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Project name: Reform - Palm Beach - Waste Classification
Project number: SC200089.01

Epic Environmental (Epic) was engaged by Reform Projects (Reform) to undertake a waste classification assessment for in situ soils at 1102 Barrenjoey Road, Palm Beach NSW (the site). This waste classification has been carried out in accordance with the NSW EPA (2014) 'Waste Classification Guidelines, Part 1: Classifying Waste'.

1 INTRODUCTION

The site is located at 1102 Barrenjoey Road, Palm Beach NSW and is legally described as Lot 11 DP1207743 (refer Figure 1). The soils that are the subject of this report are approximately 650 m^2 of soils that require excavation and offsite disposal prior to construction of a single level basement carpark for proposed residential redevelopment at the site.

1.1 Objectives

The objective of the assessment was to classify the insitu soils requiring offsite disposal in accordance with NSW EPA (2014).

1.2 Scope of works

To achieve the objectives outlined above and in accordance with relevant guidelines, the following scope of works have been undertaken:

- Desktop review of available government and environmental/geological databases
- Collection of discrete soil samples from 7 boreholes to a maximum depth of 1.0 mbgl
- Submission of selected samples to a National Association of Testing Authority (NATA) accredited laboratory, and analysis for the defined suite of contaminants
- Preparation of this waste classification assessment report

2 SITE BACKGROUND

2.1 Site Identification

The site is located at 1102 Barrenjoey Road, Palm Beach NSW and is legally described as Lot 11 DP1207743. The site is located approximately 32 km northeast of the Sydney CBD in the Northern Beaches Local Government Area. The site is currently vacant land, with the most recent use as Palm Beach Fish and Chips

cleared and demolished prior to proposed residential development. The site is surrounded by mixed commercial premises, low density residential and Mckay nature reserve.

Site details are summarised in Table 1 with the layout and locality shown Figure F1 at the rear of this report.

Table 1. Site Identification

Category	Details
Site Address	1102 Barrenjoey Road, Palm Beach NSW
Lot Description	Lot 11 DP1207743
Site co-ordinates (centre of site)	33°35'50.8"S 151°19'13.0"E
Current owner	Asia Digital Investments Pty Ltd
Current occupier	Vacant
Excavation Area	650 m^2
Local Government Authority	Northern Beaches Council
Current Zoning	B1 Neighbourhood Centre
Trigger for assessment	Proposed redevelopment

2.2 Site Background

The site previously consisted of restaurant and/or low-density residential dwellings. Review of available aerial imagery indicates that a dwelling has been present on site since before 1951.

Previous structures were demolished and removed prior to the site visit by Epic staff.

2.3 Acid Sulfate Soils

With reference to the Department of Land and Water Conservation Acid Sulfate Soil Risk mapping the site is classified as having no known occurrence of acid sulfate soils. Land to the west of the site is classified as having a low probability of acid sulfate soils 1 – 3 m below ground surface.

With reference to the Pittwater Local Environmental Plan, the site is classified as a Class 5 acid sulfate soil risk with land on the western side of Barrenjoey Road classified as Class 3 risk.

3 ASSESSMENT CRITERIA

3.1 Waste Classification

This waste screening assessment was undertaken with reference to the NSW EPA (2014) Waste Classification Guidelines - Part 1: Classifying Waste. The waste classification guidelines requires consideration of the following steps:

- Step 1: is the waste special waste?
- Step 2: is the waste liquid waste?
- Step 3: is the waste pre-classified?
- Step 4: does the waste possess hazardous characteristics?
- Step 5: determining a wastes classification using chemical assessment?
- Step 6: is the waste putrescible or non putrescible.

Soils are then classed into the following categories based on the chemical contaminant criteria outlined in Table 1 and Table 2 of NSW EPA (2014).

- *General solid waste* (GSW) - If chemical concentrations is less than Contaminant Threshold (CT) 1 then can classify the soil as GSW. If Toxicity Characteristic Leaching Potential (TCLP) is less than

TCLP1 and chemical concentrations are less than Specific Chemical Concentration (SCC) 1 then classify as GSW.

- *Restricted solid waste* (RSW) - If chemical concentrations is less than CT2 but greater than CT1 then can classify the soil as RSW. If TCLP is less than TCLP2 and chemical concentrations are less than SCC2 (but >SCC1) then classify as RSW.
- *Hazardous waste* (HW) – if chemical concentrations are above CT2 then preliminary classification is HW. If chemical concentrations are above SCC2 and/ or TCLP2 then classify as HW.

4 METHODOLOGY

4.1 Sampling Methodology

NSW EPA (1995) Sampling Design Guidelines and NSW EPA (2014) ENM Order recommend six discrete sampling points to characterise excavation footprints up to 1,000 m^2 in size. Epic therefore collected samples from six discrete sampling points in the fill stratigraphy (where encountered) and from natural soils.

Samples were collected with a hand auger or trowel from fill soils (ranging from 0-0.3 mbgl) and from 0.1 m into natural soils. Hand auger boreholes were extended to a depth of 1.0 mbgl, or practical refusal due to bedrock. Samples were collected directly from the centre of the hand auger using nitrile gloves and a description of the waste soils was logged from the borehole. New nitrile gloves were used for the collection of each sample to ensure there was cross contamination between samples. The soil samples were collected in 250 mL laboratory supplied jars and were labelled and immediately stored on ice in an esky for transport to the laboratory.

Logging of the samples was conducted in general accordance with the Unified Soil Classification System and AS 1726-1993. Any anthropogenic materials observed were handled with nitrile gloves and inspected for indications of ACM. If the fragment was suspected ACM, it was placed into a ziplock bag, sealed, and stored for transport to the designated laboratory.

4.2 Sample analysis

Samples were analysed at Envirolab, Chatswood, a NATA accredited laboratory for the laboratory methods used. A summary of the sample analysis is included in below.

Table 2. Sample Analysis

Samples Analysed	Fill: HA01_0.1, HA02_0.0, HA03_0.1, HA04_0.1
	Natural: HA01_0.5, HA02_0.4, HA03_0.4, HA04_0.4, TP05_0.0, TP06_0.1, HA07_0.1,
Analytical suite	Total petroleum hydrocarbons (TPH), organochlorine pesticides (OCP's), polychlorinated Biphenyls (PCBs), total recoverable hydrocarbons (TRH), benzene toluene ethylbenzene xylenes (BTEX), polycyclic aromatic hydrocarbons (PAH), heavy metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel and zinc) and asbestos
Justification for analysis	Analytical suite is based on residential and restaurant land uses, as well as adjacent electrical kiosk. PFAS was not identified as a potential contaminant of concern and therefore has not been included in the waste classification analytical suite.
Sampling date	05/04/2022
Sampled by	Jayden Pan, Consultant Environmental Scientist
Primary laboratory	NATA Accredited, Envirolab, Chatswood NSW

4.3 Material Description

Fill was encountered during the intrusive investigation in the western portion of the site to a maximum depth of 0.3 mbgl and comprised brown/dark brown silty sand. Fill was not observed in the eastern portion of the

site (locations TP05, TP06 and HA07). Concrete, brick, slag, charcoal and timber were observed in the fill materials. ACM was not observed within any of the investigation locations.

Natural soils at the site were encountered from 0.4 mbgl in the western portion of the site, and from the ground surface in the western portion of the site (locations TP05, TP06 and HA07). Natural soils comprised grey-brown silty sand, while bedrock consisted of orange, brown and grey shale and sandstone.

5 QUALITY ASSURANCE AND QUALITY CONTROL

The data quality objectives of the sampling program were to obtain sufficient data to provide an adequate level of confidence that the assessment objectives are achieved.

5.1 Field Quality Assurance and Quality Control

The Quality Assurance and Quality Control (QA/QC) protocols used during the fieldwork for the assessment are shown in Table 2**.**

Table 3. Field QA/QC

Protocol	Description
Sampling Team	Fieldwork completed by suitably qualified Epic Environmental consultants. Site personnel comprise only professionally qualified environmental scientists and engineers experienced in undertaking soil sampling programs.
QA/QC System	All field activities, sampling and analysis was conducted in accordance with the Epic Environmental Sampling Plan.
Chain of Custody Protocols	All samples were logged and transferred under appropriately completed Chain of Custody Forms.
Preservation	All samples were received at the laboratory in appropriately preserved containers, with preservation.
Blind Field Duplicates	Blind field duplicates are split field samples which are both sent to the primary laboratory for individual analysis. one blind duplicate sample pair was analysed to assess the field methods as well as precision of the primary laboratory. Duplicate samples were prepared in accordance with procedures given in Section 8 of Australian Standard AS4482.1-2005. The frequency of duplicate collection exceeded 10% of primary samples. The accepted Relative Percentage Difference (RPD) range between primary and duplicate samples is 50% (>10x LOR) for inorganic analysis.

Sampling team, QA/QC system, Chain of Custody, and preservation procedures were all adhered to and RPD's were within acceptable ranges for all analytes.

Field duplicate RPDs are presented in **Table T3** at the rear of this report.

5.2 Laboratory Quality Assurance and Quality Control

Envirolab (Chatswood, NSW) was the nominated laboratory to undertake laboratory analysis of environmental samples.

The following data validation process was used to determine the accuracy and precision of analytical results and to assess the reliability of the analytical data suite.

Table 3 outlines the analytical data validation criteria, qualifications to the data and the overall QA/QC procedures used for the laboratory testing program.

Table 4. Laboratory QA/QC

Protocol	Description
Holding Times	Holding times are the maximum permissible elapsed time in days from the collection of the sample to its extraction and/or analysis.

Protocol	Description
Reagent Blanks	The reagent blank sample is a laboratory prepared sample containing the reagents used to prepare the sample for final analysis. The purpose of this procedure is to identify contamination in the reagent materials and assess potential bias in the sample analysis due to contaminated reagents. The QC criteria are no detectable contamination in the reagents. Each analytical procedure will be subject to a reagent blank analysis.
Laboratory Duplicates	Laboratory duplicates are field samples that are split in the laboratory and subsequently analysed a number of times in the same batch. These sub-samples are selected by the laboratory to assess the accuracy and precision of the analytical method. The adopted laboratory duplicate acceptance criterion is 50% RPD.
Matrix Spikes / Matrix	MS/MSDs are field samples to which a predetermined stock solution of known concentration has been added. The samples are then analysed for recovery of the known addition. Adopted acceptance criteria for MS are 70% - 130%, while laboratory MSD acceptance criterion is 50% RPD.

Holding times, reagent blanks and surrogates were all within acceptable limits for soil analysis undertaken by Envirolab.

Matrix spike recovery was outside the acceptance criteria for sample 292704-2. The sample was re-digested and re-spiked and the low recovery was confirmed. An acceptable recovery was obtained for the laboratory control spike, indicating the low spike recovery was due to matrix interference, and not due to laboratory error. Further investigation is not required.

5.3 Data Quality Objective Completion

The data validation procedure employed in the assessment of the field and laboratory QA/QC data indicated that the reported analytical results are representative of the conditions at the sample locations and that the analytical data can be relied upon for the purpose of this environmental investigation.

Based on the data collected, and an assessment of the QA/QC process and DQOs, Epic concludes that overall, the quality of the analytical data produced is reliable for the purpose of this investigation.

6 WASTE CLASSIFICATION

Analytical results for the waste classification assessment are presented in **Table T1**. Laboratory certificates are attached to this letter.

6.1 EPA (2014) Waste Classification

The waste classification is conducted using the 6-step procedure described in NSW EPA (2014), as follows:

Table 5. Waste Classification 6 Step Procedure

Step 1: Is the waste special waste?	Asbestos was not observed in the seven locations sampled or detected in the 11 samples analysed for asbestos.
Step 2: Is the waste liquid waste?	No
Step 3: Is the waste pre-classified?	Yes. Laboratory results for the seven samples analysed from natural soils were within background ranges, indicating the soils are suitable for classification as Virgin Excavated Natural Material (VENM). VENM is pre-classified as General Solid Waste.
Step 4: Does the waste possess hazardous characteristics?	No.
Determining the waste's classification using chemical assessment	Selected samples were analysed for the contaminants described in Table 1 to determine the material classification where it was not pre-classified under Steps 1–4 of the Guidelines. Concentrations of the samples analysed were reported as less than the CT1 criteria. The material sampled are suitable for classification as **General Solid Waste (GSW) – non-putrescible**. Refer to **Table T1** for fill soil results. Refer to **Table T2** for natural soil results.
Is the waste putrescible or non-putrescible	Non-putrescible.

Fill samples were encountered to a maximum depth of 0.4 mbgl in the western portion of the site (HA01-HA04). As fill soils did not report any exceedances of CT1 criteria, they may be suitable for disposal to recycling facilities licensed to accept this waste.

Natural soils and bedrock encountered from 0.4 mbgl (eastern portion) and from the ground surface in the western portion were within acceptable background ranges for classification as VENM.

7 CONCLUSIONS

Following the completion of the waste classification assessment the following conclusions have been made:

- Intrusive soil sampling was completed from seven boreholes to a maximum depth of 1.0 mbgl
- Samples were analysed at Envirolab for TPH, TRH, BTEX, PAH, heavy metals, PCBs, OCPs and asbestos
- Laboratory analysis and field observations indicated that the subject soils are suitable for classification as **General Solid Waste (non-putrescible)**
- Prior to the offsite disposal of the subject soils, if materials uncovered onsite do not match the description contained within this report, further assessment will be required by an experienced environmental consultant.

The above classification and conclusions are specific only to the materials described in this report.

Regards

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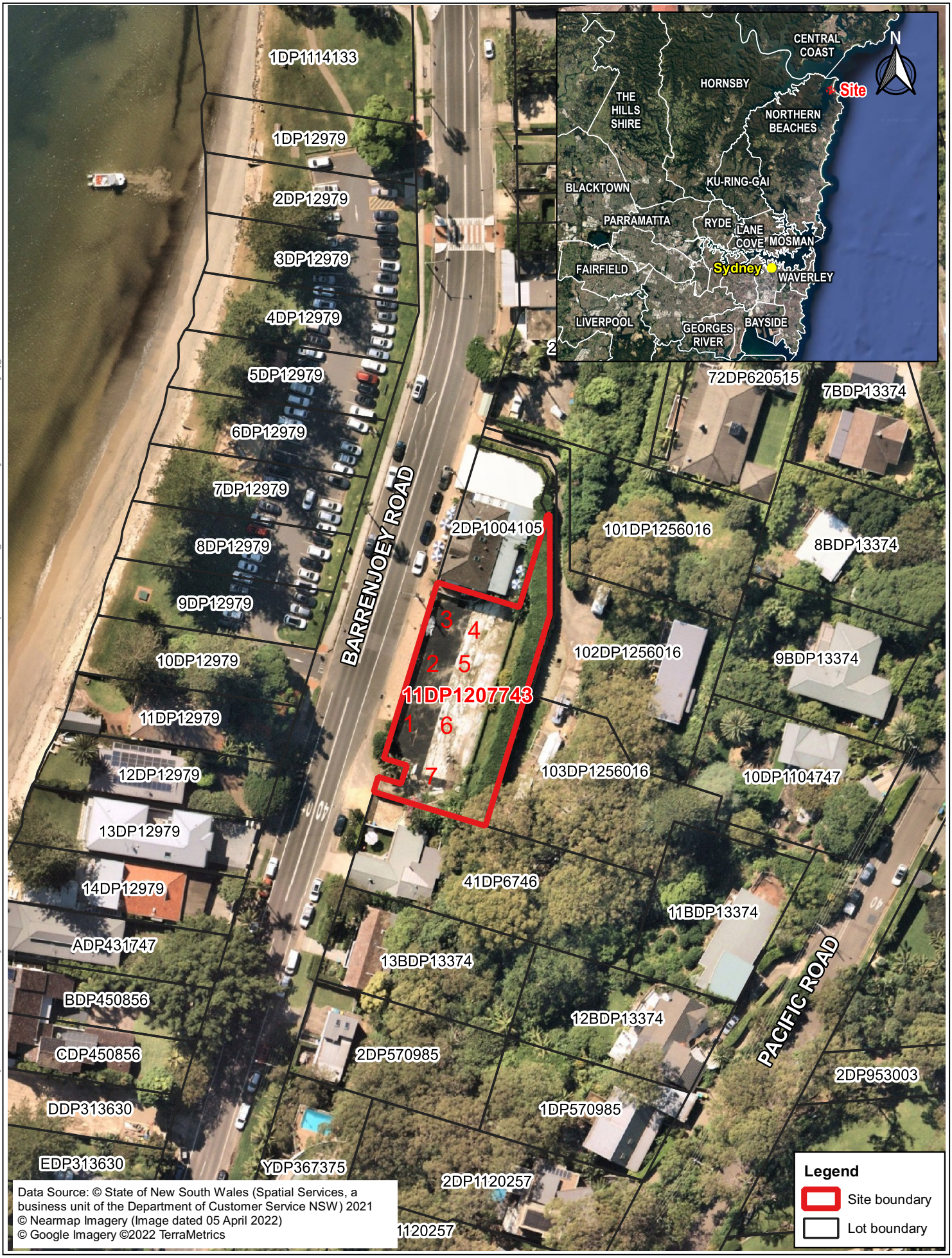
FIGURES



Data Source: © State of New South Wales (Spatial Services, a business unit of the Department of Customer Service NSW) 2021
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©QGIS 2019 File Path G:\GIS\Epic Environmental\Projects\SC2020\SC200089.01 Reform Palm Beach ESA\Workspaces\PSI\Figure F1 Site Layout and Locality.qgz

epic ENVIRONMENTAL

0 15 30 45 60 m

Scale: 1: 1000 @ A4

Datum: GDA2020 Projection: MGA zone 56

Reform Projects
1102 Barrenjoey Road, Palm Beach
Preliminary Site Investigation

Figure F1
Site Layout & Locality

SC200089.01 Rev A 19/04/2022

PLATES

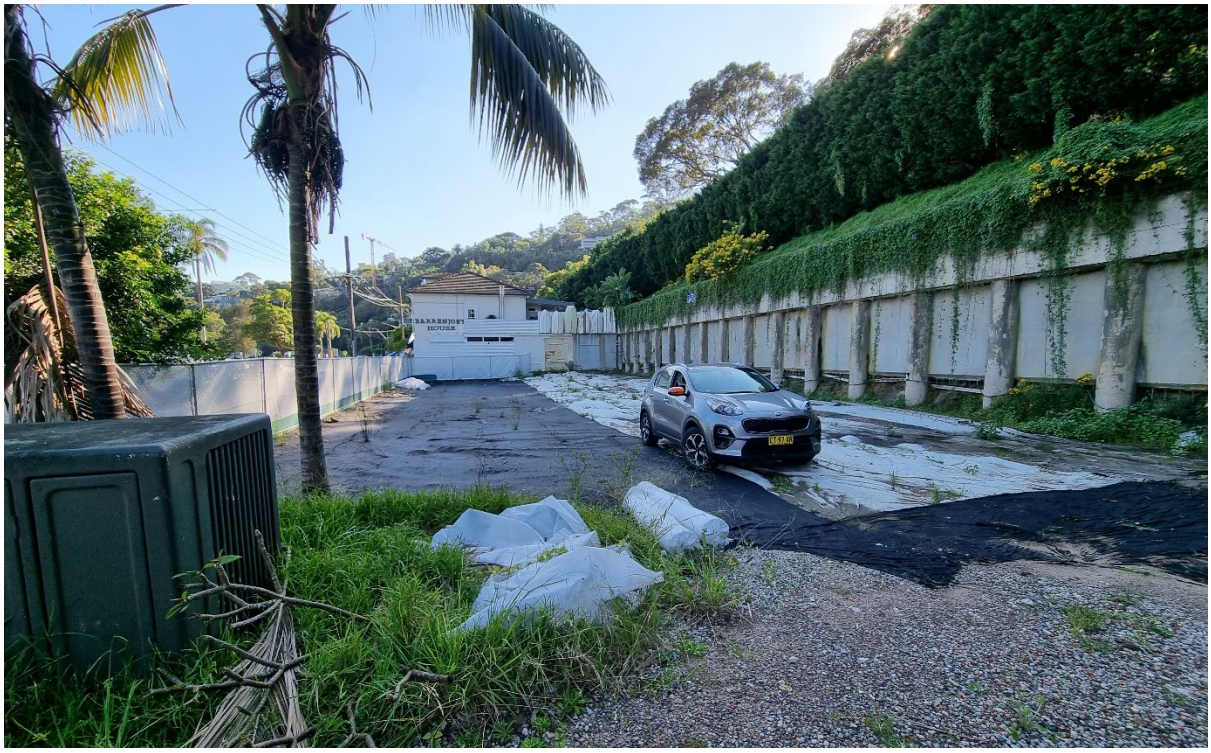

Plate 1. Site layout, facing north. Ground covering and scarp with soldier pile wall evident, as well as electricity kiosk.

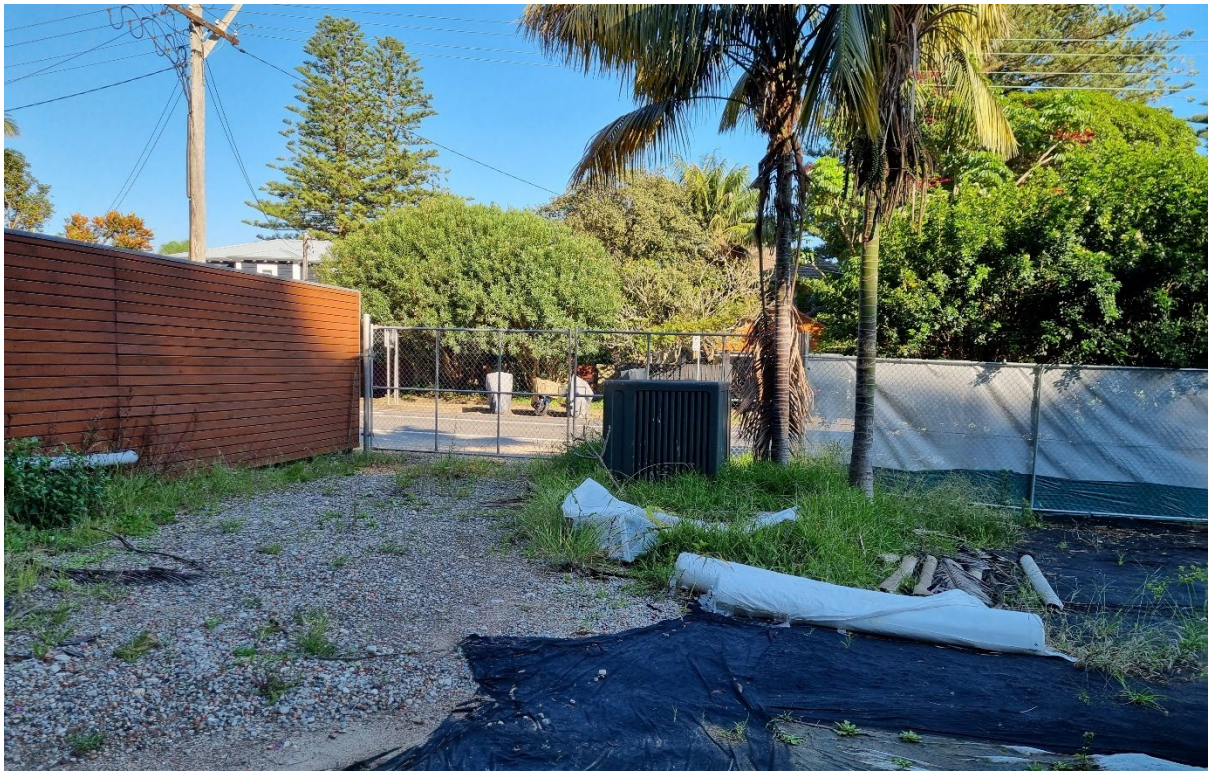

Plate 2. Site layout, southern portion, facing west. Site surface covering and electricity kiosk evident

APPENDIX A RESULTS TABLES

Table T1: Fill soil classification

	Asbestos	Metals									
	Asbestos fibres	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C10	C6-C10 (F1 minus BTEX)
	Detect	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL		4	0.4	1	1	1	0.1	1	1	25	25
NSW 2014 General Solid Waste CT1 (No Leaching)		100	20			100	4	40			
NSW 2014 General Solid Waste SCC1 (with leached)		500	100			1,500	50	1,050			
Field ID	**Date**	**Matrix Type**									
HA01_0.1	**05.04.2022**	**Soil**	**0**	<4	<0.4	**8**	**18**	**38**	<0.1	**4**	**110**	<25	<25
HA02_0.0	**05.04.2022**	**Soil**	**0**	**4**	<0.4	**10**	**17**	**51**	**0.1**	**3**	**95**	<25	<25
HA03_0.1	**05.04.2022**	**Soil**	**0**	<4	<0.4	**9**	**17**	**42**	**0.1**	**2**	**82**	<25	<25
HA04_0.1	**05.04.2022**	**Soil**	**0**	<4	<0.4	**6**	**4**	**8**	<0.1	**1**	**4**	<25	<25

Table T1: Fill soil classification

	TRH					TPH					
	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Benzene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	50	100	100	50	25	50	100	100	50	0.2
NSW 2014 General Solid Waste CT1 (No Leaching)						650				10,000	10
NSW 2014 General Solid Waste SCC1 (with leached)						650				10,000	18
Field ID	**Date**	**Matrix Type**									
HA01_0.1	**05.04.2022**	**Soil**	<50	<50	**160**	<100	**160**	<25	<50	**120**	<100	**120**	<0.2
HA02_0.0	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA03_0.1	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA04_0.1	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2

Table T1: Fill soil classification

			BTEX						Halogenated Benzenes			
			Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	Naphthalene (BTEX)	Hexachlorobenzene	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	1	2	1	1	0.1	1	0.1	0.2	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)			288	600			1,000						
NSW 2014 General Solid Waste SCC1 (with leached)			518	1,080			1,800						
Field ID	**Date**	**Matrix Type**											
HA01_0.1	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	<0.1	**0.2**	<0.1	<0.1
HA02_0.0	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	<0.1	<0.2	<0.1	<0.1
HA03_0.1	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	<0.1	**0.2**	<0.1	<0.1
HA04_0.1	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	<0.1	<0.2	<0.1	<0.1

Table T1: Fill soil classification

			PAH									
			Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)					0.8								
NSW 2014 General Solid Waste SCC1 (with leached)					10								
Field ID	**Date**	**Matrix Type**											
HA01_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	**0.06**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	**0.1**
HA02_0.0	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	**0.06**	<0.1	<0.1	<0.1	**0.1**	<0.1	<0.1	<0.1	**0.1**
HA04_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T1: Fill soil classification

						PCBs						
			Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)													
NSW 2014 General Solid Waste SCC1 (with leached)													
Field ID	**Date**	**Matrix Type**											
HA01_0.1	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	**0.4**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA02_0.0	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03_0.1	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	**0.52**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA04_0.1	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T1: Fill soil classification

				Organochlori							
	PCBs (Sum of total)	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)	50										
NSW 2014 General Solid Waste SCC1 (with leached)	50										

Field ID	Date	Matrix Type										
HA01_0.1	05.04.2022	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA02_0.0	05.04.2022	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03_0.1	05.04.2022	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA04_0.1	05.04.2022	Soil	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T1: Fill soil classification

	ne Pesticides									
	Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
NSW 2014 General Solid Waste CT1 (No Leaching)										
NSW 2014 General Solid Waste SCC1 (with leached)										

Field ID	Date	Matrix Type									
HA01_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA02_0.0	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA04_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T2 - Natural Soil Results

			Asbestos	Metals									
			Asbestos fibres	Arsenic	Cadmium	Chromium (III+VI)	Copper	Lead	Mercury	Nickel	Zinc	C6-C10	C6-C10 (F1 minus BTEX)
			Detect	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL				4	0.4	1	1	1	0.1	1	1	25	25
Background Concentrations (metals)				0.2-30	0.04-2	0.5-110	1-190	<2-200	0.001-0.1	2-400	2-180		
Field ID	**Date**	**Matrix Type**											
HA01_0.5	**05.04.2022**	**Soil**	**0**	<4	<0.4	**9**	**4**	**16**	<0.1	**1**	**18**	<25	<25
HA02_0.4	**05.04.2022**	**Soil**	**0**	**5**	<0.4	**10**	**7**	**10**	<0.1	**4**	**6**	<25	<25
HA03_0.4	**05.04.2022**	**Soil**	**0**	<4	<0.4	**5**	**3**	**9**	<0.1	<1	**6**	<25	<25
HA04_0.4	**05.04.2022**	**Soil**	**0**	<4	<0.4	**6**	**2**	**8**	<0.1	**1**	**3**	<25	<25
HA07_0.1	**05.04.2022**	**Soil**	**0**	<4	<0.4	**11**	**21**	**8**	<0.1	<1	**6**	<25	<25
TP05_0.0	**05.04.2022**	**Soil**	**0**	<4	<0.4	**7**	**17**	**7**	<0.1	**7**	**58**	<25	<25
TP06_0.1	**05.04.2022**	**Soil**	**0**	<4	<0.4	**4**	**7**	**7**	<0.1	**1**	**6**	<25	<25

Table T2 - Natural Soil Results

	TRH					TPH					
	C10-C16	C10-C16 (F2 minus Naphthalene)	C16-C34	C34-C40	C10-C40 (Sum of total)	C6-C9	C10-C14	C15-C28	C29-C36	C10-C36 (Sum of total)	Benzene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	50	50	100	100	50	25	50	100	100	50	0.2
Background Concentrations (metals)											
Field ID	**Date**	**Matrix Type**									
HA01_0.5	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA02_0.4	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA03_0.4	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA04_0.4	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
HA07_0.1	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
TP05_0.0	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2
TP06_0.1	**05.04.2022**	**Soil**	<50	<50	<100	<100	<50	<25	<50	<100	<100	<50	<0.2

Table T2 - Natural Soil Results

	BTEX							Halogenated Benzenes			
	Toluene	Ethylbenzene	Xylene (m & p)	Xylene (o)	Xylene Total	Naphthalene	Naphthalene (BTEX)	Hexachlorobenzene	Benzo(b+j+k)fluoranthene	Acenaphthene	Acenaphthylene
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL	0.5	1	2	1	1	0.1	1	0.1	0.2	0.1	0.1
Background Concentrations (metals)											
Field ID	**Date**	**Matrix Type**									
HA01_0.5	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1
HA02_0.4	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1
HA03_0.4	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1
HA04_0.4	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	<0.1	<0.2	<0.1	<0.1
HA07_0.1	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1
TP05_0.0	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1
TP06_0.1	**05.04.2022**	**Soil**	<0.5	<1	<2	<1	<1	<0.1	<1	-	<0.2	<0.1	<0.1

Table T2 - Natural Soil Results

			PAH									
			Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(g,h,i)perylene	Chrysene	Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Phenanthrene	Pyrene
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Background Concentrations (metals)													
Field ID	**Date**	**Matrix Type**											
HA01_0.5	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA02_0.4	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA03_0.4	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA04_0.4	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA07_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP05_0.0	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
TP06_0.1	**05.04.2022**	**Soil**	<0.1	<0.1	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Table T2 - Natural Soil Results

						PCBs						
			Benzo(a)pyrene TEQ calc (Half)	Benzo(a)pyrene TEQ (LOR)	Benzo(a)pyrene TEQ calc (Zero)	PAHs (Sum of positives)	Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.5	0.5	0.5	0.05	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Background Concentrations (metals)													
Field ID	**Date**	**Matrix Type**											
HA01_0.5	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-
HA02_0.4	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-
HA03_0.4	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-
HA04_0.4	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA07_0.1	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-
TP05_0.0	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-
TP06_0.1	**05.04.2022**	**Soil**	<0.5	<0.5	<0.5	<0.05	-	-	-	-	-	-	-

Table T2 - Natural Soil Results

				Organochlori								
			PCBs (Sum of total)	4,4-DDE	a-BHC	Aldrin	b-BHC	Chlordane (cis)	Chlordane (trans)	d-BHC	DDD	DDT	DDT+DDE+DDD
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Background Concentrations (metals)													
Field ID	**Date**	**Matrix Type**											
HA01_0.5	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-
HA02_0.4	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-
HA03_0.4	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-
HA04_0.4	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA07_0.1	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-
TP05_0.0	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-
TP06_0.1	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-	-

Table T2 - Natural Soil Results

			ne Pesticides									
			Dieldrin	Endosulfan I	Endosulfan II	Endosulfan sulphate	Endrin	Endrin aldehyde	g-BHC (Lindane)	Heptachlor	Heptachlor epoxide	Methoxychlor
			mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
EQL			0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Background Concentrations (metals)												
Field ID	**Date**	**Matrix Type**										
HA01_0.5	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-
HA02_0.4	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-
HA03_0.4	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-
HA04_0.4	**05.04.2022**	**Soil**	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
HA07_0.1	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-
TP05_0.0	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-
TP06_0.1	**05.04.2022**	**Soil**	-	-	-	-	-	-	-	-	-	-

Table T3 - Soil RPDs

			Lab Report Number	292704	292704	
			Field ID	HA03_0.1	QC01	
			Date			
			Matrix Type	Soil	Soil	RPD
	Unit	EQL				
Asbestos						
Asbestos fibres	Detect			0	0	-
NA						
Moisture Content	%	0.1		12	12	0
Metals						
Arsenic	mg/kg	4		<4	<4	0
Cadmium	mg/kg	0.4		<0.4	<0.4	0
Chromium (III+VI)	mg/kg	1		9	8	12
Copper	mg/kg	1		17	24	34
Lead	mg/kg	1		42	52	21
Mercury	mg/kg	0.1		0.1	0.2	67
Nickel	mg/kg	1		2	3	40
Zinc	mg/kg	1		82	100	20
TRH						
C6-C10	mg/kg	25		<25	<25	0
C6-C10 (F1 minus BTEX)	mg/kg	25		<25	<25	0
C10-C16	mg/kg	50		<50	<50	0
C10-C16 (F2 minus Naphthalene)	mg/kg	50		<50	<50	0
C16-C34	mg/kg	100		<100	<100	0
C34-C40	mg/kg	100		<100	<100	0
C10-C40 (Sum of total)	mg/kg	50		<50	<50	0
TPH						
C6-C9	mg/kg	25		<25	<25	0
C10-C14	mg/kg	50		<50	<50	0
C15-C28	mg/kg	100		<100	<100	0
C29-C36	mg/kg	100		<100	<100	0
C10-C36 (Sum of total)	mg/kg	50		<50	<50	0
BTEX						
Benzene	mg/kg	0.2		<0.2	<0.2	0
Toluene	mg/kg	0.5		<0.5	<0.5	0
Ethylbenzene	mg/kg	1		<1	<1	0
Xylene (m & p)	mg/kg	2		<2	<2	0
Xylene (o)	mg/kg	1		<1	<1	0
Xylene Total	mg/kg	1		<1	<1	0
Naphthalene	mg/kg	0.1		<0.1	<0.1	0
Naphthalene (BTEX)	mg/kg	1		<1	<1	0
Halogenated Benzenes						
Hexachlorobenzene	mg/kg	0.1		<0.1	<0.1	0
PAH						
Benzo(b+j+k)fluoranthene	mg/kg	0.2		0.2	0.3	40
Acenaphthene	mg/kg	0.1		<0.1	<0.1	0
Acenaphthylene	mg/kg	0.1		<0.1	<0.1	0
Anthracene	mg/kg	0.1		<0.1	<0.1	0
Benz(a)anthracene	mg/kg	0.1		<0.1	<0.1	0
Benzo(a) pyrene	mg/kg	0.05		0.06	0.08	29
Benzo(g,h,i)perylene	mg/kg	0.1		<0.1	<0.1	0
Chrysene	mg/kg	0.1		<0.1	<0.1	0
Dibenz(a,h)anthracene	mg/kg	0.1		<0.1	<0.1	0
Fluoranthene	mg/kg	0.1		0.1	0.2	67
Fluorene	mg/kg	0.1		<0.1	<0.1	0
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1		<0.1	<0.1	0
Phenanthrene	mg/kg	0.1		<0.1	0.1	0
Pyrene	mg/kg	0.1		0.1	0.2	67
Benzo(a)pyrene TEQ calc (Half)	mg/kg	0.5		<0.5	<0.5	0
Benzo(a)pyrene TEQ (LOR)	mg/kg	0.5		<0.5	<0.5	0
Benzo(a)pyrene TEQ calc (Zero)	mg/kg	0.5		<0.5	<0.5	0
PCBs						
Arochlor 1016	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1221	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1232	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1242	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1248	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1254	mg/kg	0.1		<0.1	<0.1	0
Arochlor 1260	mg/kg	0.1		<0.1	<0.1	0
PCBs (Sum of total)	mg/kg	0.1		<0.1	<0.1	0
Organochlorine Pesticides						
4,4-DDE	mg/kg	0.1		<0.1	<0.1	0
a-BHC	mg/kg	0.1		<0.1	<0.1	0
Aldrin	mg/kg	0.1		<0.1	<0.1	0
b-BHC	mg/kg	0.1		<0.1	<0.1	0
Chlordane (cis)	mg/kg	0.1		<0.1	<0.1	0
Chlordane (trans)	mg/kg	0.1		<0.1	<0.1	0
d-BHC	mg/kg	0.1		<0.1	<0.1	0
DDD	mg/kg	0.1		<0.1	<0.1	0
DDT	mg/kg	0.1		<0.1	<0.1	0
DDT+DDE+DDD	mg/kg	0.1		<0.1	<0.1	0
Dieldrin	mg/kg	0.1		<0.1	<0.1	0
Endosulfan I	mg/kg	0.1		<0.1	<0.1	0
Endosulfan II	mg/kg	0.1		<0.1	<0.1	0
Endosulfan sulphate	mg/kg	0.1		<0.1	<0.1	0
Endrin	mg/kg	0.1		<0.1	<0.1	0
Endrin aldehyde	mg/kg	0.1		<0.1	<0.1	0
g-BHC (Lindane)	mg/kg	0.1		<0.1	<0.1	0
Heptachlor	mg/kg	0.1		<0.1	<0.1	0

Table T3 - Soil RPDs

		Lab Report Number	**292704**	**292704**	
		Field ID	**HA03_0.1**	**QC01**	
		Date			
		Matrix Type	**Soil**	**Soil**	**RPD**
	Unit	EQL			
Heptachlor epoxide	**mg/kg**	0.1	<0.1	<0.1	0
Methoxychlor	**mg/kg**	0.1	<0.1	<0.1	0

APPENDIX B LABORATORY REPORTS

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CERTIFICATE OF ANALYSIS 292704

Client Details

Client	Epic Environmental (Sydney) Pty Ltd
Attention	Jayden Pan
Address	Suite 4.01, 55 Miller St, Pyrmont, NSW, 2009

Sample Details

Your Reference	**SC200089.01, Palm Beach PSI**
Number of Samples	13 Soil
Date samples received	05/04/2022
Date completed instructions received	11/04/2022

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	13/04/2022
Date of Issue	13/04/2022

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Authorised by Asbestos Approved Signatory: Lucy Zhu

Results Approved By
Hannah Nguyen, Metals Supervisor
Liam Timmins, Chemist
Lucy Zhu, Asbestos Supervisor
Steven Luong, Senior Chemist
Thomas Beenie, Lab Technician

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
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	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	95	90	91	96	87

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
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	<1	<1	<1	<1	<1
Surrogate aaa-Trifluorotoluene	%	85	92	89	92	92

vTRH(C6-C10)/BTEXN in Soil			
Our Reference		292704-12	292704-13
Your Reference	UNITS	TP06_0.1	HA07_0.1
Type of sample		Soil	Soil
Date extracted	-	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022
TRH C_6 - C_9	mg/kg	<25	<25
TRH C_6 - C_{10}	mg/kg	<25	<25
vTPH C_6 - C_{10} less BTEX (F1)	mg/kg	<25	<25
Benzene	mg/kg	<0.2	<0.2
Toluene	mg/kg	<0.5	<0.5
Ethylbenzene	mg/kg	<1	<1
m+p-xylene	mg/kg	<2	<2
o-Xylene	mg/kg	<1	<1
Naphthalene	mg/kg	<1	<1
Total +ve Xylenes	mg/kg	<1	<1
Surrogate aaa-Trifluorotoluene	%	98	88

svTRH (C10-C40) in Soil						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50	<50	<50	<50
TRH C_{15} - C_{28}	mg/kg	120	<100	<100	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (C10-C36)	mg/kg	120	<50	<50	<50	<50
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	160	<100	<100	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100	<100	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	160	<50	<50	<50	<50
Surrogate o-Terphenyl	%	89	91	91	90	91

svTRH (C10-C40) in Soil						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
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
Total +ve TRH (C10-C36)	mg/kg	<50	<50	<50	<50	<50
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	90	91	92	91

svTRH (C10-C40) in Soil			
Our Reference		292704-12	292704-13
Your Reference	UNITS	TP06_0.1	HA07_0.1
Type of sample		Soil	Soil
Date extracted	-	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	13/04/2022
TRH C_{10} - C_{14}	mg/kg	<50	<50
TRH C_{15} - C_{28}	mg/kg	<100	<100
TRH C_{29} - C_{36}	mg/kg	<100	<100
Total +ve TRH (C10-C36)	mg/kg	<50	<50
TRH >C_{10} -C_{16}	mg/kg	<50	<50
TRH >C_{10} - C_{16} less Naphthalene (F2)	mg/kg	<50	<50
TRH >C_{16} -C_{34}	mg/kg	<100	<100
TRH >C_{34} -C_{40}	mg/kg	<100	<100
Total +ve TRH (>C10-C40)	mg/kg	<50	<50
Surrogate o-Terphenyl	%	93	96

PAHs in Soil						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	13/04/2022	12/04/2022	12/04/2022	12/04/2022
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	0.06	<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	0.4	<0.05	<0.05	<0.05	0.52
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	110	95	90	95

PAHs in Soil						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	12/04/2022	12/04/2022	12/04/2022	13/04/2022
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	0.2	<0.1	<0.1	<0.1
Pyrene	mg/kg	<0.1	0.2	<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	0.3	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	0.08	<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	0.92	<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	%	104	94	92	86	110

PAHs in Soil			
Our Reference		292704-12	292704-13
Your Reference	UNITS	TP06_0.1	HA07_0.1
Type of sample		Soil	Soil
Date extracted	-	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022
Naphthalene	mg/kg	<0.1	<0.1
Acenaphthylene	mg/kg	<0.1	<0.1
Acenaphthene	mg/kg	<0.1	<0.1
Fluorene	mg/kg	<0.1	<0.1
Phenanthrene	mg/kg	<0.1	<0.1
Anthracene	mg/kg	<0.1	<0.1
Fluoranthene	mg/kg	<0.1	<0.1
Pyrene	mg/kg	<0.1	<0.1
Benzo(a)anthracene	mg/kg	<0.1	<0.1
Chrysene	mg/kg	<0.1	<0.1
Benzo(b,j+k)fluoranthene	mg/kg	<0.2	<0.2
Benzo(a)pyrene	mg/kg	<0.05	<0.05
Indeno(1,2,3-c,d)pyrene	mg/kg	<0.1	<0.1
Dibenzo(a,h)anthracene	mg/kg	<0.1	<0.1
Benzo(g,h,i)perylene	mg/kg	<0.1	<0.1
Total +ve PAH's	mg/kg	<0.05	<0.05
Benzo(a)pyrene TEQ calc (zero)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(half)	mg/kg	<0.5	<0.5
Benzo(a)pyrene TEQ calc(PQL)	mg/kg	<0.5	<0.5
Surrogate p-Terphenyl-d14	%	106	110

Organochlorine Pesticides in soil						
Our Reference		292704-1	292704-3	292704-5	292704-7	292704-9
Your Reference	UNITS	HA01_0.1	HA02_0.0	HA03_0.1	QC01	HA04_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
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	%	88	86	85	87	84

Organochlorine Pesticides in soil		
Our Reference		292704-10
Your Reference	UNITS	HA04_0.4
Type of sample		Soil
Date extracted	-	12/04/2022
Date analysed	-	12/04/2022
alpha-BHC	mg/kg	<0.1
HCB	mg/kg	<0.1
beta-BHC	mg/kg	<0.1
gamma-BHC	mg/kg	<0.1
Heptachlor	mg/kg	<0.1
delta-BHC	mg/kg	<0.1
Aldrin	mg/kg	<0.1
Heptachlor Epoxide	mg/kg	<0.1
gamma-Chlordane	mg/kg	<0.1
alpha-chlordane	mg/kg	<0.1
Endosulfan I	mg/kg	<0.1
pp-DDE	mg/kg	<0.1
Dieldrin	mg/kg	<0.1
Endrin	mg/kg	<0.1
Endosulfan II	mg/kg	<0.1
pp-DDD	mg/kg	<0.1
Endrin Aldehyde	mg/kg	<0.1
pp-DDT	mg/kg	<0.1
Endosulfan Sulphate	mg/kg	<0.1
Methoxychlor	mg/kg	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1
Surrogate TCMX	%	83

PCBs in Soil						
Our Reference		292704-1	292704-3	292704-5	292704-7	292704-9
Your Reference	UNITS	HA01_0.1	HA02_0.0	HA03_0.1	QC01	HA04_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
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	%	88	86	85	87	84

PCBs in Soil		
Our Reference		292704-10
Your Reference	UNITS	HA04_0.4
Type of sample		Soil
Date extracted	-	12/04/2022
Date analysed	-	12/04/2022
Aroclor 1016	mg/kg	<0.1
Aroclor 1221	mg/kg	<0.1
Aroclor 1232	mg/kg	<0.1
Aroclor 1242	mg/kg	<0.1
Aroclor 1248	mg/kg	<0.1
Aroclor 1254	mg/kg	<0.1
Aroclor 1260	mg/kg	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1
Surrogate TCMX	%	83

Acid Extractable metals in soil						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Arsenic	mg/kg	<4	<4	4	5	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	8	9	10	10	9
Copper	mg/kg	18	4	17	7	17
Lead	mg/kg	38	16	51	10	42
Mercury	mg/kg	<0.1	<0.1	0.1	<0.1	0.1
Nickel	mg/kg	4	1	3	4	2
Zinc	mg/kg	110	18	95	6	82

Acid Extractable metals in soil						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Arsenic	mg/kg	<4	<4	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	5	8	6	6	7
Copper	mg/kg	3	24	4	2	17
Lead	mg/kg	9	52	8	8	7
Mercury	mg/kg	<0.1	0.2	<0.1	<0.1	<0.1
Nickel	mg/kg	<1	3	1	1	7
Zinc	mg/kg	6	100	4	3	58

Acid Extractable metals in soil				
Our Reference		292704-12	292704-13	292704-14
Your Reference	UNITS	TP06_0.1	HA07_0.1	TP05_0.0 - [TRIPLICATE]
Type of sample		Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	12/04/2022	12/04/2022	12/04/2022
Arsenic	mg/kg	<4	<4	<4
Cadmium	mg/kg	<0.4	<0.4	<0.4
Chromium	mg/kg	4	11	6
Copper	mg/kg	7	21	17
Lead	mg/kg	7	8	8
Mercury	mg/kg	<0.1	<0.1	<0.1
Nickel	mg/kg	1	<1	6
Zinc	mg/kg	6	6	48

Moisture						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
Moisture	%	11	19	9.9	17	12

Moisture						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
Moisture	%	12	12	11	14	3.8

Moisture			
Our Reference		292704-12	292704-13
Your Reference	UNITS	TP06_0.1	HA07_0.1
Type of sample		Soil	Soil
Date prepared	-	12/04/2022	12/04/2022
Date analysed	-	13/04/2022	13/04/2022
Moisture	%	10	25

Asbestos ID - soils						
Our Reference		292704-1	292704-2	292704-3	292704-4	292704-5
Your Reference	UNITS	HA01_0.1	HA01_0.5	HA02_0.0	HA02_0.4	HA03_0.1
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
Sample mass tested	g	Approx. 45g	Approx. 55g	Approx. 30g	Approx. 50g	Approx. 60g
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	-	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

Asbestos ID - soils						
Our Reference		292704-6	292704-7	292704-9	292704-10	292704-11
Your Reference	UNITS	HA03_0.4	QC01	HA04_0.1	HA04_0.4	TP05_0.0
Type of sample		Soil	Soil	Soil	Soil	Soil
Date analysed	-	13/04/2022	13/04/2022	13/04/2022	13/04/2022	13/04/2022
Sample mass tested	g	Approx. 45g	Approx. 60g	Approx. 50g	Approx. 45g	Approx. 55g
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	-	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

Asbestos ID - soils			
Our Reference		292704-12	292704-13
Your Reference	UNITS	TP06_0.1	HA07_0.1
Type of sample		Soil	Soil
Date analysed	-	13/04/2022	13/04/2022
Sample mass tested	g	Approx. 50g	Approx. 60g
Sample Description	-	Beige clayey soil & rocks	Beige clayey soil & rocks
Asbestos ID in soil	-	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

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.
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-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-022/025	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.

Method ID	Methodology Summary
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)-BTEX 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)-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-2	292704-3
Date extracted	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
Date analysed	-			13/04/2022	1	13/04/2022	13/04/2022		13/04/2022	13/04/2022
TRH C_6 - C_9	mg/kg	25	Org-023	<25	1	<25	<25	0	93	105
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	1	<25	<25	0	93	105
Benzene	mg/kg	0.2	Org-023	<0.2	1	<0.2	<0.2	0	94	105
Toluene	mg/kg	0.5	Org-023	<0.5	1	<0.5	<0.5	0	92	105
Ethylbenzene	mg/kg	1	Org-023	<1	1	<1	<1	0	92	104
m+p-xylene	mg/kg	2	Org-023	<2	1	<2	<2	0	94	105
o-Xylene	mg/kg	1	Org-023	<1	1	<1	<1	0	94	106
Naphthalene	mg/kg	1	Org-023	<1	1	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	91	1	95	92	3	88	92

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]	11	12/04/2022	12/04/2022		[NT]	[NT]
Date analysed	-			[NT]	11	13/04/2022	13/04/2022		[NT]	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	[NT]	11	<25	<25	0	[NT]	[NT]
Benzene	mg/kg	0.2	Org-023	[NT]	11	<0.2	<0.2	0	[NT]	[NT]
Toluene	mg/kg	0.5	Org-023	[NT]	11	<0.5	<0.5	0	[NT]	[NT]
Ethylbenzene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
m+p-xylene	mg/kg	2	Org-023	[NT]	11	<2	<2	0	[NT]	[NT]
o-Xylene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Naphthalene	mg/kg	1	Org-023	[NT]	11	<1	<1	0	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	[NT]	11	92	95	3	[NT]	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	292704-3
Date extracted	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
Date analysed	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	1	<50	<50	0	107	99
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	1	120	<100	18	111	99
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	1	<100	<100	0	123	115
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	1	<50	<50	0	107	99
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	1	160	<100	46	111	99
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	1	<100	<100	0	123	115
Surrogate o-Terphenyl	%		Org-020	95	1	89	93	4	93	87

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
Date analysed	-			13/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	90	[NT]
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	89	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	92	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
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	96	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	1	0.1	<0.1	0	101	[NT]
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	93	[NT]
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	0.06	<0.05	18	78	[NT]
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	107	1	97	97	0	95	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
Date analysed	-			13/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	86	[NT]
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	85	[NT]
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	65	[NT]
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	95	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	78	[NT]
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	94	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	98	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	72	[NT]
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	90	[NT]
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	62	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	87	1	88	85	3	89	[NT]

QUALITY CONTROL: PCBs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-2	[NT]
Date extracted	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
Date analysed	-			13/04/2022	1	12/04/2022	12/04/2022		12/04/2022	[NT]
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	95	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	1	<0.1	<0.1	0	[NT]	[NT]
Surrogate TCMX	%		Org-021	87	1	88	85	3	89	[NT]

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-10	292704-2
Date prepared	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
Date analysed	-			12/04/2022	1	12/04/2022	12/04/2022		12/04/2022	12/04/2022
Arsenic	mg/kg	4	Metals-020	<4	1	<4	4	0	97	88
Cadmium	mg/kg	0.4	Metals-020	<0.4	1	<0.4	<0.4	0	99	79
Chromium	mg/kg	1	Metals-020	<1	1	8	8	0	104	81
Copper	mg/kg	1	Metals-020	<1	1	18	19	5	95	90
Lead	mg/kg	1	Metals-020	<1	1	38	37	3	106	77
Mercury	mg/kg	0.1	Metals-021	<0.1	1	<0.1	<0.1	0	130	#
Nickel	mg/kg	1	Metals-020	<1	1	4	5	22	99	82
Zinc	mg/kg	1	Metals-020	<1	1	110	120	9	105	78

QUALITY CONTROL: Acid Extractable metals in soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	[NT]	[NT]
Date prepared	-			[NT]	11	12/04/2022	12/04/2022		[NT]	[NT]
Date analysed	-			[NT]	11	12/04/2022	12/04/2022		[NT]	[NT]
Arsenic	mg/kg	4	Metals-020	[NT]	11	<4	<4	0	[NT]	[NT]
Cadmium	mg/kg	0.4	Metals-020	[NT]	11	<0.4	<0.4	0	[NT]	[NT]
Chromium	mg/kg	1	Metals-020	[NT]	11	7	5	33	[NT]	[NT]
Copper	mg/kg	1	Metals-020	[NT]	11	17	12	34	[NT]	[NT]
Lead	mg/kg	1	Metals-020	[NT]	11	7	6	15	[NT]	[NT]
Mercury	mg/kg	0.1	Metals-021	[NT]	11	<0.1	<0.1	0	[NT]	[NT]
Nickel	mg/kg	1	Metals-020	[NT]	11	7	8	13	[NT]	[NT]
Zinc	mg/kg	1	Metals-020	[NT]	11	58	38	42	[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

Asbestos: A portion of the supplied sample was sub-sampled for asbestos analysis according to Envirolab procedures.
We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g of sample in its own container.
Note: Sample 292704-7 was sub-sampled from a jar provided by the client.

Asbestos: Excessive sample volume was provided for asbestos analysis. A portion of the supplied sample was sub-sampled according to Envirolab procedures. We cannot guarantee that this sub-sample is indicative of the entire sample. Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 292704-1 to 6, 9 to 13 were sub-sampled from bags provided by the client.

Acid Extractable Metals in Soil:
- The laboratory RPD acceptance criteria has been exceeded for 292704-11 for Zn. Therefore a triplicate result has been issued as laboratory sample number 292704-14.
- # Poor spike recovery was obtained for this sample. The sample was re-digested and re-spiked and the low recovery was confirmed. This is due to matrix interferences. However, an acceptable recovery was obtained for the LCS.

292704

epic ENVIRONMENTAL

Chain of Custody Record

Project No:	SC2000089.01	Lab:	
Project/Site:	Reform Palm Beach	Lab Quote No:	
Project Manager:	Todd O'Brien (tobrien@epicenvironmental.com.au)	Lab Batch No:	
Sampled By:	Jayden Pan (jpan@epicenvironmental.com.au)	Date Results Required:	5 day tat
Phone:	0497 417 941	Sample Disposal After:	
Page:	1 of 1		
Number of Eskies:			

				CONTAINER TYPE & PRESERVATIVE										ANALYSIS REQUIRED										
				Soil / Solid			Water / Liquid						Other											
LAB ID	SAMPLE ID	DATE	MATRIX	150-250ml Glass Jar	200ml Plastic Jar	- Plastic bag	2x 40ml Amber Vial	100-500ml Amber Bottle	60ml Metals	60ml Nutrients	250-500ml Plastic (Unpreserved)	60-250ml Plastic (PFAS)		Combo 5a	Combo 3a									HOLD
1	HA01-0.1	5/04/2022	s	x		x								x										
2	HA01-0.5	5/04/2022	s	x		x									x									
3	HA02-0.0	5/04/2022	s	x		x								x										
4	HA02-0.4	5/04/2022	s	x		x									x									
5	HA03-0.1	5/04/2022	s	x		x								x										
6	HA03-0.4	5/04/2022	s	x		x									x									
7	QC01	5/04/2022	s	x										x										
8	HA03-1.0	5/04/2022	s	x		x																		x
9	HA04-0.1	5/04/2022	s	x		x								x										
10	HA04-0.4	5/04/2022	s	x		x								x										
11	TP05-0.0	5/04/2022	s	x		x									x									
12	TP06-0.1	5/04/2022	s	x		x									x									
13	HA07-0.1	5/04/2022	s	x		x									x									
			TOTALS																					

Relinquished By:				Received By:			
NAME	Jayden Pan	SIGNATURE	JP	DATE	11-Apr-22	NAME	Allie
						SIGNATURE	
						DATE	11/4/22

Custody Seals Intact	Y	N
Samples Received Chilled	Y	N
Method of Shipment		

NOTES:

Email tobrien@epicenvironmental.com.a
cc jpan@epicenvironmental.com.au
cc epicenvironmental@esdat.com.au
cc labs@epicenvironmental.com.au