20	69	BH316	3.2-3.45	G, A	0	F: Silty clay												
13.10.20	70	BH317	0-0.2	G, A	0	F: Silty clay		X										
13.10.20	71	BH317	0.7-0.95	G, A	0	F: Silty clay			X									
13.10.20	72	BH317	1.7-1.95	G, A	0	F: Silty clay		X										
13.10.20	73	BH317	2-2.2	G, A	0	F: Gravelly sand												
13.10.20	74	BH317	2.4-2.6	G, A	0	F: Silty clay												
13.10.20	75	BH317	3.3-3.45	G, A	0	F: Silty clay												
13.10.20	76	BH317	4.2-4.6	G, A	0	F: Silty clay												
Remarks (comments/detection limits required):							Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag											
							253565 Date: 15.10.20 Time: 445pm Received By: ELS Syd K-Gore Date: 15/10 1550											
Relinquished By: B. Page																		

COC! 16/10
0955

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job E33177P Number: Date Results STANDARD Required: Page: 4 of 5		FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bp@jkenvironments.com.au	

Location: Glenmore Park							Sample Preserved in Esky on Ice											
Sampler: CR/MMP							Tests Required											
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM 500ml)			
14.10.20	77	BH318	0-0.2	G, A	0	F: Silty clay		X							X			
14.10.20	78	BH318	0.5-0.7	G, A	0	F: Silty clay			X									
14.10.20	79	BH318	1.7-1.95	G, A	0	F: Silty clay												
14.10.20	80	BH318	3-3.3	G, A	0	F: Silty clay												
14.10.20	81	BH319	0-0.2	G, A	0	F: Silty gravelly clay		X							X			
14.10.20	82	BH319	0.5-0.7	G	0	F: Silty clay			X									
14.10.20	83	BH319	0.7-0.95	G, A	0	F: Silty clay												
14.10.20	84	BH319	1.5-1.7	G	0	F: Silty clay												
14.10.20	85	BH319	1.75-1.95	G, A	0	F: Silty clay												
14.10.20	86	BH319	3.2-3.4	G, A	0	F: Silty clay												
14.10.20	87	BH320	0-0.2	G, A	0.1	F: Silty gravelly clay		X										
14.10.20	88	BH320	0.7-0.95	G, A	0	F: Silty clay			X									
14.10.20	89	BH320	1.5-1.7	G	0	F: Silty clay												
14.10.20	90	BH320	1.7-1.95	G, A	0	F: Silty clay												
14.10.20	91	BH320	2.2-2.4	G, A	0	F: Silty clay												
14.10.20	92	BH320	3.2-3.4	G, A	0	F: Silty clay												
-	93	SDUP301	-	G		Soil			X									
-	##	SDUP302	-	G		Soil			X									
Remarks (comments/detection limits required): ## send to envirolab VIC							Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag 253565											
Relinquished By: B. Page				Date: 15.10.20			Time: 445pm		Received By: ELS Syd K-Gore				Date: 15/10. 1530					

coc: 16/10
 0955

CERTIFICATE OF ANALYSIS 23012

Client Details

Client	JK Environments
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	<u>E33177P</u>
Number of Samples	4 Soil
Date samples received	19/10/2020
Date completed instructions received	19/10/2020

Analysis Details

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

Report Details

Date results requested by	26/10/2020
Date of Issue	26/10/2020
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Chris De Luca, Operations Manager

Authorised By



Pamela Adams, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil					
Our Reference		23012-1	23012-2	23012-3	23012-4
Your Reference	UNITS	SDUP302	SDUP303	SDUP306	SDUP308
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
vTRH C ₆ - C ₉	mg/kg	<25	<25	<25	<25
vTRH C ₆ - C ₁₀	mg/kg	<25	<25	<25	<25
TRH C ₆ - C ₁₀ less BTEX (F1)	mg/kg	<25	<25	<25	<25
Benzene	mg/kg	<0.2	<0.2	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1	<1	<1
m+p-xylene	mg/kg	<2	<2	<2	<2
o-Xylene	mg/kg	<1	<1	<1	<1
Naphthalene	mg/kg	<1	<1	<1	<1
Total BTEX	mg/kg	<1	<1	<1	<1
Total +ve Xylenes	mg/kg	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	96	95	115	113

TRH Soil C10-C40 NEPM					
Our Reference		23012-1	23012-2	23012-3	23012-4
Your Reference	UNITS	SDUP302	SDUP303	SDUP306	SDUP308
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	mg/kg	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	mg/kg	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ -C ₁₆	mg/kg	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	mg/kg	<50	<50	<50	<50
TRH >C ₁₆ -C ₃₄	mg/kg	<100	<100	<100	<100
TRH >C ₃₄ -C ₄₀	mg/kg	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50	<50	<50
Surrogate o-Terphenyl	%	97	96	96	95

PAHs in Soil					
Our Reference		23012-1	23012-2	23012-3	23012-4
Your Reference	UNITS	SDUP302	SDUP303	SDUP306	SDUP308
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	24/10/2020	24/10/2020	24/10/2020	24/10/2020
Naphthalene	mg/kg	0.1	<0.1	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1	<0.1	<0.1
Phenanthrene	mg/kg	0.1	<0.1	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(b,j&k)fluoranthene	mg/kg	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PAH's	mg/kg	0.2	<0.05	<0.05	<0.05
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (Half)	mg/kg	<0.5	<0.5	<0.5	<0.5
Benzo(a)pyrene TEQ calc (PQL)	mg/kg	<0.5	<0.5	<0.5	<0.5
Surrogate <i>p</i> -Terphenyl-d ₁₄	%	114	96	108	108

OCP in Soil			
Our Reference		23012-1	23012-2
Your Reference	UNITS	SDUP302	SDUP303
Date Sampled		14/10/2020	14/10/2020
Type of sample		Soil	Soil
Date extracted	-	21/10/2020	21/10/2020
Date analysed	-	24/10/2020	24/10/2020
alpha-BHC	mg/kg	<0.1	<0.1
Hexachlorobenzene	mg/kg	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1
Total +ve reported Aldrin + Dieldrin	mg/kg	<0.1	<0.1
Total +ve reported DDT+DDD+DDE	mg/kg	<0.1	<0.1
Surrogate 2-chlorophenol-d4	%	90	82

OP in Soil			
Our Reference		23012-1	23012-2
Your Reference	UNITS	SDUP302	SDUP303
Date Sampled		14/10/2020	14/10/2020
Type of sample		Soil	Soil
Date extracted	-	21/10/2020	21/10/2020
Date analysed	-	24/10/2020	24/10/2020
Azinphos-methyl	mg/kg	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1
Chlorpyrifos	mg/kg	<0.1	<0.1
Chlorpyrifos-methyl	mg/kg	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1
Dichlorovos	mg/kg	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1
Surrogate 2-chlorophenol-d4	%	90	82

PCBs in Soil			
Our Reference		23012-1	23012-2
Your Reference	UNITS	SDUP302	SDUP303
Date Sampled		14/10/2020	14/10/2020
Type of sample		Soil	Soil
Date extracted	-	21/10/2020	21/10/2020
Date analysed	-	24/10/2020	24/10/2020
Aroclor 1016	mg/kg	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1
Surrogate 2-fluorobiphenyl	%	94	86

Acid Extractable metals in soil					
Our Reference		23012-1	23012-2	23012-3	23012-4
Your Reference	UNITS	SDUP302	SDUP303	SDUP306	SDUP308
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date digested	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	22/10/2020	22/10/2020	22/10/2020	22/10/2020
Arsenic	mg/kg	8	7	8	7
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	15	13	12	13
Copper	mg/kg	28	30	30	26
Lead	mg/kg	19	19	17	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	12	14	15	15
Zinc	mg/kg	47	48	59	51

Moisture					
Our Reference		23012-1	23012-2	23012-3	23012-4
Your Reference	UNITS	SDUP302	SDUP303	SDUP306	SDUP308
Date Sampled		14/10/2020	14/10/2020	14/10/2020	14/10/2020
Type of sample		Soil	Soil	Soil	Soil
Date prepared	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	22/10/2020	22/10/2020	22/10/2020	22/10/2020
Moisture	%	8.1	8.0	5.3	9.0

Method ID	Methodology Summary
Inorg-008	Moisture content determined by heating at 105 deg C for a minimum of 12 hours.
Metals-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021 CV-AAS	Determination of Mercury by Cold Vapour AAS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis. Note, the Total +ve TRH PQL is reflective of the lowest individual PQL and is therefore "Total +ve TRH" is simply a sum of the positive individual TRH fractions (>C10-C40).
Org-021/022	Soil samples are extracted with dichloromethane/acetone and waters with dichloromethane and analysed by GC-ECD or GC-MS. Note, the Total +ve PCBs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PCBs" is simply a sum of the positive individual PCBs.
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Note, For OCs the Total +ve reported DDD+DDE+DDT PQL is reflective of the lowest individual PQL and is therefore simply a sum of the positive individually report DDD+DDE+DDT.

Method ID	Methodology Summary
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013. For soil results:- 1. 'EQ PQL' values are assuming all contributing PAHs reported as <PQL are actually at the PQL. This is the most conservative approach and can give false positive TEQs given that PAHs that contribute to the TEQ calculation may not be present. 2. 'EQ zero' values are assuming all contributing PAHs reported as <PQL are zero. This is the least conservative approach and is more susceptible to false negative TEQs when PAHs that contribute to the TEQ calculation are present but below PQL. 3. 'EQ half PQL' values are assuming all contributing PAHs reported as <PQL are half the stipulated PQL. Hence a mid-point between the most and least conservative approaches above. Note, the Total +ve PAHs PQL is reflective of the lowest individual PQL and is therefore "Total +ve PAHs" is simply a sum of the positive individual PAHs.
Org-022	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater. Note, the Total +ve Xylene PQL is reflective of the lowest individual PQL and is therefore "Total +ve Xylenes" is simply a sum of the positive individual Xylenes.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	23012-1
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Date analysed	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	21/10/2020
vTRH C ₆ - C ₉	mg/kg	25	Org-023	<25	2	<25	<25	0	92	99
vTRH C ₆ - C ₁₀	mg/kg	25	Org-023	<25	2	<25	<25	0	92	99
Benzene	mg/kg	0.2	Org-023	<0.2	2	<0.2	<0.2	0	95	102
Toluene	mg/kg	0.5	Org-023	<0.5	2	<0.5	<0.5	0	96	103
Ethylbenzene	mg/kg	1	Org-023	<1	2	<1	<1	0	85	91
m+p-xylene	mg/kg	2	Org-023	<2	2	<2	<2	0	91	99
o-Xylene	mg/kg	1	Org-023	<1	2	<1	<1	0	88	95
Naphthalene	mg/kg	1	Org-023	<1	2	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	112	2	95	119	22	103	107

QUALITY CONTROL: TRH Soil C10-C40 NEPM						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	23012-1
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Date analysed	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	21/10/2020
TRH C ₁₀ - C ₁₄	mg/kg	50	Org-020	<50	2	<50	<50	0	85	83
TRH C ₁₅ - C ₂₈	mg/kg	100	Org-020	<100	2	<100	<100	0	78	100
TRH C ₂₉ - C ₃₆	mg/kg	100	Org-020	<100	2	<100	<100	0	120	91
TRH >C ₁₀ -C ₁₆	mg/kg	50	Org-020	<50	2	<50	<50	0	85	83
TRH >C ₁₆ -C ₃₄	mg/kg	100	Org-020	<100	2	<100	<100	0	78	100
TRH >C ₃₄ -C ₄₀	mg/kg	100	Org-020	<100	2	<100	<100	0	120	91
Surrogate o-Terphenyl	%		Org-020	81	2	96	96	0	76	91

QUALITY CONTROL: PAHs in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			24/10/2020	2	24/10/2020	24/10/2020		24/10/2020	[NT]
Naphthalene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	98	[NT]
Acenaphthylene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	104	[NT]
Acenaphthene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluorene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	102	[NT]
Phenanthrene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	98	[NT]
Anthracene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	94	[NT]
Pyrene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	96	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	94	[NT]
Benzo(b,j&k)fluoranthene	mg/kg	0.2	Org-022	<0.2	2	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022	<0.05	2	<0.05	<0.05	0	94	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d ₁₄	%		Org-022	90	2	96	118	21	100	[NT]

QUALITY CONTROL: OCP in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			24/10/2020	2	24/10/2020	24/10/2020		24/10/2020	[NT]
alpha-BHC	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	100	[NT]
Hexachlorobenzene	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	98	[NT]
gamma-BHC	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	86	[NT]
delta-BHC	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	86	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	88	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	90	[NT]
alpha-chlordane	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	90	[NT]
Dieldrin	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	90	[NT]
Endrin	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan II	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	96	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	94	[NT]
Methoxychlor	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022	74	2	82	92	11	88	[NT]

QUALITY CONTROL: OP in Soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			24/10/2020	2	24/10/2020	24/10/2020		24/10/2020	[NT]
Azinphos-methyl	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Chlorpyrifos	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	94	[NT]
Chlorpyrifos-methyl	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dichlorovos	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Dimethoate	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	114	[NT]
Fenitrothion	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	122	[NT]
Malathion	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Parathion	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-chlorophenol-d4	%		Org-022	74	2	82	92	11	88	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date extracted	-			21/10/2020	2	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			24/10/2020	2	24/10/2020	24/10/2020		24/10/2020	[NT]
Aroclor 1016	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	100	[NT]
Aroclor 1260	mg/kg	0.1	Org-022	<0.1	2	<0.1	<0.1	0	[NT]	[NT]
Surrogate 2-fluorobiphenyl	%		Org-022	78	2	86	96	11	92	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-1	[NT]
Date digested	-			21/10/2020	3	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			22/10/2020	3	22/10/2020	22/10/2020		22/10/2020	[NT]
Arsenic	mg/kg	4	Metals-020 ICP-AES	<4	3	8	8	0	106	[NT]
Cadmium	mg/kg	0.4	Metals-020 ICP-AES	<0.4	3	<0.4	<0.4	0	106	[NT]
Chromium	mg/kg	1	Metals-020 ICP-AES	<1	3	12	12	0	104	[NT]
Copper	mg/kg	1	Metals-020 ICP-AES	<1	3	30	29	3	105	[NT]
Lead	mg/kg	1	Metals-020 ICP-AES	<1	3	17	16	6	104	[NT]
Mercury	mg/kg	0.1	Metals-021 CV-AAS	<0.1	3	<0.1	<0.1	0	117	[NT]
Nickel	mg/kg	1	Metals-020 ICP-AES	<1	3	15	15	0	103	[NT]
Zinc	mg/kg	1	Metals-020 ICP-AES	<1	3	59	61	3	104	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

SAMPLE RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Brendan Page

Sample Login Details

Your reference	E33177P
Envirolab Reference	23012
Date Sample Received	19/10/2020
Date Instructions Received	19/10/2020
Date Results Expected to be Reported	26/10/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	4 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	15.8
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Pamela Adams

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Fax: 03 9763 2633
Email: padams@envirolab.com.au

Chris De Luca

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Email: cdeluca@envirolab.com.au

Analysis Underway, details on the following page:



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Sample ID	VTRH(C6-C10)/BTEXN in Soil	TRH Soil C10-C40 NEPM	PAHs in Soil	OCP in Soil	OP in Soil	PCBs in Soil	Acid Extractable metals in soil
SDUP302	✓	✓	✓	✓	✓	✓	✓
SDUP303	✓	✓	✓	✓	✓	✓	✓
SDUP306	✓	✓	✓				✓
SDUP308	✓	✓	✓				✓

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

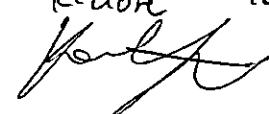
Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

SAMPLE AND CHAIN OF CUSTODY FORM

TO: ENVIROLAB SERVICES PTY LTD 12 ASHLEY STREET CHATSWOOD NSW 2067 P: (02) 99106200 F: (02) 99106201 Attention: Aileen		EIS Job E33177P Number: Date Results STANDARD Required: Page: 4 of 5		FROM:  JK Environments REAR OF 115 WICKS ROAD MACQUARIE PARK, NSW 2113 P: 02-9888 5000 F: 02-9888 5001 Attention: bpape@ikenvironments.com.au															
Location: Glenmore Park		Sample Preserved in Esky on Ice																	
Sampler: CR/MMP		Tests Required																	
Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 2	Combo 3	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos (NEPM 500ml)				
14.10.20	77	BH318	0-0.2	G, A	0	F: Silty clay		X							X				
14.10.20	78	BH318	0.5-0.7	G, A	0	F: Silty clay			X										
14.10.20	79	BH318	1.7-1.95	G, A	0	F: Silty clay													
14.10.20	80	BH318	3-3.3	G, A	0	F: Silty clay													
14.10.20	81	BH319	0-0.2	G, A	0	F: Silty gravelly clay		X							X				
14.10.20	82	BH319	0.5-0.7	G	0	F: Silty clay			X										
14.10.20	83	BH319	0.7-0.95	G, A	0	F: Silty clay													
14.10.20	84	BH319	1.5-1.7	G	0	F: Silty clay													
14.10.20	85	BH319	1.75-1.95	G, A	0	F: Silty clay													
14.10.20	86	BH319	3.2-3.4	G, A	0	F: Silty clay													
14.10.20	87	BH320	0-0.2	G, A	0.1	F: Silty gravelly clay		X											
14.10.20	88	BH320	0.7-0.95	G, A	0	F: Silty clay			X										
14.10.20	89	BH320	1.5-1.7	G	0	F: Silty clay													
14.10.20	90	BH320	1.7-1.95	G, A	0	F: Silty clay													
14.10.20	91	BH320	2.2-2.4	G, A	0	F: Silty clay													
14.10.20	92	BH320	3.2-3.4	G, A	0	F: Silty clay													
-	93	SDUP301	-	G		Soil			X										
-	##	SDUP302	-	G		Soil			X										
Remarks (comments/detection limits required): ## send to envirolab VIC							Sample Containers: G - 250mg Glass Jar A - Ziplock Asbestos Bag P - Plastic Bag Time: 445pm Received By: ELS Syd K-Gore Date: 15/10/20												

ELS Syd K-Gore
 16/10/2020 1500


COC: 16/10
 0955


 Envirolab Services
 25 Research Drive
 Croydon South VIC 3136
 Ph: (03) 9763 2000
 Job No: 23012
 Date Received: 19/10/20
 Time Received: 12:15pm
 Received By: GS
 Temp: Cool/Ambient
 Cooling: Ice/Repack
 Security: Intact/Broken/None

15-88

[illegible]

ELS Syd K-Gore

16/10/2020
1500

COL: 16/10
0955

CERTIFICATE OF ANALYSIS 253783

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	<u>E33177P, Glenmore Park</u>
Number of Samples	7 Water
Date samples received	20/10/2020
Date completed instructions received	20/10/2020

Analysis Details

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

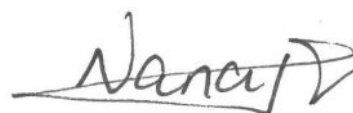
Report Details

Date results requested by	27/10/2020
Date of Issue	26/10/2020
NATA Accreditation Number 2901. This document shall not be reproduced except in full.	
Accredited for compliance with ISO/IEC 17025 - Testing. Tests not covered by NATA are denoted with *	

Results Approved By

Dragana Tomas, Senior Chemist
 Hannah Nguyen, Senior Chemist
 Priya Samarawickrama, Senior Chemist

Authorised By



Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Water

Our Reference		253783-1	253783-2	253783-3	253783-4	253783-5
Your Reference	UNITS	MW8	MW311	MW317	WDUP301	WDUP302
Date Sampled		19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	22/10/2020
Date analysed	-	22/10/2020	22/10/2020	22/10/2020	22/10/2020	23/10/2020
TRH C ₆ - C ₉	µg/L	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀	µg/L	<10	<10	<10	<10	<10
TRH C ₆ - C ₁₀ less BTEX (F1)	µg/L	<10	<10	<10	<10	<10
Benzene	µg/L	<1	<1	<1	<1	<1
Toluene	µg/L	<1	<1	<1	<1	<1
Ethylbenzene	µg/L	<1	<1	<1	<1	<1
m+p-xylene	µg/L	<2	<2	<2	<2	<2
o-xylene	µg/L	<1	<1	<1	<1	<1
Naphthalene	µg/L	<1	<1	<1	<1	<1
Surrogate Dibromofluoromethane	%	72	107	71	76	100
Surrogate toluene-d8	%	119	101	97	110	97
Surrogate 4-BFB	%	117	73	94	95	101

vTRH(C6-C10)/BTEXN in Water

Our Reference		253783-6	253783-7
Your Reference	UNITS	TS-W301	TB-W301
Date Sampled		19/10/2020	19/10/2020
Type of sample		Water	Water
Date extracted	-	21/10/2020	21/10/2020
Date analysed	-	22/10/2020	22/10/2020
Benzene	µg/L	97%	<1
Toluene	µg/L	99%	<1
Ethylbenzene	µg/L	110%	<1
m+p-xylene	µg/L	110%	<2
o-xylene	µg/L	110%	<1
Naphthalene	µg/L	[NA]	<1
Surrogate Dibromofluoromethane	%	97	114
Surrogate toluene-d8	%	97	100
Surrogate 4-BFB	%	101	130

svTRH (C10-C40) in Water						
Our Reference		253783-1	253783-2	253783-3	253783-4	253783-5
Your Reference	UNITS	MW8	MW311	MW317	WDUP301	WDUP302
Date Sampled		19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	22/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
TRH C ₁₀ - C ₁₄	µg/L	<50	<50	<50	<50	<50
TRH C ₁₅ - C ₂₈	µg/L	<100	<100	<100	<100	<100
TRH C ₂₉ - C ₃₆	µg/L	<100	<100	<100	<100	<100
TRH >C ₁₀ - C ₁₆	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₀ - C ₁₆ less Naphthalene (F2)	µg/L	<50	<50	<50	<50	<50
TRH >C ₁₆ - C ₃₄	µg/L	<100	<100	<100	<100	<100
TRH >C ₃₄ - C ₄₀	µg/L	<100	<100	<100	<100	<100
Surrogate o-Terphenyl	%	76	86	82	86	82

PAHs in Water - Low Level						
Our Reference	UNITS	253783-1	253783-2	253783-3	253783-4	253783-5
Your Reference		MW8	MW311	MW317	WDUP301	WDUP302
Date Sampled		19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water	Water	Water
Date extracted	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	22/10/2020	22/10/2020	22/10/2020	22/10/2020	22/10/2020
Naphthalene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Acenaphthylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Acenaphthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluorene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Phenanthrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Chrysene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(b,j+k)fluoranthene	µg/L	<0.2	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Indeno(1,2,3-c,d)pyrene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Dibenzo(a,h)anthracene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(g,h,i)perylene	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Benzo(a)pyrene TEQ	µg/L	<0.5	<0.5	<0.5	<0.5	<0.5
Total +ve PAH's	µg/L	<0.1	<0.1	<0.1	<0.1	<0.1
Surrogate <i>p</i> -Terphenyl-d14	%	86	94	99	95	101

HM in water - dissolved						
Our Reference		253783-1	253783-2	253783-3	253783-4	253783-5
Your Reference	UNITS	MW8	MW311	MW317	WDUP301	WDUP302
Date Sampled		19/10/2020	19/10/2020	19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water	Water	Water
Date prepared	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020	21/10/2020	21/10/2020
Arsenic-Dissolved	µg/L	40	1	7	8	<1
Cadmium-Dissolved	µg/L	<0.1	0.2	<0.1	<0.1	0.2
Chromium-Dissolved	µg/L	<1	<1	<1	<1	<1
Copper-Dissolved	µg/L	<1	1	<1	<1	1
Lead-Dissolved	µg/L	<1	<1	<1	<1	<1
Mercury-Dissolved	µg/L	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel-Dissolved	µg/L	20	7	4	4	7
Zinc-Dissolved	µg/L	12	7	3	1	6

Miscellaneous Inorganics				
Our Reference		253783-1	253783-2	253783-3
Your Reference	UNITS	MW8	MW311	MW317
Date Sampled		19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water
Date prepared	-	20/10/2020	20/10/2020	20/10/2020
Date analysed	-	20/10/2020	20/10/2020	20/10/2020
pH	pH Units	7.1	6.8	7.3
Electrical Conductivity	µS/cm	5,700	14,000	7,400
Chloride, Cl	mg/L	590	2,900	1,300
Sulphate, SO ₄	mg/L	630	2,200	710

Cations in water Dissolved				
Our Reference		253783-1	253783-2	253783-3
Your Reference	UNITS	MW8	MW311	MW317
Date Sampled		19/10/2020	19/10/2020	19/10/2020
Type of sample		Water	Water	Water
Date digested	-	21/10/2020	21/10/2020	21/10/2020
Date analysed	-	21/10/2020	21/10/2020	21/10/2020
Calcium - Dissolved	mg/L	70	230	96
Magnesium - Dissolved	mg/L	200	480	260
Hardness	mgCaCO ₃ /L	990	2,500	1,300

Method ID	Methodology Summary
Inorg-001	pH - Measured using pH meter and electrode in accordance with APHA latest edition, 4500-H+. Please note that the results for water analyses are indicative only, as analysis outside of the APHA storage times.
Inorg-002	Conductivity and Salinity - measured using a conductivity cell at 25°C in accordance with APHA latest edition 2510 and Rayment & Lyons.
Inorg-081	Anions - a range of Anions are determined by Ion Chromatography, in accordance with APHA latest edition, 4110-B. Waters samples are filtered on receipt prior to analysis. Alternatively determined by colourimetry/turbidity using Discrete Analyser.
Metals-020	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
Metals-022	Determination of various metals by ICP-MS.
Org-020	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-FID. F2 = (>C10-C16)-Naphthalene as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater (HSLs Tables 1A (3, 4)). Note Naphthalene is determined from the VOC analysis.
Org-022/025	Soil samples are extracted with Dichloromethane/Acetone and waters with Dichloromethane and analysed by GC-MS/GC-MSMS. Benzo(a)pyrene TEQ as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater - 2013.
Org-023	Water samples are analysed directly by purge and trap GC-MS.
Org-023	Soil samples are extracted with methanol and spiked into water prior to analysing by purge and trap GC-MS. Water samples are analysed directly by purge and trap GC-MS. F1 = (C6-C10)-BTEX as per NEPM B1 Guideline on Investigation Levels for Soil and Groundwater.

QUALITY CONTROL: vTRH(C6-C10)/BTEXN in Water					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W2	[NT]
Date extracted	-			22/10/2020	1	21/10/2020	21/10/2020		21/10/2020	[NT]
Date analysed	-			23/10/2020	1	22/10/2020	22/10/2020		22/10/2020	[NT]
TRH C ₆ - C ₉	µg/L	10	Org-023	<10	1	<10	<10	0	99	[NT]
TRH C ₆ - C ₁₀	µg/L	10	Org-023	<10	1	<10	<10	0	99	[NT]
Benzene	µg/L	1	Org-023	<1	1	<1	<1	0	104	[NT]
Toluene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
Ethylbenzene	µg/L	1	Org-023	<1	1	<1	<1	0	110	[NT]
m+p-xylene	µg/L	2	Org-023	<2	1	<2	<2	0	85	[NT]
o-xylene	µg/L	1	Org-023	<1	1	<1	<1	0	114	[NT]
Naphthalene	µg/L	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate Dibromofluoromethane	%		Org-023	96	1	72	101	34	93	[NT]
Surrogate toluene-d8	%		Org-023	99	1	119	98	19	85	[NT]
Surrogate 4-BFB	%		Org-023	100	1	117	99	17	115	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Water						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	253783-2
Date extracted	-			21/10/2020	1	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Date analysed	-			21/10/2020	1	22/10/2020	22/10/2020		21/10/2020	21/10/2020
TRH C ₁₀ - C ₁₄	µg/L	50	Org-020	<50	1	<50	<50	0	96	98
TRH C ₁₅ - C ₂₈	µg/L	100	Org-020	<100	1	<100	<100	0	88	93
TRH C ₂₉ - C ₃₆	µg/L	100	Org-020	<100	1	<100	<100	0	113	102
TRH >C ₁₀ - C ₁₆	µg/L	50	Org-020	<50	1	<50	<50	0	96	98
TRH >C ₁₆ - C ₃₄	µg/L	100	Org-020	<100	1	<100	<100	0	88	93
TRH >C ₃₄ - C ₄₀	µg/L	100	Org-020	<100	1	<100	<100	0	113	102
Surrogate o-Terphenyl	%		Org-020	94	1	76	81	6	68	86

QUALITY CONTROL: PAHs in Water - Low Level						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	253783-2
Date extracted	-			21/10/2020	1	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Date analysed	-			22/10/2020	1	22/10/2020	22/10/2020		22/10/2020	22/10/2020
Naphthalene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	87	113
Acenaphthylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Acenaphthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	116
Fluorene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	114	119
Phenanthrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	104	91
Anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Fluoranthene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	93	111
Pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	96	117
Benzo(a)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Chrysene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	86
Benzo(b,j+k)fluoranthene	µg/L	0.2	Org-022/025	<0.2	1	<0.2	<0.2	0	[NT]	[NT]
Benzo(a)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	107	105
Indeno(1,2,3-c,d)pyrene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Dibenzo(a,h)anthracene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Benzo(g,h,i)perylene	µg/L	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	90	1	86	97	12	82	94

QUALITY CONTROL: HM in water - dissolved						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	253783-2
Date prepared	-			21/10/2020	1	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Date analysed	-			21/10/2020	1	21/10/2020	21/10/2020		21/10/2020	21/10/2020
Arsenic-Dissolved	µg/L	1	Metals-022	<1	1	40	40	0	94	105
Cadmium-Dissolved	µg/L	0.1	Metals-022	<0.1	1	<0.1	<0.1	0	97	108
Chromium-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	96	99
Copper-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	104	89
Lead-Dissolved	µg/L	1	Metals-022	<1	1	<1	<1	0	102	90
Mercury-Dissolved	µg/L	0.05	Metals-021	<0.05	1	<0.05	<0.05	0	107	99
Nickel-Dissolved	µg/L	1	Metals-022	<1	1	20	20	0	95	90
Zinc-Dissolved	µg/L	1	Metals-022	<1	1	12	11	9	97	93

QUALITY CONTROL: Miscellaneous Inorganics					Duplicate			Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date prepared	-			20/10/2020	[NT]	[NT]	[NT]	[NT]	20/10/2020	[NT]
Date analysed	-			20/10/2020	[NT]	[NT]	[NT]	[NT]	20/10/2020	[NT]
pH	pH Units		Inorg-001	[NT]	[NT]	[NT]	[NT]	[NT]	98	[NT]
Electrical Conductivity	µS/cm	1	Inorg-002	<1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chloride, Cl	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Sulphate, SO4	mg/L	1	Inorg-081	<1	[NT]	[NT]	[NT]	[NT]	116	[NT]

QUALITY CONTROL: Cations in water Dissolved						Duplicate		Spike Recovery %		
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date digested	-			21/10/2020	[NT]	[NT]	[NT]	[NT]	21/10/2020	[NT]
Date analysed	-			21/10/2020	[NT]	[NT]	[NT]	[NT]	21/10/2020	[NT]
Calcium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	104	[NT]
Magnesium - Dissolved	mg/L	0.5	Metals-020	<0.5	[NT]	[NT]	[NT]	[NT]	108	[NT]

Result Definitions

NT	Not tested
NA	Test not required
INS	Insufficient sample for this test
PQL	Practical Quantitation Limit
<	Less than
>	Greater than
RPD	Relative Percent Difference
LCS	Laboratory Control Sample
NS	Not specified
NEPM	National Environmental Protection Measure
NR	Not Reported

Quality Control Definitions

Blank	This is the component of the analytical signal which is not derived from the sample but from reagents, glassware etc, can be determined by processing solvents and reagents in exactly the same manner as for samples.
Duplicate	This is the complete duplicate analysis of a sample from the process batch. If possible, the sample selected should be one where the analyte concentration is easily measurable.
Matrix Spike	A portion of the sample is spiked with a known concentration of target analyte. The purpose of the matrix spike is to monitor the performance of the analytical method used and to determine whether matrix interferences exist.
LCS (Laboratory Control Sample)	This comprises either a standard reference material or a control matrix (such as a blank sand or water) fortified with analytes representative of the analyte class. It is simply a check sample.
Surrogate Spike	Surrogates are known additions to each sample, blank, matrix spike and LCS in a batch, of compounds which are similar to the analyte of interest, however are not expected to be found in real samples.
Australian Drinking Water Guidelines recommend that Thermotolerant Coliform, Faecal Enterococci, & E.Coli levels are less than 1cfu/100mL. The recommended maximums are taken from "Australian Drinking Water Guidelines", published by NHMRC & ARMC 2011.	
The recommended maximums for analytes in urine are taken from "2018 TLVs and BEIs", as published by ACGIH (where available). Limit provided for Nickel is a precautionary guideline as per Position Paper prepared by AIOH Exposure Standards Committee, 2016.	
Guideline limits for Rinse Water Quality reported as per analytical requirements and specifications of AS 4187, Amdt 2 2019, Table 7.2	

Laboratory Acceptance Criteria

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

Filters, swabs, wipes, tubes and badges will not have duplicate data as the whole sample is generally extracted during sample extraction.

Spikes for Physical and Aggregate Tests are not applicable.

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

Duplicates: >10xPQL - RPD acceptance criteria will vary depending on the analytes and the analytical techniques but is typically in the range 20%-50% – see ELN-P05 QA/QC tables for details; <10xPQL - RPD are higher as the results approach PQL and the estimated measurement uncertainty will statistically increase.

Matrix Spikes, LCS and Surrogate recoveries: Generally 70-130% for inorganics/metals (not SPOCAS); 60-140% for organics/SPOCAS (+/-50% surrogates) and 10-140% for labile SVOCs (including labile surrogates), ultra trace organics and speciated phenols is acceptable.

In circumstances where no duplicate and/or sample spike has been reported at 1 in 10 and/or 1 in 20 samples respectively, the sample volume submitted was insufficient in order to satisfy laboratory QA/QC protocols.

When samples are received where certain analytes are outside of recommended technical holding times (THTs), the analysis has proceeded. Where analytes are on the verge of breaching THTs, every effort will be made to analyse within the THT or as soon as practicable.

Where sampling dates are not provided, Envirolab are not in a position to comment on the validity of the analysis where recommended technical holding times may have been breached.

Measurement Uncertainty estimates are available for most tests upon request.

Analysis of aqueous samples typically involves the extraction/digestion and/or analysis of the liquid phase only (i.e. NOT any settled sediment phase but inclusive of suspended particles if present), unless stipulated on the Envirolab COC and/or by correspondence. Notable exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, total recoverable metals and PFAS where solids are included by default.

Samples for Microbiological analysis (not Amoeba forms) received outside of the 2-8°C temperature range do not meet the ideal cooling conditions as stated in AS2031-2012.

SAMPLE RECEIPT ADVICE

Client Details

Client	Environmental Investigation Services
Attention	Brendan Page

Sample Login Details

Your reference	E33177P, Glenmore Park
Envirolab Reference	253783
Date Sample Received	20/10/2020
Date Instructions Received	20/10/2020
Date Results Expected to be Reported	27/10/2020

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	7 Water
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	10.7
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Nil

Please direct any queries to:

Aileen Hie	Jacinta Hurst
Phone: 02 9910 6200	Phone: 02 9910 6200
Fax: 02 9910 6201	Fax: 02 9910 6201
Email: ahie@envirolab.com.au	Email: jhurst@envirolab.com.au

Analysis Underway, details on the following page:



Envirolab Services Pty Ltd

ABN 37 112 535 645

12 Ashley St Chatswood NSW 2067

ph 02 9910 6200 fax 02 9910 6201

customerservice@envirolab.com.au

www.envirolab.com.au

Sample ID	vTRH(C6-C10)/BTEXN in Water	svTRH (C10-C40) in Water	PAHs in Water - Low Level	HM in water - dissolved	pH	Electrical Conductivity	Chloride, Cl	Sulphate, SO4	Cations in water Dissolved
MW8	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW311	✓	✓	✓	✓	✓	✓	✓	✓	✓
MW317	✓	✓	✓	✓	✓	✓	✓	✓	✓
WDUP301	✓	✓	✓	✓					
WDUP302	✓	✓	✓	✓					
TS-W301	✓								
TB-W301	✓								

The '✓' indicates the testing you have requested. **THIS IS NOT A REPORT OF THE RESULTS.**

Additional Info

Sample storage - Waters are routinely disposed of approximately 1 month and soils approximately 2 months from receipt.

Requests for longer term sample storage must be received in writing.

Please contact the laboratory immediately if observed settled sediment present in water samples is to be included in the extraction and/or analysis (exceptions include certain Physical Tests (pH/EC/BOD/COD/Apparent Colour etc.), Solids testing, Total Recoverable metals and PFAS analysis where solids are included by default.

TAT for Micro is dependent on incubation. This varies from 3 to 6 days.

SAMPLE AND CHAIN OF CUSTODY FORM

[illegible]

10.7.



Appendix F: Report Explanatory Notes



QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)²⁰ methods and those described in *Environmental Sampling and Analysis, A Practical Guide*, (1991)²¹. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

²⁰ US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. (US EPA SW-846)

²¹ Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$



Appendix G: Data (QA/QC) Evaluation

Data (QA/QC) Evaluation

A. INTRODUCTION

This Data (QA/QC) Evaluation forms part of the validation process for the DQOs summarised in Section 4.1 documented in the SAQP attached in Appendix J of this report. Checks were made to assess the data in terms of precision, accuracy, representativeness, comparability and completeness. These 'PARCC' parameters are referred to collectively as DQIs and are defined in the Report Explanatory Notes attached in Appendix F.

1. Field and Laboratory Considerations

The quality of the analytical data produced for this project has been considered in relation to the following:

- Sample collection, storage, transport and analysis;
- Laboratory PQLs;
- Field QA/QC results; and
- Laboratory QA/QC results.

2. Field QA/QC Samples and Analysis

A summary of the field QA/QC samples collected and analysed for this investigation is provided in the following table:

Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Intra-laboratory duplicate (soil)	SDUP301 (primary sample TP308 0-0.2m)	Approximately 8% of primary samples	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs and PCBs
Intra-laboratory duplicate (soil)	SDUP304 (primary sample TP302 0-0.2m)	As above	As above
Intra-laboratory duplicate (soil)	SDUP305 (primary sample TP302 0-0.2m)	As above	As above
Intra-laboratory duplicate (soil)	SDUP307 (primary sample BH317 0-0.2m)	As above	Heavy metals, TRH/BTEX, PAHs
Intra-laboratory duplicate (soil)	SDUP309 (primary sample BH314 0-0.2m)	As above	As above
Intra-laboratory duplicate (soil)	SDUP310 (primary sample BH315 0-0.2m)	As above	As above
Inter-laboratory duplicate (soil)	SDUP302 (primary sample TP304 0-0.2m)	Approximately 5% of primary samples	Heavy metals, TRH/BTEX, PAHs, OCPs, OPPs and PCBs
Inter-laboratory duplicate (soil)	SDUP303 (primary sample TP301 0-0.2m)	As above	As above
Inter-laboratory duplicate (soil)	SDUP306 (primary sample BH313 0-0.2m)	As above	Heavy metals, TRH/BTEX, PAHs



Sample Type	Sample Identification	Frequency (of Sample Type)	Analysis Performed
Inter-laboratory duplicate (soil)	SDUP308 (primary sample BH311 0-0.2m)	As above	As above
Intra-laboratory duplicate (groundwater)	WDUP301 (primary sample MW317)	Approximately 66% of primary samples	Heavy metals, TRH/BTEX, low level PAHs
Intra-laboratory duplicate (groundwater)	WDUP302 (primary sample MW311)	As above	As above
Trip spike (soil)	TS-S1 (12/10/2020)	One for the investigation to demonstrate adequacy of preservation, storage and transport methods	BTEX
Trip spike (water)	TS-W301 (19/10/2020)	One for the investigation to demonstrate adequacy of preservation, storage and transport methods	BTEX
Trip blank (soil)	TB-S1 (12/10/2020)	One for the investigation to demonstrate adequacy of storage and transport methods	Heavy metals, TRH/BTEX, PAHs
Trip blank (water)	TB-W301 (19/10/2020)	One for the investigation to demonstrate adequacy of storage and transport methods	BTEX
Rinsate (soil SPT)	FR1 (13/10/2020)	One for the investigation to demonstrate adequacy of decontamination methods	Heavy metals, TRH/BTEX, PAHs

The results for the field QA/QC samples are detailed in the laboratory summary tables (Table Q1 and Table Q2) attached to the investigation report and are discussed in the subsequent sections of this Data (QA/QC) Evaluation report.

3. Data Assessment Criteria

JKE adopted the following criteria for assessing the field and laboratory QA/QC analytical results:

Field Duplicates

Acceptable targets for precision of field duplicates in this report will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field/Trip Blanks and Rinsates

Acceptable targets for field blank and rinsate samples in this report will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to typical background concentrations in soils.

Trip Spikes

Acceptable targets for trip spike samples in this report will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data is assessed against the laboratory QA/QC criteria which is outlined in the laboratory reports. These criteria were developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the acceptable limits adopted by the primary laboratory (Envirolab) is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics;
- 60-140% recovery acceptable for organics; and
- 10-140% recovery acceptable for VOCs.

Surrogate Spikes

- 60-140% recovery acceptable for general organics; and
- 10-140% recovery acceptable for VOCs.

Method Blanks

- All results less than PQL.

B. DATA EVALUATION

1. Sample Collection, Storage, Transport and Analysis

Samples were collected by trained field staff in accordance with standardised field sampling procedures. Field sampling procedures were designed to be consistent with relevant guidelines, including NEPM (2013) and other guidelines made under the CLM Act 1997.

Appropriate sample preservation, handling and storage procedures were adopted. Laboratory analysis was undertaken within specified holding times generally in accordance with Schedule B(3) of NEPM (2013) and the laboratory NATA accredited methodologies. Envirolab noted that the asbestos results were reported to be consistent with the recommendations in NEPM (2013), however this level of reporting is outside the scope

of their NATA accreditation. In the absence of other available analytical methods for asbestos, this was found to be acceptable for the purpose of this investigation.

JKE note that the temperature on receipt of soil samples was reported to be up to 16.7°C. JKE understand that the temperature is measured at the laboratory using an infrared temperature probe by scanning the outside of the sample container (i.e. one sample jar/container at the time of registering the samples). This procedure is not considered to be robust as there is a potential for the outside of the jar to warm to ambient temperature, or at least to increase from that of the internal contents, relatively quickly. On this basis, JKE are of the opinion that the temperatures reported on the Sample Receipts are unlikely to be reliable or representative of the overall batch. This is further supported by the trip spike recovery results (discussed further below) which reported adequate recovery in the range of 99% to 102%.

JKE note that due to a clerical error, a duplicate sample for groundwater was not analysed by a secondary laboratory (as an inter-laboratory duplicate sample). The analysis of all groundwater samples (including the planned inter-laboratory duplicate sample) was undertaken by the primary laboratory. The analysis was undertaken in accordance with NATA accredited methodologies and the results were consistent between the primary/duplicate sample pairings. JKE consider that this deviation does not affect the precision of the dataset as a whole or the outcome of the investigation.

Review of the project data also indicated that:

- COC documentation was adequately maintained;
- Sample receipt advice documentation was provided for all sample batches;
- All analytical results were reported; and
- Consistent units were used to report the analysis results.

2. Laboratory PQLs

Appropriate PQLs were adopted for the analysis and all PQLs were below the SAC, with the exception of the anthracene PQL for groundwater analysis which was 10 times greater than the ecological SAC. In light of the PAH concentrations reported for soil and groundwater, JKE are of the opinion that this is not significant, and it does not affect the quality or comparability of the dataset as a whole or the outcome of the investigation.

3. Field QA/QC Sample Results

Field Duplicates

The results indicated that field precision was acceptable. RPD non-conformances were reported for some analytes as discussed below:

- Elevated RPDs were reported for zinc in SDUP301/TP308 (0-0.2m);
- Elevated RPDs were reported for naphthalene and several heavy metals in SDUP302/TP304 (0-0.2m);
- Elevated RPDs were reported for several heavy metals in SDUP303/TP301 (0-0.2m);
- Elevated RPDs were reported for lead in SDUP304/TP302 (0-0.2m);
- Elevated RPDs were reported for several heavy metals in SDUP306/BH313 (0-0.2m);
- Elevated RPDs were reported for phenanthrene (a PAH compound) and several heavy metals in SDUP307/BH317 (0-0.2m);
- Elevated RPDs were reported for several heavy metals in SDUP308/BH311 (0-0.2m);
- Elevated RPDs were reported for several heavy metals in SDUP309/BH314 (0-0.2m);

- Elevated RPDs were reported for phenanthrene (a PAH compound) in SDUP310/BH315 (0-0.2m);
- Elevated RPDs were reported zinc in WDUP301/MW317; and
- Elevated RPDs were reported for arsenic in WDUP302/MW311.

Soil heavy metals RPD values outside the acceptable limits for soil samples have been attributed to sample heterogeneity and the difficulties associated with obtaining homogenous duplicate samples of heterogeneous matrices. The PAH RPDs outside acceptable limits are due to results close to the PQLs. The heterogeneity reports for metals is not significant as all heavy metals concentrations were well below the SAC and both primary and duplicate values were compared to the SAC for risk assessment purposes.

Values outside the acceptable limits for groundwater samples have been attributed to the low analyte concentrations detected (i.e. results close to the PQLs). As both the primary and duplicate sample results were less than the SAC, the exceedances are not considered to have had an adverse impact on the data set as a whole.

Trip Blanks

During the investigation, one soil trip blank and one water trip blank were placed in the eskies during sampling and transported back to the laboratory.

The soil trip blank analysis results were all less than the PQLs with the exception of chromium, lead and zinc with reported concentrations ranging from 2mg/kg to 3mg/kg. Low level metals concentrations are typical in washed sand which is utilised as blank material. In JKE's experience, the concentrations reported were consistent with background concentrations in a sand matrix and were not indicative of cross-contamination. On this basis, cross contamination between samples that may have significance for data validity did not occur.

The water trip blank analysis results were all less than the PQLs, therefore cross contamination between samples that may have significance for data validity did not occur.

Rinsates

A concentration of TRH F2 were detected in the rinsate sample. The laboratory advised that the positive result was due to a single peak with no hydrocarbon profile and is consistent with the use of plastic containers. A trace concentration of toluene was also detected in the rinsate sample. There is a potential for toluene to have impacted the rinsate through the decontamination process as a result of the sampling equipment making contact with parts of the drill rig where hydraulic oil etc is present. Considering the soil analysis results obtained during the investigation, there is considered to be a low potential for cross contamination to have occurred to an extent that may have significance for data validity.

Trip Spikes

The soil trip spike results ranged from 99% to 102% and the water trip spike results ranged from 97% to 110%. The results indicated that field preservation methods were appropriate.

4. Laboratory QA/QC

The analytical methods implemented by the laboratory were performed in accordance with their NATA accreditation and were consistent with Schedule B(3) of NEPM (2013). The frequency of data reported for the laboratory QA/QC (i.e. duplicates, spikes, blanks, LCS) was considered to be acceptable for the purpose of this investigation. A review of the laboratory QA/QC data identified the following minor non-conformances:

- Report 253071 – The RPD for nickel in one sample exceeded the acceptable limit. The laboratory issued a triplicate result for the exceedance;
- Report 253-071 – The matrix spike recovery for zinc in two samples were not able to be determined. The laboratory attributed the failure to the non-homogeneous nature of the samples and noted that the LCS recoveries were acceptable;
- Report 253565 – The RPD for lead in one sample exceeded the acceptable limit. The laboratory issued a triplicate result for the exceedance; and
- Report 253565 – The matrix spike recovery for arsenic, chromium and zinc in one sample, and zinc in another sample was not able to be determined. The laboratory attributed the failure to the non-homogeneous nature of the samples and noted that the LCS recoveries were acceptable.

The laboratory data quality non-conformances were minor and were not considered to impact the overall accuracy of the data.

C. DATA QUALITY SUMMARY

JKE are of the opinion that the data are adequately precise, accurate, representative, comparable and complete to serve as a basis for interpretation to achieve the investigation objectives.

Non-conformances were reported for some field QA/QC samples and laboratory QA/QC analysis. These non-conformances were considered to be sporadic and minor, and were not considered to be indicative of systematic sampling or analytical errors. On this basis, these non-conformances are not considered to materially impact the report findings.

There was only one groundwater monitoring event (for all monitoring wells) undertaken for the DSI, although it is noted that a monitoring event was also undertaken from MW8 as part of the PSI. On this basis there is some uncertainty around the representativeness of the groundwater data, particularly during different climatic conditions and after wet/dry periods. However, given the low contaminant concentrations reported and the relative consistency in concentrations encountered in MW8 between both sampling events, this is not considered to alter the conclusions of the investigation.



Appendix H: Field Work Documents

Groundwater Development Sheets

Job No.: E33177P

Well No.: MW 8

Depth (m): 6

	Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

Standpipe ☐

Other (describe) ☐

Method:	typical	SWL – Before (m):	2.00
Date:	14/10/16	Time – Before:	13:00
Undertaken By:	CR/MMB	SWL – After (m):	~~2.15~~ 2.00
Total Vol. Removed:	32	Time – After:	13:15
PID Reading (ppm):	0.2		

SWL – Before (m):	2.00

Time - Before: 13:00

SWL – After (m): ~~12.1~~ 2.00

Time - After: 13:15

Comments:

[illegible]

Comments:Odours (YES / NO)	NAPL/PSH (YES / NO)	Sheen (YES / NO)	Steady State Achieved (YES / NO)

YSI Used: 55

clear water

Remarks:

- Steady state conditions
- Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown

- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry

Date:	21/10/20

WELL FINISH DETAILS

WELL DEVELOPMENT DETAILS

Comments:

DEVELOPMENT MEASUREMENTS

Comments:Odours (YES / NO)	NAPL/PSH (YES / NO)	Sheen (YES / NO)	Steady State Achieved (YES / NO)

moderate silt load

Tested By:	CR	Remarks: - Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown - Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date Tested:	14/10/20	
Checked By:	BP	
Date:	21/10/20	



Client:	NSW Department of Education	Job No.:	E33177P
Project:	Proposed Public School	Well No.:	NW 317
Location:	1-23 Forestwood Drive, GLENMORE PARK, NSW	Depth (m):	6

WELL FINISH DETAILS

Gatic Cover ☒	Standpipe ☐	Other (describe) ☐

WELL DEVELOPMENT DETAILS

Method:	1/1/1400	SWL - Before (m):	2.04m
Date:	14/10/20	Time - Before:	12:00
Undertaken By:	ce/mmP	SWL - After (m):	4.4m
Total Vol. Removed:	44	Time - After:	12:30
PID Reading (ppm):	0.6		

Comments:

DEVELOPMENT MEASUREMENTS

Volume Removed (L)	Temp (°C)	DO (mg/L)	EC (µS/cm)	pH	Eh (mV)
2	19.5	2.9	3217	7.15	16.1
4	19.2	2.2	3299	7.13	-33.8
6	19.7	11.5	1815	7.55	-64.0
8	19.2	7.4	4426	7.17	-73.0
10	19.3	7.11	5401	7.10	-93.0
12	20.1	1.0	4718	7.07	-99.9
14	19.5	0.6	5061	7.06	-104.7
16	19.6	1.0	5696	7.09	-102.2
18	19.7	2.0	3963	7.16	-103.6
20	20.1	2.2	6216	7.13	-106.5
22	20.1	0.8	6464	7.14	-113.3
24	20.0	0.8	6353	7.14	-114.8
26	20.0	1.0	6394	7.18	-116.0
30	20.2	2.7	6433	7.21	-117.5
32	20.3	3.1	6200	7.18	-120.9
34	20.5	1.9	6037	7.13	-120.8
36	20.3	0.7	6142	7.15	-123.3
38	20.2	0.7	6234	7.16	-124.8
40	20.7	0.9	6044	7.16	-122.2
42	20.4	1.5	6626	7.20	-121.8
44	20.2	1.5	6618	7.19	-121.9

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI Used: 5

HIGH SILT LOAD

Tested By:	CPL	Remarks:
Date Tested:	14/10/20	- Steady state conditions - Difference in the pH less than 0.2 units, difference in the conductivity less than 10% and SWL stable/not in drawdown
Checked By:	BP	- Minimum 3 monitoring well volumes purged, unless well purged until it is effectively dry
Date:	21/10/20	

Groundwater Sampling Sheets

Tested By: Craig Ridley	Remarks:
Date Tested: 19/10/20	- Steady state conditions
Checked By: BR	- difference in the pH less than 0.2 units, difference in conductivity less than 10%
Date: 21/10/20	10% and SWL stable/not in drawdown

WELL FINISH

WELL PURGE DETAILS:

PURGING / SAMPLING MEASUREMENTS

Comments: Odours (YES / NO), NAPL/PSH (YES / NO), Sheen (YES / NO), Steady State Achieved (YES / NO)

YSI used: 5

Date:

- difference in the pH less than 0.2 units, difference in conductivity less than 10%
10% and SWL stable/not in drawdown

21/10/20

Calibration Documents



PID FIELD CALIBRATION FORM

Client:	NSW Department of Education		
Project:	Proposed Public School		
Location:	1-23 Forestwood Drive, GLENMORE PARK, NSW		
Job Number:	E33177PA		
PID			
Make:	Model:	Unit: <u>PID GREEN</u>	Date of last factory calibration:
Date of calibration:	<u>13/10/20</u>		Name of Calibrator: <u>HAILEY VANG</u>
Calibration gas:	Iso-butylene		Calibration Gas Concentration: 100.0 ppm
Measured reading:	<u>100</u> ppm		Error in measured reading: $\pm$ <u>0</u> ppm
Measured reading Acceptable (Yes/No): <u>YES</u>			
PID			
Make: <u>MINI RAE</u>	Model: <u>2000</u>	Unit: <u>PID YELLOW</u>	Date of last factory calibration: <u>19/8/20</u>
Date of calibration:	<u>19/10/20</u>		Name of Calibrator: <u>C. RILEY</u>
Calibration gas:	Iso-butylene		Calibration Gas Concentration: 100.0 ppm
Measured reading:	<u>100</u> ppm		Error in measured reading: $\pm$ <u>0</u> ppm
Measured reading Acceptable (Yes/No): <u>YES</u>			
PID			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:			Name of Calibrator:
Calibration gas:	Iso-butylene		Calibration Gas Concentration: 100.0 ppm
Measured reading:	ppm		Error in measured reading: $\pm$ ppm
Measured reading Acceptable (Yes/No):			
PID			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:			Name of Calibrator:
Calibration gas:	Iso-butylene		Calibration Gas Concentration: 100.0 ppm
Measured reading:	ppm		Error in measured reading: $\pm$ ppm
Measured reading Acceptable (Yes/No):			
PID			
Make:	Model:	Unit:	Date of last factory calibration:
Date of calibration:			Name of Calibrator:
Calibration gas:	Iso-butylene		Calibration Gas Concentration: 100.0 ppm
Measured reading:	ppm		Error in measured reading: $\pm$ ppm
Measured reading Acceptable (Yes/No):			



WATER QUALITY METER CALIBRATION FORM

Client:	NSW Department of Education		
Project:	Proposed Public School		
Location:	1-23 Forestwood Drive, GLENMORE PARK, NSW		
Job Number:	E33177P		
DISSOLVED OXYGEN			
Make: YSE 5	Model:		
Date of calibration: 14/10/2020	Name of Calibrator: MMP		
Span value: 70% to 130%			
Measured value: 101%			
Measured reading Acceptable (Yes/No): YES			
pH			
Make: YSE 5	Model:		
Date of calibration: 14/10/20	Name of Calibrator: MMP		
Buffer 1: Theoretical pH = 7.01 ± 0.01	Expiry date: 12/21	Lot No: 339904	
Buffer 2: Theoretical pH = 4.01 ± 0.01	Expiry date: 09/21	Lot No: 351749	
Measured reading of Buffer 1: 7.35			
Measured reading of Buffer 2: 4.36			
Slope:		Measured reading Acceptable (Yes/No): YES	
EC			
Make: YSE 5	Model:		
Date: 14/10/20	Name of Calibrator: MMP	Temperature: 21.2 °C	
Calibration solution: CONDUCTIVITY STANDARD	Expiry date: 11/29	Lot No: 354762	
Theoretical conductivity at temperature (see solution container): 1305 µS/cm			
Measured conductivity: 1237 µS/cm		Measured reading Acceptable (Yes/No): YES	
REDOX			
Make: YSE 5	Model:		
Date of calibration: 14/10/20	Name of Calibrator: MMP		
Calibration solution: ORP TEST SOLUTION	Expiry date: 01/25	Lot No: 4923	
Theoretical redox value: 240mV			
Measured redox reading: 220.8 mV		Measured reading Acceptable (Yes/No): YES	



WATER QUALITY METER CALIBRATION FORM

Client:	NSW Department of Education		
Project:	Proposed Public School		
Location:	1-23 Forestwood Drive, GLENMORE PARK, NSW		
Job Number:	E33177P		
DISSOLVED OXYGEN			
Make: YSI S	Model:		
Date of calibration: 19/10/20	Name of Calibrator: CR		
Span value: 70% to 130%			
Measured value: 102			
Measured reading Acceptable (Yes/No): Yes			
pH			
Make: YSI S	Model:		
Date of calibration: 19/10/20	Name of Calibrator: CR		
Buffer 1: Theoretical pH = 7.01 ± 0.01	Expiry date: 12/21	Lot No: 355904	
Buffer 2: Theoretical pH = 4.01 ± 0.01	Expiry date: 09/21	Lot No: 351749	
Measured reading of Buffer 1: 7.04			
Measured reading of Buffer 2: 4.15			
Slope:	Measured reading Acceptable (Yes/No): Yes		
EC			
Make: YSI S	Model:		
Date: 19/5/20	Name of Calibrator: CR	Temperature: 20.8 °C	
Calibration solution: CONDUCTIVITY STANDARD	Expiry date: 11/21	Lot No: 354762	
Theoretical conductivity at temperature (see solution container): 1305 µS/cm			
Measured conductivity: 1335 µS/cm		Measured reading Acceptable (Yes/No): Yes	
REDOX			
Make: YSI S	Model:		
Date of calibration: 19/5/20	Name of Calibrator: CR		
Calibration solution: ORP TEST SOLUTION	Expiry date: 01/25	Lot No: 4923	
Theoretical redox value: 240mV			
Measured redox reading: 239.8 mV		Measured reading Acceptable (Yes/No): Yes	



Appendix I: Guidelines and Reference Documents



Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2018). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia



Appendix J: Sampling, Analysis and Quality Plan (SAQP)



Appendix J

**REPORT TO
NSW DEPARTMENT OF EDUCATION**

**ON
SAMPLING, ANALYSIS AND QUALITY PLAN**

**FOR
DETAILED SITE INVESTIGATION - PROPOSED
MULGOA RISE PUBLIC SCHOOL**

**AT
1-23 FORESTWOOD DRIVE, GLENMORE PARK
NSW**

Date: 6 October 2020
Ref: E33177Prpt2-SAQP

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DOCUMENT REVISION RECORD

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Appendix C: Report Explanatory Notes
Appendix D: Guidelines and Reference Documents



Abbreviations

Ambient Background Concentrations	ABC
Added Contaminant Limits	ACL
Asbestos Containing Material	ACM
Australian Drinking Water Guidelines	ADWG
Area of Environmental Concern	AEC
Australian Height Datum	AHD
Acid Sulfate Soil	ASS
Below Ground Level	BGL
Benzene, Toluene, Ethylbenzene, Xylene	BTEX
Cation Exchange Capacity	CEC
Contaminated Land Management	CLM
Contaminant(s) of Potential Concern	CoPC
Chain of Custody	COC
Conceptual Site Model	CSM
Dial Before You Dig	DBYD
Data Quality Indicator	DQI
Data Quality Objective	DQO
Detailed Site Investigation	DSI
Ecological Investigation Level	EIL
Ecological Screening Level	ESL
Excavated Natural Material	ENM
Environment Protection Authority	EPA
Ecological Screening Level	ESL
Health Investigation Level	HILs
Hardness Modified Trigger Values	HMTV
Health Screening Level	HSL
International Organisation of Standardisation	ISO
JK Environments	JKE
Light Non-Aqueous Phase Liquid	LNAPL
Map Grid of Australia	MGA
National Association of Testing Authorities	NATA
National Environmental Protection Measure	NEPM
Organochlorine Pesticides	OCP
Organophosphate Pesticides	OPP
Polycyclic Aromatic Hydrocarbons	PAH
Polychlorinated Biphenyls	PCBs
Photo-ionisation Detector	PID
Protection of the Environment Operations	POEO
Practical Quantitation Limit	PQL
Quality Assurance	QA
Quality Control	QC
Remediation Action Plan	RAP
Relative Percentage Difference	RPD
Site Assessment Criteria	SAC
Sampling, Analysis and Quality Plan	SAQP
Site Specific Assessment	SSA
Source, Pathway, Receptor	SPR
Standard Penetration Test	SPT
Standing Water Level	SWL
Trip Blank	TB
Toxicity Characteristic Leaching Procedure	TCLP
Total Recoverable Hydrocarbons	TRH
Upper Confidence Limit	UCL



United States Environmental Protection Agency
Volatile Organic Compounds
World Health Organisation
Work Health and Safety

USEPA
VOC
WHO
WHS

Units

Litres
Metres BGL
Metres
Millilitres
Micrograms per Litre
Milligrams per Kilogram
Milligrams per Litre
Parts Per Million
Percentage

L
mBGL
m
ml or mL
 $\mu\text{g/L}$
mg/kg
mg/L
ppm
%

Appendix J

1 INTRODUCTION

NSW Department of Education | School Infrastructure NSW ('the client') commissioned JK Environments (JKE) to undertake a Detailed Site Investigation (DSI) for the proposed new primary school development at 1-23 Forestwood Drive, Glenmore Park, NSW ('the site'). The site location is shown on Figure 1 and the investigation will be confined to the site boundaries as shown on Figure 2.

This report has been prepared to document the Sampling, Analysis and Quality Plan (SAQP) for the DSI.

JKE has previously undertaken a Preliminary Site Investigation (PSI) for the project. A summary of the PSI findings is presented in Section 2. A geotechnical investigation was undertaken in conjunction with the PSI by JK Geotechnics (JKG). Reference is to be made to the geotechnical report (Ref: 33177PNrpt, dated 3 June 2020)¹ for further details.

1.1 Proposed Development Details

Based on the information provided, we understand that a new primary school is proposed (Mulgoa Rise Public School). It is assumed that relatively minor cut/fill earthworks may be required. The proposed buildings will be over the northern and western parts of the site and will not include basements. A carpark is proposed at the eastern end of the site. It is understood that the development may occur over two stages.

A concept layout plan for the school is attached in Appendix A.

1.2 Aims and Objectives

The primary aim of the investigation is to characterise the soil and groundwater contamination conditions in order to establish whether remediation is required. A secondary aim is to provide preliminary waste classification data for off-site disposal of soil waste which may be generated during the proposed development works.

The objectives are to:

- Supplement the PSI data via an additional soil and groundwater investigation;
- Assess the potential risks posed by contamination to the receptors identified in the Conceptual Site Model (CSM);
- Provide a preliminary waste classification for the in-situ soil;
- Assess whether the site is suitable or can be made suitable for the proposed development (from a contamination viewpoint); and
- Assess whether further intrusive investigation and/or remediation is required.

1.3 Scope of Work

This SAQP has been prepared generally in accordance with a JKE proposal (Ref: EP52030P-P52030PN Rev2) of 16 June 2020, a formal agreement in relation to a tender (Ref: SINSW00711/20) executed on 8 May 2020, and a variation approval from the client dated 18 September 2020. The scope of work included review of the

¹ Referred to as JKG report



PSI and preparation of an SAQP with regards to the National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)², other guidelines made under or with regards to the Contaminated Land Management Act (1997)³ and State Environmental Planning Policy No.55 – Remediation of Land (1998)⁴. A list of reference documents/guidelines is included in the appendices.

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² National Environment Protection Council (NEPC), (2013). *National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)*. (referred to as NEPM 2013)

³ Contaminated Land Management Act 1997 (NSW) (referred to as CLM Act 1997)

⁴ *State Environmental Planning Policy No. 55 – Remediation of Land 1998* (NSW) (referred to as SEPP55)

2 SITE INFORMATION

2.1 PSI

The PSI included a review of historical information, soil sampling from 12 boreholes, 10 test pits and groundwater sampling from one monitoring well installed on-site (see Figure 2 in Appendix B). The site has historically been used quarrying activities and was rehabilitated from around the year 2000 via importation of material and controlled filling. A summary of the site history is provided in Section 2.6 of this SAQP.

The PSI did not identify any soil or groundwater contamination that was assessed to pose a risk to on-site receptors and/or in relation to the proposed land use. Groundwater was found to be impacted by arsenic, nickel and zinc at concentrations that exceeded the ecological site assessment criteria (SAC). However, the occurrence of these heavy metals in the groundwater was considered likely to be attributed to regional factors.

Due to the presence of deep fill (see details in Section 2.5.1 of this SAQP) and the identification of potential sources of contamination, the PSI recommended a DSI.

2.2 Site Identification

Table 2-1: Site Identification

Current Site Owner:	The Minister for Education
Site Address:	1-23 Forestwood Drive, Glenmore Park, NSW
Lot & Deposited Plan:	Lot 1663 in DP1166869
Current Land Use:	Vacant
Proposed Land Use:	Primary School (kindergarten to year six)
Local Government Authority:	Penrith City Council
Current Zoning:	R1 – General Residential
Site Area (m²) (approx.):	30,000
RL (AHD in m) (approx.):	60
Geographical Location (decimal degrees) (approx.):	Latitude: -33.802927 Longitude: 150.681562
Site Location Plan:	Figure 1
PSI Sample Location Plan:	Figure 2
PSI Site Contamination Plan:	Figure 3

2.3 Site Description Summary

The site is located in a predominantly residential and recreational area of Glenmore Park and is bound by Deerubbin Drive to the north, Darug Avenue to the west, Forestwood Drive to the south and Mulgoa Rise Field recreational grounds to the east/south-east. The majority of the surrounding properties were residential in nature. The site is located approximately 200m to the west of Surveyors Creek.

The site fell gently towards the north-east with an overall slope of approximately 2°. The site topography was generally in-line with the surrounding natural elevation and topographic features.

A walkover inspection of the site was undertaken by JKE on 11 May 2020. At the time of the inspection, the site was vacant, levelled grassed area. A substation kiosk was observed along the western site boundary. This was most likely installed during late 1990s to early 2000s and was therefore considered unlikely to contain polychlorinated biphenyl (PCB) oils.

The site was fenced by steel post and wire fencing along the southern boundary, and steel post/tubing along the eastern boundary. Visual inspection of the site extents revealed no obvious signs of soil erosion.

No apparent visible or olfactory indicators of contamination were identified during site inspection and throughout the course of the PSI.

A stormwater ran along the eastern site boundary, with stormwater collection pit situated in the north-eastern corner of the site. A sewer main was also noted to be present in the north-eastern corner of the site.

Sensitive environments such as wetlands, ponds, creeks or extensive areas of natural vegetation were not identified on site or in the immediate surrounds. Mulgoa Rise Field recreational grounds were situated directly to the east/south-east of the site with Surveyors Creek and associated areas of native vegetation located approximately 200m further to the east/south-east.

The site was overgrown with grasses and weeds, with larger tree plantings along the footpaths next to the northern, western and southern site boundaries. No obvious signs of vegetation stress or grass dieback were observed anywhere on site.

JKE did not observe any land uses in the immediate surrounds that were identified as potential contamination sources for the site. We observed the following land uses in the immediate surrounds:

- North – vacant grassed lot beyond Deerubbin Drive as well as residential properties including an early learning centre (“Young Academics”) to the north-east;
- South – residential properties beyond Forestwood Drive;
- East – recreational land (Mulgoa Rise Field) including parking area, soccer fields, children’s playground and amenities; and
- West – residential properties beyond Darug Avenue.

2.4 Underground Services

The 'Dial Before You Dig' (DBYD) plans were reviewed for the PSI. The DBYD plans indicated that a sewer main was present in the north-eastern corner of the site.

2.5 Summary of Geology and Hydrogeology

2.5.1 Regional Geology and Soil/Bedrock Conditions

Regional geological information reviewed for the PSI indicated that the site is underlain by Bringelly Shale of the Wianamatta Group, which typically consists of shale, carbonaceous claystone, claystone, laminite, fine to medium grained lithic sandstone, rare coal and tuff. A summary of the subsurface fill, soil and bedrock conditions encountered in the boreholes/test pits during the PSI is provided in the following table:

Table 2-2: Summary of Subsurface Conditions

Profile	Description
Fill	Fill (i.e. historically imported soil) was encountered at the surface in all boreholes and extended to depths of greater than approximately 1.3-12.45m below ground level (BGL). All boreholes were terminated in fill. The fill typically comprised silty clay and gravelly silty clay, with inclusions comprising of varying sizes and fractions of igneous, ironstone, sandstone and siltstone gravel, ash, traces of sand, roots, glass and plastic (in some of the locations). The fill was largely considered to be consistent with excavated natural soil/ripped bedrock. The occurrence of anthropogenic inclusions was negligible and organic materials were not encountered (except for root-affected soils at the ground surface).
Natural Soil	Natural residual soil was not encountered in any of the boreholes down to the maximum depth of 12.45mBGL.
Bedrock	Bedrock was not encountered in any of the boreholes down to the maximum depth of 12.45mBGL.

2.5.2 Hydrogeology and Groundwater

Hydrogeological information reviewed for the PSI indicated that the regional aquifer on-site and in the areas immediately surrounding the site includes porous, extensive aquifers of low to moderate productivity. There were a total of seven registered bores within the report buffer of 1,000m. In summary:

- The nearest registered bore was located approximately 800m north of the site. This was utilised for monitoring purposes;
- The majority of the bores were registered for monitoring purposes;
- There were no nearby bores (i.e. within 1,000m) registered for domestic or irrigation uses; and
- The drillers log information from the closest registered bores typically identified top soil and/or clay soil to depths of 1.0-6.0m, underlain by shale bedrock. Standing water levels (SWLs) in these bores was not recorded however final drill depth ranged from 2.5mBGL to 8.9mBGL.

The potential for viable groundwater abstraction and use of groundwater at the site or in the vicinity was considered to be low. There is a reticulated water supply in the area and consumption of groundwater was not expected to occur. Use of groundwater is not proposed as part of the development.

Considering the local topography and surrounding land features, JKE expected groundwater to flow eastwards towards Surveyors Creek.

The site location and regional topography indicates that most of the excess surface water flows through the site are expected to eventuate in the stormwater drainage trench along the eastern perimeter and collection pit in the north-eastern corner of the site which is expected to discharge into Surveyors Creek located approximately 200m east of the site. This water body is considered to be the closest potential ecological receptor.

A summary of the groundwater conditions encountered during the PSI is presented in the following table:

Table 2-3: Summary of Subsurface Conditions

Profile	Description
Groundwater	All test pits were dry on completion of excavation (maximum depth of 2mBGL). Groundwater seepage was observed in BH2, BH6, BH8, BH10 and BH16 at depths ranging between 4.0-7.2mBGL after completion of drilling. A groundwater monitoring well was installed at BH8 to allow for groundwater sampling. The groundwater in MW8 was observed at depths ranging between 2.05-2.07mBGL during well development and upon return to the site for sampling at a later date. Based on the initial water strike level/seepage depths recorded during drilling, compared to the SWLs recorded in MW8, it was considered possible that the groundwater is confined or semi-confined. The SWL in MW8 may be representative of a potentiometric water level rather than the true groundwater level.
Groundwater Field Parameters	Field measurements recorded during sampling were as follows: - pH ranged from 6.74 to 6.92; - Electrical conductivity (EC) ranged from 5,185μS/cm to 5,414μS/cm; - Redox potential (Eh) ranged from 6.7mV to 175.1mV; and - Dissolved oxygen (DO) ranged from 0.6ppm to 2.6ppm. Phase separated product (i.e. non-aqueous phase liquid - NAPL) was not detected using the interphase probe during groundwater sampling for the PSI.

2.5.3 Acid Sulfate Soil

The site is not located in an acid sulfate soil (ASS) risk area according to the risk maps prepared by the Department of Land and Water Conservation and the Penrith City Council.

2.6 Summary of Site History

A time line summary of the historical land uses and activities is presented in the table below. The information presented in the table is based on a weight of evidence assessment of the site history documentation and observations made by JKE during the PSI.

Table 2-4: Summary of Historical Land Uses / Activities

Year(s)	On-site - Potential Land Use / Activities	Off-site - Potential Land Use / Activities
Circa early 1900s until at least 1982	Vacant land, overgrown with trees, shrubs and grasses which was possibly used for grazing purposes.	Vacant land, possibly used for agricultural activities (i.e. crop cultivation) and/or grazing.
Since at least 1986 until 2007.	Quarry activities which ceased by 2000.	Quarry activities which ceased by 2007.
2000-2007	Rehabilitation of land post Quarry activities. Filling of the site occurred.	Rehabilitation of land post Quarry activities. Filling of the surrounding land also occurred.
2007-Current	Vacant, levelled grassed over area.	Mostly residential and recreational uses. Neighbouring land to the north remains vacant.

3 CONCEPTUAL SITE MODEL

NEPM (2013) defines a CSM as a representation of site related information regarding contamination sources, receptors and exposure pathways between those sources and receptors. The CSM for the site is presented in the following sub-sections and is based on the site information (including the site inspection information) and the review of site history information. Reference should also be made to the figures attached in the appendices.

3.1 Potential Contamination Sources and Contaminants of Potential Concern

The potential contamination sources/areas of environmental concern (AEC) and contaminants of potential concern (CoPC) are presented in the following table:

Table 3-1: Potential (and/or known) Contamination Sources/AEC and Contaminants of Potential Concern

Source / AEC	CoPC
<u>Fill material</u> – The site has been historically filled to achieve the existing levels. The PSI identified fill to depths of over 12m. Supplementary geotechnical investigation work that is currently underway by JK Geotechnics has indicated that the fill may be around 20m deep. The client supplied limited information for the PSI relating to earthworks and compaction which suggested that the filling of the site was undertaken in controlled manner (i.e. controlled fill/earthworks).	Heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc), petroleum hydrocarbons (referred to as total recoverable hydrocarbons – TRHs), benzene, toluene, ethylbenzene and xylene (BTEX), polycyclic aromatic hydrocarbons (PAHs), and asbestos, and to a lesser extent organochlorine pesticides (OCPs), organophosphate pesticides (OPPs), and PCBs.
<u>Historical mining/extractive industry</u> – The site and surrounding areas were historically used for quarrying activities. The aerial photographs suggested soil and/or rock quarrying occurred. The main source of contamination is therefore considered to be the operational aspect of the mining such as the use of machinery and plant (e.g. re-fuelling, spills, leaks etc). Backfilling of the quarry also occurred (see discussion on ‘fill material’ above).	TRH/BTEX and the PAH compound naphthalene. Heavy metals, cyanide, radionuclides and explosives are generally associated with minerals mining. Minerals mining and the associated processing of ores and minerals is not expected to have occurred at the site. On this basis these have not been considered as CoPC.
<u>Use of the site by parked vehicles</u> – eastern part of the site.	Heavy metal lead, TRHs, BTEX and the PAH compound naphthalene.

3.2 Mechanism for Contamination, Affected Media, Receptors and Exposure Pathways

The mechanisms for contamination, affected media, receptors and exposure pathways relevant to the potential contamination sources/AEC are outlined in the following CSM table:

Table 3-2: CSM

Potential mechanism for contamination	Potential mechanisms for contamination include: • Fill material – importation of impacted material, ‘top-down’ impacts (e.g. placement of fill, leaching from surficial material etc), or sub-surface release (e.g. impacts from buried material); • Use of the site by parked vehicles – ‘top-down’ and spills (e.g. leaks onto unpaved ground surface); and • Historical mining/extractive industry – spills associated with refuelling of plant, fuel stores etc, or sub-surface release (e.g. impacts from buried material during rehabilitation works).
Affected media	Soil and groundwater have been identified as potentially affected media.
Receptor identification	Human receptors include site users (including adults and children), construction workers and intrusive maintenance workers. Off-site human receptors include adjacent land users, and recreational water users within Surveyors Creek. Ecological receptors include terrestrial organisms and plants within unpaved areas, and freshwater ecology of Surveyors Creek.
Potential exposure pathways	Potential exposure pathways relevant to the human receptors include ingestion, dermal absorption and inhalation of dust (all contaminants) and vapours (volatile TRH, naphthalene and BTEX). The potential for exposure would typically be associated with the construction and excavation works, and future use of the site. Potential exposure pathways for ecological receptors include primary/direct contact and ingestion. Exposure during future site use could occur via direct contact with soil in unpaved areas such as gardens/playground areas, inhalation of airborne asbestos fibres during soil disturbance, or inhalation of vapours within enclosed spaces such as buildings. Exposure to groundwater could occur in Surveyors Creek through direct migration, however, connectivity between the aquifer and the creek has not been confirmed. Groundwater has the potential to enter the creek via the stormwater system (which is expected to discharge into the creek) in a situation where groundwater seepage is captured and discharged to stormwater, e.g. subsoil drainage.
Potential exposure mechanisms	The following have been identified as potential exposure mechanisms for site contamination: • Vapour intrusion into the proposed structures (either from soil contamination or volatilisation of contaminants from groundwater); • Contact (dermal, ingestion or inhalation) with exposed soils in landscaped areas and/or unpaved areas; and • Migration of groundwater off-site and into nearby water body (Surveyors Creek), including aquatic ecosystems and those being used for recreation.



Presence of preferential pathways for contaminant movement	Local underground services such as sewer and stormwater have the potential to act as preferential pathways for contaminant migration at the site. However, the potential for migration would depend on the fate and transport properties of the CoPC.

Appendix J

4 SAMPLING, ANALYSIS AND QUALITY PLAN

4.1 Data Quality Objectives (DQO)

Data Quality Objectives (DQOs) have been developed to define the type and quality of data required to achieve the project objectives outlined in Section 1.2. The DQOs were prepared with reference to the process outlined in Schedule B2 of NEPM (2013) and the Guidelines for the NSW Site Auditor Scheme, 3rd Edition (2017)⁵. The seven-step DQO approach for this project is outlined in the following sub-sections.

Appendix J

4.1.1 Step 1 - State the Problem

The CSM identified potential sources of contamination/AEC at the site that may pose a risk to human health and the environment. The PSI identified deep fill with low or non-detectable concentrations of the CoPC which was consistent with expectations for controlled filling undertaken as part of the relatively recent rehabilitation of the former quarry.

Investigation data is required to better characterise the site, assess the risks posed by the contaminants in the context of the proposed development/intended land use, and assess whether remediation is required. This information will be considered by the project team in the design and delivery of the project as well as by the consent authority in exercising its planning functions in relation to the approval of the development consent and issue of construction/occupancy certificates.

A waste classification is required prior to off-site disposal of excavated soil/bedrock.

4.1.2 Step 2 - Identify the Decisions of the Study

The objectives of the assessment are outlined in Section 1.2. The decisions to be made reflect these objectives and are as follows:

- Are any results above the SAC?
- Do potential risks associated with contamination exist, and if so, what are they?
- Is remediation required?
- Is the site characterisation sufficient to provide adequate confidence that remediation is/is not required?
- Is the site suitable for the proposed development, or can the site be made suitable subject to further characterisation and/or remediation?

4.1.3 Step 3 - Identify Information Inputs

The primary information inputs required to address the decisions outlined in Step 2 include the following:

- Existing site information from the PSI, including the PSI soil/groundwater data, site observations and site history documentation;
- Sampling of potentially affected media, including soil and groundwater;
- Observations of sub-surface variables such as soil type, photo-ionisation detector (PID) concentrations, odours and staining, and groundwater physiochemical parameters;

⁵ NSW EPA (2017). *Guidelines for the NSW Site Auditor Scheme, 3rd ed.* (referred to as Site Auditor Guidelines 2017)

- Laboratory analysis of soils, fibre cement and groundwater for the CoPC identified in the CSM; and
- Field and laboratory QA/QC data.

4.1.4 Step 4 - Define the Study Boundary

The sampling will be confined to the site boundaries as shown in Figure 2 and will be limited vertically to maximum nominated sampling depths of approximately 3.5mBGL for grid-based soil sampling locations, the base of the fill (~20mBGL) for targeted soil sampling locations and 6mBGL for groundwater (spatial boundary). The sampling will be completed in October 2020 (temporal boundary).

4.1.5 Step 5 - Develop an Analytical Approach (or Decision Rule)

4.1.5.1 Tier 1 Screening Criteria

4.1.5.1.1 Soil

Soil data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013). Health Investigation Levels (HIL) and Health Screening Levels (HSL) will be based on land use Type A which is applicable to primary schools. HSLs for hydrocarbons will be derived conservatively using a sand soil type and a depth interval of 0-1m.

HSLs for direct soil contact will be adopted based on the values presented in the CRC Care Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document (2011)⁶. Management limits for petroleum hydrocarbons (as presented in Schedule B1 of NEPM 2013) will also be considered following evaluation of human health and ecological risks, and risks to groundwater.

Regarding the ecological screening criteria, the Ecological Investigation Levels (EIL) will be derived using the Ambient Background Concentration (ABC) from the document titled Trace Element Concentrations in Soils from Rural and Urban Areas of Australia (1995)⁷ and using site specific physiochemical data for soil pH, clay content and Cation Exchange Capacity (CEC) to select the Added Contaminant Limit (ACL) values in Schedule B(1) of NEPM (2013). NEPM (2013) recommends that ecological SAC are applied to the top 2m of soil, however, we propose to evaluate the data down to 3mBGL as part of the ecological assessment to account for minor excavation works which may reduce the site levels.

Waste classification data is to be assessed in accordance with the NSW EPA Waste Classification Guidelines, Part 1: Classifying Waste (2014)⁸ and with regards to the Absolute Maximum Concentrations (AMC) and Maximum Average Concentrations (MAC) presented in the Excavated Natural Material (ENM) Order (2014)⁹.

Where appropriate, data will be assessed against valid statistical parameters to characterise the data population. This may include calculation and application of mean values and/or 95% upper confidence limit

⁶ Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC Care), (2011). Technical Report No. 10 - Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

⁷ Olszowy, H., Torr, P., and Imray, P., (1995), *Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4.* Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

⁸ NSW EPA, (2014). *Waste Classification Guidelines, Part 1: Classifying Waste.* (referred to as Waste Classification Guidelines 2014)

⁹ NSW EPA, (2014). *Resource Recovery Order under Part 9, Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014. The excavated natural material order 2014* (referred to as ENM Exemption 2014)

(UCL) values for the data set, with regards to the NEPM (2013) framework and other relevant guidelines made under the CLM Act 1997. UCLs are considered acceptable where the UCL is below the SAC, the standard deviation of the data is less than 50% of the SAC and none of the individual concentrations are more than 250% of the SAC.

4.1.5.1.2 Groundwater

Groundwater data will be compared to relevant Tier 1 screening criteria in accordance with NEPM (2013), following an assessment of environmental values in accordance with the Guidelines for the Assessment and Management of Groundwater Contamination (2007)¹⁰. Environmental values identified during the PSI included aquatic ecosystems and human-health risks in non-use scenarios (vapour intrusion and recreational exposure).

The NEPM (2013) HSLs were not considered to be applicable for the PSI as the proposed development design was not ascertained at that point in time. In addition, the groundwater was recorded at shallow depth around 2mBGL. On this basis, JKE propose an initial screening of the TRH/BTEX data against the HSL-A/B criteria assuming a groundwater level of 2-4m and a sand soil type. Subsequently, a site-specific assessment (SSA) is to occur for the Tier 1 screening of human health risks posed by volatile contaminants in groundwater based on the following:

- Australian Drinking Water Guidelines 2011 (updated 2018)¹¹ for BTEX compounds;
- World Health Organisation (WHO) document titled Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality (2008)¹² for petroleum hydrocarbons (i.e. TRH fractions);
- USEPA Region 9 screening levels for naphthalene (threshold value for tap water); and
- The use of the laboratory PQLs for other contaminants where there is no Australian guideline.

The ADWG 2011 are to be multiplied by a factor of 10 to assess potential risks associated with incidental/recreational-type exposure to groundwater (e.g. within down-gradient water bodies).

Groundwater Investigation Levels (GILs) for 95% protection of freshwater species are to be adopted based on the Default Guideline Values in the Australian and New Zealand Guidelines for Fresh and Marine Water Quality (2018)¹³. The 99% trigger values are to be utilised, where required, to account for bioaccumulation. Low and moderate reliability trigger values are also to be adopted for some contaminants where high-reliability trigger values do not exist.

¹⁰ NSW Department of Environment and Conservation, (2007). *Guidelines for the Assessment and Management of Groundwater Contamination*.

¹¹ National Health and Medical Research Council (NHMRC), (2018). *National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011* (referred to as ADWG 2011)

¹² World Health Organisation (WHO), (2008). *Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality* (referred to as WHO 2008)

¹³ Australian and New Zealand Governments (ANZG), (2018). *Australian and New Zealand Guidelines for Fresh and Marine Water Quality*. Australian and New Zealand Governments and Australian state and territory governments, Canberra ACT, Australia (referred to as ANZG 2018)

4.1.5.2 Quality Assurance/Quality Control 9QA/QC)

Field QA/QC will include analysis of inter-laboratory duplicates (minimum of 5% of primary samples), intra-laboratory duplicates (minimum of 5% of primary samples), and one trip spike, trip blank and rinsate sample (one for each medium sampled to assess the adequacy of field practices).

The suitability of the laboratory data is to be assessed against the laboratory QA/QC criteria which will be outlined in the laboratory reports. These criteria are developed and implemented in accordance with the laboratory's National Association of Testing Authorities, Australia (NATA) accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence are reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory will be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, the most conservative concentration reported are to be adopted.

4.1.5.3 Appropriateness of Practical Quantitation Limits (PQLs)

The PQLs of the analytical methods are to be considered in relation to the SAC to confirm that the PQLs are less than the SAC. In cases where the PQLs are greater than the SAC, a discussion of this will be provided.

4.1.6 Step 6 – Specify Limits on Decision Errors

To limit the potential for decision errors, a range of quality assurance processes are adopted. A quantitative assessment of the potential for false positives and false negatives in the analytical results will be undertaken with reference to Schedule B(3) of NEPM (2013) using the data quality assurance information collected.

Decision errors can be controlled through the use of hypothesis testing. The test can be used to show either that the baseline condition is false or that there is insufficient evidence to indicate that the baseline condition is false. The null hypothesis is an assumption that is assumed to be true in the absence of contrary evidence. For the DSI, the null hypothesis will be adopted which is that, there is considered to be a complete source-pathway-receptor (SPR) linkage for the CoPC identified in the CSM unless this linkage can be proven not to (or unlikely to) exist.

Data Quality Indicators (DQI) for field and laboratory QA/QC samples are defined below. An assessment of the DQI's is to be made in relation to precision, accuracy, representativeness, completeness and comparability.

Field Duplicates

Acceptable targets for precision of field duplicates will be 30% or less, consistent with NEPM (2013). RPD failures will be considered qualitatively on a case-by-case basis taking into account factors such as the concentrations used to calculate the RPD (i.e. RPD exceedance where concentrations are close to the PQL are typically not as significant as those where concentrations are reported at least five or 10 times the PQL), sample type, collection methods and the specific analyte where the RPD exceedance was reported.

Field Blanks

Acceptable targets for trip blank samples will be less than the PQL for organic analytes. Metals will be considered on a case-by-case basis with regards to the reference material used as the blank medium.

Trip Spikes

Acceptable targets for trip spike samples will be 70% to 130%.

Laboratory QA/QC

The suitability of the laboratory data will be assessed against the laboratory QA/QC criteria. These criteria are developed and implemented in accordance with the laboratory's NATA accreditation and align with the acceptable limits for QA/QC samples as outlined in NEPM (2013) and other relevant guidelines.

A summary of the typical limits is provided below:

RPDs

- Results that are <5 times the PQL, any RPD is acceptable; and
- Results >5 times the PQL, RPDs between 0-50% are acceptable.

Laboratory Control Samples (LCS) and Matrix Spikes

- 70-130% recovery acceptable for metals and inorganics; and
- 60-140% recovery acceptable for organics.

Surrogate Spikes

- 60-140% recovery acceptable for general organics.

Method Blanks

- All results less than PQL.

In the event that acceptable limits are not met by the laboratory analysis, other lines of evidence will be reviewed (e.g. field observations of samples, preservation, handling etc) and, where required, consultation with the laboratory is to be undertaken in an effort to establish the cause of the non-conformance. Where uncertainty exists, we will adopt the most conservative concentration reported.

4.1.7 Step 7 - Optimise the Design for Obtaining Data

The most resource-effective design will be used in an optimum manner to achieve the objectives. Adjustment of the investigation design can occur following consultation or feedback from project stakeholders. For this investigation, the design was optimised via consideration of the various lines of evidence used to select the sample locations, the media being sampled, and also by the way in which the data will be collected. The sampling plan and methodology are outlined in the following sub-sections.

4.2 Soil Sampling Plan and Methodology

The soil sampling plan and methodology adopted for this DSI is outlined in the table below:

Table 4-1: Soil Sampling Plan and Methodology

Aspect	Input
Sampling Density	Samples will be collected from an additional 23 locations for the DSI, as shown on Figure 4 attached in Appendix B. Twenty (20) of these locations will be grid-based (systematic) and three will be targeted in the proposed building areas in the north/north-western parts of the site. Combined with the locations sampled for the PSI, the overall sampling density meets the minimum sampling density for hotspot identification on a 30,000m² site, as outlined in the NSW EPA Contaminated Sites Sampling Design Guidelines (1995)¹⁴. Based on the sampling density, the following hotspot diameters have been calculated: • Circular hotspot diameter with a 95% confidence level (K value of 0.59) - 32m; and • Elliptical hotspot diameter with a 95% confidence level (K value of 0.9) - 50m along the major axis and 25m along the minor axis. The EPA Sampling Design Guidelines 1995 requires consideration of increased sampling densities for larger sites with sensitive land uses. However, for this project, the minimum sampling density for a 30,000m² site is considered to be appropriate based on the consistency of the conditions encountered during the PSI and the low contaminant concentrations reported. Sampling for field asbestos quantification will occur from the 10 test pit locations only. This density is considered to be adequate based on the findings of the PSI and considering the requirements recommended in the Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia (2009)¹⁵ (endorsed in NEPM 2013).
Sampling Plan	Twenty (20) of the locations will be placed on a systematic, grid-based sampling plan to supplement the PSI locations. Three locations will be targeted in the proposed building area and these will be drilled/sampled concurrently with the geotechnical investigation by JKG. The test pits will be limited to a depth of approximately 2-3mBGL due to the compacted nature of the fill and limitations associated with excavating this material. Sampling from the grid-based boreholes will be limited to a depth of approximately 3.5mBGL. Sampling at these locations will occur from each stratum profile encountered, or generally at 1m intervals if there are few/no strata changes. Sampling from the three targeted locations will occur from approximately 3mBGL to the base of the fill. It is unlikely that natural soil/rock samples will be collected at the base of the former quarry at these locations as rock is expected on first contact.
Set-out and Sampling Equipment	Sampling locations will be set out using hand held GPS unit (with an accuracy of ±5m). Samples will be collected from test pits and boreholes. Where borehole sampling occurs, the samples will be collected from a Standard Penetration Test (SPT) split-spoon sampler. Auger sampling will not occur unless insufficient return is encountered in the SPT sampler.

¹⁴ NSW EPA, (1995), *Contaminated Sites Sampling Design Guidelines*. (referred to as EPA Sampling Design Guidelines 1995)

¹⁵ Western Australian (WA) Department of Health (DoH), (2009). *Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia*. (referred to as WA DoH 2009)

Aspect	Input
	Samples from the test pits will be obtained from the walls or directly from the bucket by hand. Where sampling occurred from the bucket, JKE will collect samples from the central portion of large soil clods, or from material that was unlikely to have come into contact with the bucket.
Sample Collection and Field QA/QC	All locations are to be logged to an appropriate standard in accordance with NEPM (2013) and all samples will be documented on the logs. Samples are to be placed in glass jars with plastic caps and teflon seals with minimal headspace. Samples for asbestos analysis will be placed in zip-lock plastic bags. During sampling, soil at selected depths will be split into primary and duplicate samples for field QA/QC analysis. The splitting procedure will include alternate filling of the jars with soil. Homogenisation of duplicate samples will not occur due to the clayey nature of the soil.
Field Screening	A portable Photoionisation Detector (PID) fitted with a 10.6mV lamp will be used to screen the samples for the presence of volatile organic compounds (VOCs). This will occur on soil samples using the soil sample headspace method (i.e. from partly filled zip-lock plastic bags following equilibration of the headspace gases). PID calibration records will be maintained throughout the project. The field screening for asbestos quantification from the test pits will include the following: • A representative 10L sample will be collected from fill at 1m intervals, or from each distinct fill profile. The bulk sample intervals are shown on the attached borehole and test pit logs; • Each 10L sample will be weighed using an electronic scale; • Each bulk sample will be passed through a sieve with a 7.1mm aperture and inspected for the presence of fibre cement. Alternatively, due to the cohesive nature of the soils, the samples will be placed on a contrasting support (blue tarpaulin) and inspected for the presence of fibre cement. Any soil clumps/nodules were to be disaggregated; • The condition of fibre cement or any other suspected asbestos materials will be noted on the field records; and • If observed, any fragments of fibre cement in the 10L sample will be collected, placed in a zip-lock bag and assigned a unique identifier. Calculations for asbestos content will be undertaken based on the requirements outlined in Schedule B1 of NEPM (2013).
Decontamination and Sample Preservation	Sampling personnel will use disposable nitrile gloves during sampling activities. Re-usable sampling equipment was decontaminated using a Decon and potable water solution (with rags and scrubbing brush), followed by a rinse with potable water. Soil samples will be preserved by immediate storage in an insulated sample container with ice. On completion of the fieldwork, the samples will be stored temporarily in fridges in the JKE warehouse before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard chain of custody (COC) procedures.

4.3 Groundwater Sampling Plan and Methodology

The groundwater sampling plan and methodology is outlined in the table below:

Table 4-2: Groundwater Sampling Plan and Methodology

Aspect	Input
Sampling Plan	A groundwater monitoring well was installed in BH8 (MW8) for the PSI. The well was positioned to gain a snap-shot of the groundwater conditions. Considering the topography and the location of the nearest down-gradient water body, MW8 was considered to be in the intermediate area of the site and was expected to provide an indication of groundwater flowing across (beneath) the site. Two additional groundwater wells will be installed for the DSI, as shown on Figure 4 in Appendix B. The wells will be positioned to provide general site coverage whilst also targeting the proposed building area.
Monitoring Well Installation Procedure	The monitoring well construction details will be documented on the corresponding borehole log. The wells will be installed to approximately 5-6mBGL and generally constructed as follows: • 50mm diameter Class 18 PVC (machine slotted screen) installed in the lower section of the well to intersect groundwater; • 50mm diameter Class 18 PVC casing installed in the upper section of the well (screw fixed); • A 2mm sand filter pack around the screen section for groundwater infiltration; • A hydrated bentonite seal/plug on top of the sand pack to seal the well; and • A gatic cover installed at the surface with a concrete plug to limit the inflow of surface water. The proposed well construction is considered to be appropriate for screening purposes to assess general aquifer conditions with regards to the recommended monitoring well installation requirements in Schedule B2 of NEPM 2013. The installation depths and screen intervals may vary depending on observations (i.e. water strike) during drilling.
Monitoring Well Development	The monitoring wells will be developed using a submersible electrical pump with single-use tubing. A calibrated water quality meter will be used to measure pH, EC, DO, Eh and temperature. Development will occur until either the well is pumped dry or until steady state conditions are achieved. For the DSI, steady state conditions are defined as the pH measurements over a one-minute time interval varying by less than 0.2 units, the difference in EC over the same period varying by less than 10%, and the SWL not being in drawdown.
Groundwater Sampling	Prior to sampling, the monitoring wells will be checked for the presence of Light Non-Aqueous Phase Liquids (LNAPLs) using an inter-phase probe electronic dip meter. The monitoring well head space will also be checked for VOCs using a calibrated PID unit. Samples will be obtained using a peristaltic pump, after purging to achieve steady state conditions. Where steady state conditions cannot be achieved, the wells will be sampled whilst the SWL is in drawdown. Groundwater samples were obtained directly from the single use tubing and placed in the sample containers. Duplicate samples are to be obtained by alternate filling of sample containers. This technique will be adopted to minimise disturbance of the samples and loss of volatile contaminants associated with mixing of liquids in secondary containers, etc. Groundwater removed from the wells during development and sampling will be transported to JKE in jerry cans and stored in holding drums prior to collection by a licensed waste water contractor for off-site disposal.
Decontaminant and Sample Preservation	Groundwater sampling utilises single-use tubing, therefore no decontamination procedure is considered necessary.

Aspect	Input
	The samples will be preserved with reference to the analytical requirements and placed in an insulated container with ice in accordance. On completion of the fieldwork, the samples may be temporarily stored in a fridge at the JKE office, before being delivered in the insulated sample container to a NATA registered laboratory for analysis under standard COC procedures.

4.4 Laboratory Analysis and Analytical Rationale

Samples are to be analysed by an appropriate, NATA Accredited laboratory using the analytical methods detailed in Schedule B(3) of NEPM 2013. The laboratory details are provided in the table below:

Table 4-3: Laboratory Details

Samples	Laboratory
All primary samples and field QA/QC samples including (intra-laboratory duplicates, trip blanks and trip spikes)	Envirolab Services Pty Ltd NSW, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)
Inter-laboratory duplicates	Envirolab Services Pty Ltd VIC, NATA Accreditation Number – 2901 (ISO/IEC 17025 compliance)

An allowance has been made for the following analysis:

- Up to 20 selected soil samples for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH; BTEX; OCP; OPP; and PCB;
- Up to 60 selected soil samples for: heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc); PAHs; TRH; and BTEX;
- Up to 20 selected soil samples (500mL) for asbestos using laboratory quantification (gravimetric) methods;
- Up to 10 selected soil samples for pH, EC and foreign materials;
- Up to two selected soil samples for: pH; CEC; and clay content (%);
- Targeted toxicity characteristic leachate procedure (TCLP) analysis for waste classification purposes;
- Up to two selected fibre cement fragments, if found on or in soil, analysed for asbestos; and
- Three groundwater samples analysed for: heavy metals; TRH/BTEX; low level PAHs; pH; and EC.

The soil analysis will generally be targeted in the top 3-3.5m of soil as the proposed development does not include substantial excavation works. Deeper fill samples will be analysed from the targeted locations in the proposed building areas in order to confirm the deeper conditions are consistent with the shallower soils.

4.5 Reporting Requirements

A DSI report is to be prepared presenting the results of the investigation, in accordance with the NSW EPA Consultants Reporting on Contaminated Land, Contaminated Land Guidelines (2020)¹⁶.

¹⁶ NSW EPA, (2020). *Consultants Reporting on Contaminated Land, Contaminated Land Guidelines*

5 LIMITATIONS

The report limitations are outlined below:

- JKE accepts no responsibility for any unidentified contamination issues at the site. Any unexpected problems/subsurface features that may be encountered during development works should be inspected by an environmental consultant as soon as possible;
- Previous use of this site may have involved excavation for the foundations of buildings, services, and similar facilities. In addition, unrecorded excavation and burial of material may have occurred on the site. Backfilling of excavations could have been undertaken with potentially contaminated material that may be discovered in discrete, isolated locations across the site during construction work;
- This report has been prepared based on site conditions which existed at the time of the PSI; scope of work and limitation outlined in the JKE proposal; and terms of contract between JKE and the client (as applicable);
- Subsurface soil and rock conditions encountered between investigation locations may be found to be different from those expected. Groundwater conditions may also vary, especially after climatic changes;
- The investigation and preparation of this report have been undertaken in accordance with accepted practice for environmental consultants, with reference to applicable environmental regulatory authority and industry standards, guidelines and the assessment criteria outlined in the report;
- Where information has been provided by third parties, JKE has not undertaken any verification process, except where specifically stated in the report;
- JKE has not undertaken any assessment of off-site areas that may be potential contamination sources or may have been impacted by site contamination, except where specifically stated in the report;
- JKE accept no responsibility for potentially asbestos containing materials that may exist at the site. These materials may be associated with demolition of pre-1990 constructed buildings or fill material at the site;
- JKE have not and will not make any determination regarding finances associated with the site;
- Additional investigation work may be required in the event of changes to the proposed development or landuse. JKE should be contacted immediately in such circumstances;
- Material considered to be suitable from a geotechnical point of view may be unsatisfactory from a soil contamination viewpoint, and vice versa; and
- This report has been prepared for the particular project described and no responsibility is accepted for the use of any part of this report in any other context or for any other purpose.

Important Information About This Report

These notes have been prepared by JKE to assist with the assessment and interpretation of this report.

The Report is based on a Unique Set of Project Specific Factors

This report has been prepared in response to specific project requirements as stated in the JKE proposal document which may have been limited by instructions from the client. This report should be reviewed, and if necessary, revised if any of the following occur:

- The proposed land use is altered;
- The defined subject site is increased or sub-divided;
- The proposed development details including size, configuration, location, orientation of the structures or landscaped areas are modified;
- The proposed development levels are altered, eg addition of basement levels; or
- Ownership of the site changes.

JKE will not accept any responsibility whatsoever for situations where one or more of the above factors have changed since completion of the assessment. If the subject site is sold, ownership of the assessment report should be transferred by JKE to the new site owners who will be informed of the conditions and limitations under which the assessment was undertaken. No person should apply an assessment for any purpose other than that originally intended without first conferring with the consultant.

Changes in Subsurface Conditions

Subsurface conditions are influenced by natural geological and hydrogeological process and human activities. Groundwater conditions are likely to vary over time with changes in climatic conditions and human activities within the catchment (e.g. water extraction for irrigation or industrial uses, subsurface waste water disposal, construction related dewatering). Soil and groundwater contaminant concentrations may also vary over time through contaminant migration, natural attenuation of organic contaminants, ongoing contaminating activities and placement or removal of fill material. The conclusions of an assessment report may have been affected by the above factors if a significant period of time has elapsed prior to commencement of the proposed development.

This Report is based on Professional Interpretations of Factual Data

Site assessments identify actual subsurface conditions at the actual sampling locations at the time of the investigation. Data obtained from the sampling and subsequent laboratory analyses, available site history information and published regional information is interpreted by geologists, engineers or environmental scientists and opinions are drawn about the overall subsurface conditions, the nature and extent of contamination, the likely impact on the proposed development and appropriate remediation measures.

Actual conditions may differ from those inferred, because no professional, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock and time. The actual interface between materials may be far more gradual or abrupt than an assessment indicates. Actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimise the impact. For this reason, site owners should retain the services of their consultants throughout the development stage of the project, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

Assessment Limitations

Although information provided by a site assessment can reduce exposure to the risk of the presence of contamination, no environmental site assessment can eliminate the risk. Even a rigorous professional assessment may not detect all contamination on a site. Contaminants may be present in areas that were not surveyed or sampled, or may migrate to areas which showed no signs of contamination when sampled. Contaminant analysis cannot possibly cover every type of contaminant which may occur; only the most likely contaminants are screened.

Misinterpretation of Site Assessments by Design Professionals

Costly problems can occur when other design professionals develop plans based on misinterpretation of an assessment report. To minimise problems associated with misinterpretations, the environmental consultant should be retained to work with appropriate professionals to explain relevant findings and to review the adequacy of plans and specifications relevant to contamination issues.

Logs Should not be Separated from the Assessment Report

Borehole and test pit logs are prepared by environmental scientists, engineers or geologists based upon interpretation of field conditions and laboratory evaluation of field samples. Logs are normally provided in our reports and these should not be re-drawn for inclusion in site remediation or other design drawings, as subtle but significant drafting errors or omissions may occur in the transfer process. Photographic reproduction can eliminate this problem, however contractors can still misinterpret the logs during bid preparation if separated from the text of the assessment. If this occurs, delays, disputes and unanticipated costs may result. In all cases it is necessary to refer to the rest of the report to obtain a proper understanding of the assessment. Please note that logs with the 'Environmental Log' header are not suitable for geotechnical purposes as they have not been peer reviewed by a Senior Geotechnical Engineer.

To reduce the likelihood of borehole and test pit log misinterpretation, the complete assessment should be available to persons or organisations involved in the project, such as contractors, for their use. Denial of such access and disclaiming responsibility for the accuracy of subsurface information does not insulate an owner from the attendant liability. It is critical that the site owner provides all available site information to persons and organisations such as contractors.

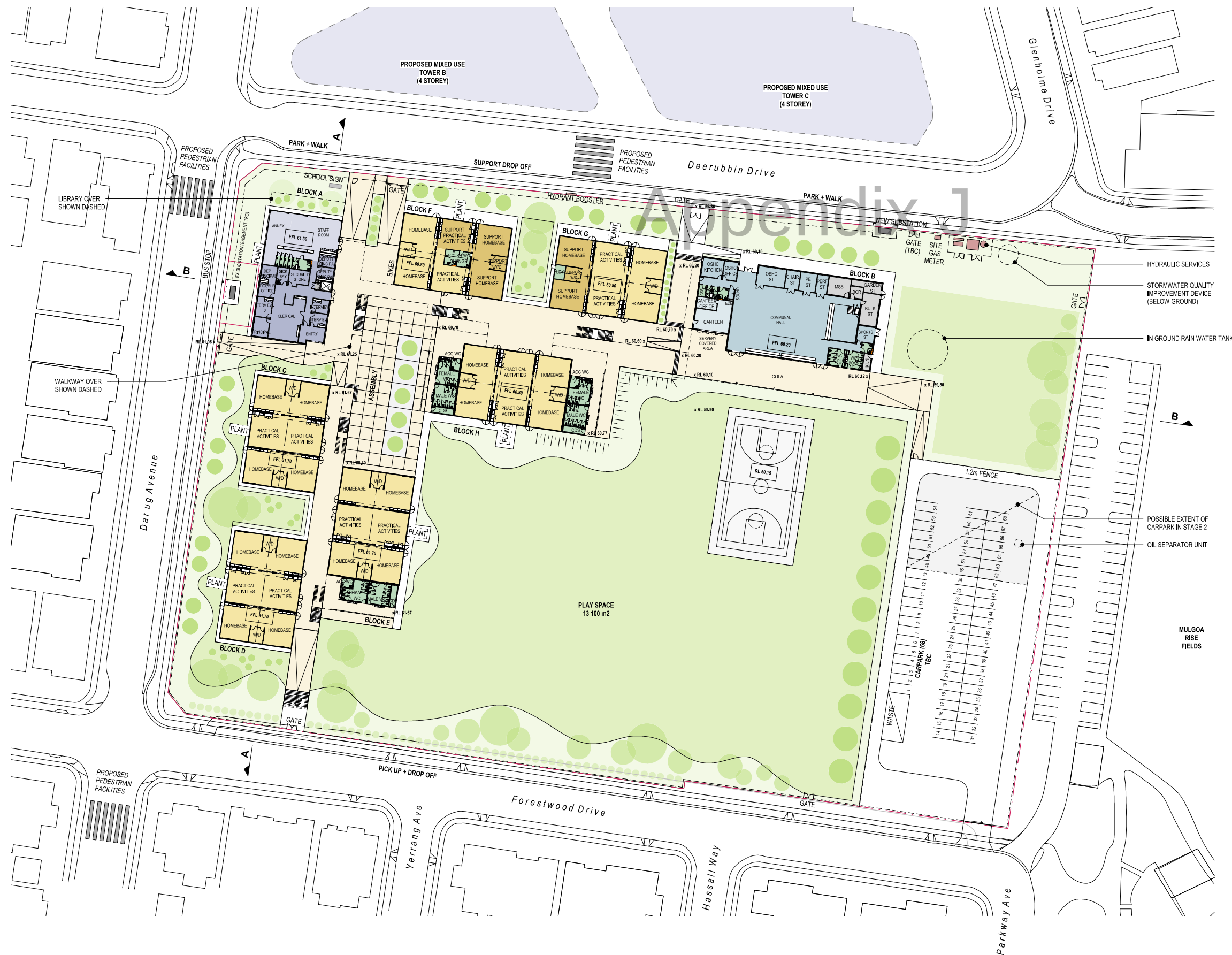
Read Responsibility Clauses Closely

Because an environmental site assessment is based extensively on judgement and opinion, it is necessarily less exact than other disciplines. This situation has resulted in wholly unwarranted claims being lodged against consultants. To help prevent this problem, model clauses have been developed for use in written transmittals. These are definitive clauses designed to indicate consultant responsibility. Their use helps all parties involved recognise individual responsibilities and formulate appropriate action. Some of these definitive clauses are likely to appear in the environmental site assessment, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to any questions.



Appendix J

Appendix A: Concept Plan





Appendix J

Appendix B: Figures



SOURCE: <http://www.whereis.com/>

AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

Title:

SITE LOCATION PLAN

Location:

1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Project No:

E33177P

Figure No:

1

This plan should be read in conjunction with the Environmental report.

JKEnvironments



PLOT DATE: 18/05/2020 11:11:53 AM DWG FILE: L:\60 EIS JOBS\33000\SE\33177PA GLENMORE PARK\CAD\E33177PA.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- ✚ BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- TP TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: PSI SAMPLE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 2
JKEnvironments	

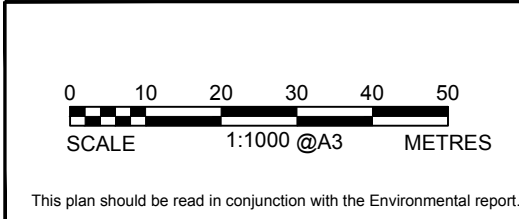


PLOT DATE: 1/06/2020 1:37:30 PM DWG FILE: Z:\5 EIS\SC EIS JOBS\33000\SE3177PA GLENMORE PARK\CADE33177PA.DWG



LEGEND

- Red dashed line: APPROXIMATE SITE BOUNDARY
- Pink circle: BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)
- Blue square with cross: BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m)
- Blue square: TP TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m)
- | SAMPLE ID | CONCENTRATION (µg/L) |
|-----------|----------------------|
| BH8/MW8 | 48 |
| BH2 | 6.45 |
| BH4 | 6.45 |
| BH6 | 12.45 |
| BH10 | 12.45 |
| BH12 | 6.02 |
| BH14 | 6.45 |
| BH16 | 12.45 |
| BH18 | 6.45 |
| BH20 | 12.45 |
| BH21 | 6.45 |
| BH22 | 6.45 |
- Blue square: GROUNDWATER SAMPLE EXCEEDANCE
- Blue square: GROUNDWATER CONTAMINATION ABOVE SAC



Title: **PSI CONTAMINATION LOCATION PLAN**

Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW

Project No: E33177P Figure No: 3

JKEnvironments



PLOT DATE: 18/05/2020 11:11:53 AM DWG FILE: L:\60 EIS JOBS\33000\SE33177PA GLENMORE PARK\CAD\E33177PA.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- + BH/MW(Fill Depth) BOREHOLE AND GROUNDWATER MONITORING WELL LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- TP TEST PIT LOCATION, NUMBER AND DEPTH OF FILL (m) - PSI
- □ PROPOSED DSI SAMPLING LOCATION AND NUMBER - DSI

0 10 20 30 40 50
SCALE 1:1000 @A3 METRES

This plan should be read in conjunction with the Environmental report.

Title: DSI SAMPLE LOCATION PLAN	
Location: 1-23 FORESTWOOD DRIVE, GLENMORE PARK, NSW	
Project No: E33177P	Figure No: 4
JKEnvironments	





Appendix J

Appendix C: Report Explanatory Notes



QA/QC Definitions

The QA/QC terms used in this report are defined below. The definitions are in accordance with US EPA publication SW-846, entitled *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods* (1994)¹⁷ methods and those described in *Environmental Sampling and Analysis, A Practical Guide*, (1991)¹⁸. The NEPM (2013) is consistent with these documents.

A. Practical Quantitation Limit (PQL), Limit of Reporting (LOR) & Estimated Quantitation Limit (EQL)

These terms all refer to the concentration above which results can be expressed with a minimum 95% confidence level. The laboratory reporting limits are generally set at ten times the standard deviation for the Method Detection Limit for each specific analyte. For the purposes of this report the LOR, PQL, and EQL are considered to be equivalent.

When assessing laboratory data it should be borne in mind that values at or near the PQL have two important limitations: *"The uncertainty of the measurement value can approach, and even equal, the reported value. Secondly, confirmation of the analytes reported is virtually impossible unless identification uses highly selective methods. These issues diminish when reliably measurable amounts of analytes are present. Accordingly, legal and regulatory actions should be limited to data at or above the reliable detection limit"* (Keith, 1991).

B. Precision

The degree to which data generated from repeated measurements differ from one another due to random errors. Precision is measured using the standard deviation or Relative Percent Difference (RPD).

C. Accuracy

Accuracy is a measure of the agreement between an experimental result and the true value of the parameter being measured (i.e. the proximity of an averaged result to the true value, where all random errors have been statistically removed). The assessment of accuracy for an analysis can be achieved through the analysis of known reference materials or assessed by the analysis of surrogates, field blanks, trip spikes and matrix spikes. Accuracy is typically reported as percent recovery.

D. Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is primarily dependent upon the design and implementation of the sampling program. Representativeness of the data is partially ensured by the avoidance of contamination, adherence to sample handling and analysis protocols and use of proper chain-of-custody and documentation procedures.

E. Completeness

Completeness is a measure of the number of valid measurements in a data set compared to the total number of measurements made and overall performance against DQIs. The following information is assessed for completeness:

- Chain-of-custody forms;
- Sample receipt form;
- All sample results reported;
- All blank data reported;

¹⁷ US EPA, (1994). *SW-846: Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*. (US EPA SW-846)

¹⁸ Keith., H, (1991). *Environmental Sampling and Analysis, A Practical Guide*

- All laboratory duplicate and RPDs calculated;
- All surrogate spike data reported;
- All matrix spike and lab control spike (LCS) data reported and RPDs calculated;
- Spike recovery acceptable limits reported; and
- NATA stamp on reports.

F. Comparability

Comparability is the evaluation of the similarity of conditions (e.g. sample depth, sample homogeneity) under which separate sets of data are produced. Data comparability checks include a bias assessment that may arise from the following sources:

- Collection and analysis of samples by different personnel; Use of different techniques;
- Collection and analysis by the same personnel using the same methods but at different times; and
- Spatial and temporal changes (due to environmental dynamics).

G. Blanks

The purpose of laboratory and field blanks is to check for artefacts and interferences that may arise during sampling, transport and analysis.

H. Matrix Spikes

Samples are spiked with laboratory grade standards to detect interactive effects between the sample matrix and the analytes being measured. Matrix Spikes are reported as a percent recovery and are prepared for 1 in every 20 samples. Sample batches that contain less than 20 samples may be reported with a Matrix Spike from another batch. The percent recovery is calculated using the formula below. Acceptable recovery limits are 70% to 130%.

$$\frac{(\text{Spike Sample Result} - \text{Sample Result}) \times 100}{\text{Concentration of Spike Added}}$$

I. Surrogate Spikes

Samples are spiked with a known concentration of compounds that are chemically related to the analyte being investigated but unlikely to be detected in the environment. The purpose of the Surrogate Spikes is to check the accuracy of the analytical technique. Surrogate Spikes are reported as percent recovery.

J. Duplicates

Laboratory duplicates measure precision, expressed as Relative Percent Difference. Duplicates are prepared from a single field sample and analysed as two separate extraction procedures in the laboratory. The RPD is calculated using the formula where D1 is the sample concentration and D2 is the duplicate sample concentration:

$$\frac{(D1 - D2) \times 100}{\{(D1 + D2)/2\}}$$



Appendix J

Appendix D: Guidelines and Reference Documents



Acid Sulfate Soils Management Advisory Committee (ASSMAC), (1998). Acid Sulfate Soils Manual

Australian and New Zealand Environment Conservation Council (ANZECC), (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality

Canadian Council of Ministers of the Environment, (1999). Canadian soil quality guidelines for the protection of environmental and human health: Benzo(a)Pyrene (1997)

CRC Care, (2011). Technical Report No. 10 – Health screening levels for hydrocarbons in soil and groundwater Part 1: Technical development document

Contaminated Land Management Act 1997 (NSW)

Department of Land and Water Conservation, (1997). 1:25,000 Acid Sulfate Soil Risk Map Series

Managing Land Contamination, Planning Guidelines SEPP55 – Remediation of Land (1998)

National Health and Medical Research Council (NHMRC), (2018). National Water Quality Management Strategy, Australian Drinking Water Guidelines 2011

NSW Department of Environment and Conservation, (2007). Guidelines for the Assessment and Management of Groundwater Contamination

NSW EPA, (1995). Contaminated Sites Sampling Design Guidelines

NSW EPA, (2014). Waste Classification Guidelines - Part 1: Classifying Waste

NSW EPA, (2015). Guidelines on the Duty to Report Contamination under Section 60 of the CLM Act 1997

NSW EPA, (2017). Guidelines for the NSW Site Auditor Scheme, 3rd Edition

NSW EPA, (2020). Consultants Reporting on Contaminated Land, Contaminated Land Guidelines

National Environment Protection Council (NEPC), (2013). National Environmental Protection (Assessment of Site Contamination) Measure 1999 as amended (2013)

Olszowy, H., Torr, P., and Imray, P., (1995). Trace Element Concentrations in Soils from Rural and Urban Areas of Australia. Contaminated Sites Monograph Series No. 4. Department of Human Services and Health, Environment Protection Agency, and South Australian Health Commission

Protection of the Environment Operations Act 1997 (NSW)

State Environmental Planning Policy No.55 – Remediation of Land 1998 (NSW)

World Health Organisation (WHO), (2008). Petroleum Products in Drinking-water, Background document for the development of WHO Guidelines for Drinking Water Quality

Western Australia Department of Health, (2009). Guidelines for the Assessment, Remediation and Management of Asbestos-Contaminated Sites in Western Australia