3 February 2021
Ref: E33775PHlet

Pymble Ladies College
Avon Road
Pymble NSW 2073

Attention: Mr Malcolm Boyes

PRELIMINARY WASTE CLASSIFICATION ASSESSMENT
PROPOSED NEW SCHOOL BUILDING
20 AVON ROAD, PYMBLE

1 INTRODUCTION

Pymble Ladies College ('the client') commissioned JK Environments (JKE) to assign a waste classification to the in-situ soil located at Pymble Ladies College, 20 Avon Road, Pymble. The site location is shown on Figure 1 and sampling for the assessment was confined to the in-situ soil in 'the site' area as shown on Figure 2 attached in the appendices.

The purpose of this assessment was to provide a preliminary waste classification for the off-site disposal of waste soil and/or bedrock to be excavated during the proposed development. The waste classification is preliminary as approximately one third of the site was inaccessible for sampling due to existing buildings. The assessment was undertaken generally in accordance with a JKE proposal (Ref: EP53314PH) of 8 January 2021 and written acceptance from the client dated 11 January 2021.

A geotechnical investigation was undertaken in conjunction with the waste classification assessment by JK Geotechnics and the results are presented in a separate report (Ref: 33775BCrpt).

1.1 Assessment Guidelines

The assessment and preparation of this report were undertaken with reference to the NSW EPA Waste Classification Guidelines - Part 1: Classifying Waste (2014)[1].

1.2 Proposed Development Details

The proposed development includes demolition of the existing buildings and construction of a five storey building, with a combined floor space of approximately 6,000m^2.

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

2 SITE INFORMATION

2.1 Site Information and Description

Table 2-1: Site Identification

Site Address:	20 Avon Road, Pymble
Lot & Deposited Plan:	Part of Lot 1 DP 69541
Current Land Use:	School Grounds
Area Applicable to Waste Classification (m^2):	2,900
Geographical Location (approx.):	Latitude: -33.748182 Longitude: 151.136368

The site is located on the south-east boundary of Pymble Ladies College. The site and immediate surrounds fall towards a gully feature, located to the north-east of the site. The majority of the site falls to the north-east at approximately 3-5°, with some sections levelled to create building pads.

At the time of the inspection, the site was occupied by a temporary building in the south-west section known as 'The Pavillion'. The building was on a concrete pad and included plastic panel walls. Demountable buildings were located immediately north-east of The Pavillion, and appeared to be placed on a former concrete tennis court. Signage on the demountable buildings indicated they were being used as a Healthcare Centre.

The central section of the site was occupied by a landscaped area that included gardens and paved footpaths. A low height retaining wall was present along the north-east side of the landscaped area. The east section of the site was grassed and included several man-made mounds.

An electrical transformer was located to the north of the site, on a concrete pad, within a landscaped area. Additional school buildings, including demountables and Goodlet House (1926), were located to the north-west of the site. Two storey classroom buildings were located to the north-east of the site, together with a grassed area that extended to the gully feature. A large and modern sports centre was located to the south-west of the site. A residential area was located to the south-east of the site that typically included single and double storey brick houses.

There was no evidence of contamination observed during the inspection and there was no apparent storage of dangerous goods, fuel or chemicals on site.

2.2 Background/Historical Information

JKE were not provided with any historical reports or background information for the site. On this basis, JKE has undertaken a preliminary review of historical information based on the following:

- The 1943 and 2018 aerial photographs for the site available on SIX Maps[2]; and
- The contaminated land records provided by the NSW EPA[3].

Based on interpretation of the aerial photographs, JKE are of the opinion that the site appeared to have been part of Pymble Ladies College since at least 1943. In 1943 the site appeared to be vacant and grassed, except for some paved footpaths. The photographs did not indicate any obvious industrial land uses in the immediate vicinity of the site. There were no records for the site on the NSW EPA contaminated land registers.

Considering the above information, the waste classification assessment has considered a broad suite of potential contaminants as outlined in Section 4.5

2.3 Regional Geology

The geological map of Sydney (1983)[4] indicates the site to be underlain by Ashfield Shale of the Wianamatta Group, which typically consists of black to dark grey shale and laminite.

3 ASSESSMENT CRITERIA

3.1 NSW EPA Waste Classification Guidelines

Off-site disposal of fill, contaminated material, stockpiled soil, natural soil, rock excavated as part of the proposed development works is regulated by the Protection of the Environment Operations Act (1997)[5] and associated regulations and guidelines including the Part 1 of the Waste Classification Guidelines.

The waste classification guidelines require an assessment 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 waste's classification using chemical assessment.

Soils are classed into the following categories based on the chemical contaminant criteria outlined in the guidelines:

[2] https://maps.six.nsw.gov.au/

[3] http://www.epa.nsw.gov.au/

[4] Department of Mineral Resources, (1983). *1:100,000 Geological Map of Sydney (Series 9130)*

[5] Protection of Environment Operations Act 1997 (NSW) (POEO Act 1997)

Table 3-1: Waste Categories

Category	Description
General Solid Waste (non-putrescible)	• If Specific Contaminant Concentration (SCC) ≤ Contaminant Threshold (CT1) then Toxicity Characteristics Leaching Procedure (TCLP) not needed to classify the soil as general solid waste; • If TCLP ≤ TCLP1 and SCC ≤ SCC1 then treat as general solid waste
Restricted Solid Waste (non-putrescible)	• If SCC ≤ CT2 then TCLP not needed to classify the soil as restricted solid waste; and • If TCLP ≤ TCLP2 and SCC ≤ 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 • 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.

4 ASSESSMENT AND INVESTIGATION PROCEDURE

4.1 Five Step Assessment of Waste

The five steps assessment of the waste is provided in the following table:

Table 4-1: Five Step Assessment

Step	Assessment
Step 1: is the waste special waste?	No. The potential for the waste to contain special waste (asbestos) is to be considered further during the assessment.
Step 2: is the waste liquid waste?	No.
Step 3: is the waste pre-classified?	No. There is a potential for the natural material to be pre-classified if the material is VENM. This will be considered further following completion of Step 5.
Step 4: does the waste possess hazardous characteristics?	No.

Step	Assessment
Step 5: Determining a waste's classification using chemical assessment.	Required, as documented in the subsequent sections of this report.

4.2 Subsurface Investigation and Soil Sampling Methods

Field work for this investigation was undertaken on 14 January 2021. Soil samples were obtained from four boreholes drilled for the JK geotechnical investigation. The sampling locations are shown on Figure 2 attached in the appendices. The investigation was limited to a maximum depth of 10.47m, although environmental sampling for the waste classification was limited to the fill and shallow natural soils/bedrock.

The sample locations were drilled using a track mounted hydraulically operated drill rig equipped with spiral flight augers. Soil samples were obtained from a Standard Penetration Test (SPT) sampler or directly from the auger when conditions did not allow use of the SPT sampler.

Soil samples were collected from the fill and natural profiles encountered during the investigation. Additional fill samples were obtained when relatively deep fill (>0.5m) was encountered. Samples were also obtained when there was a distinct change in lithology or based on the observations made during the investigation. All samples were recorded on the borehole logs attached in the appendices.

Samples were placed in glass jars with plastic caps and Teflon seals with minimal headspace. Samples for asbestos analysis were placed in zip-lock plastic bags. Sampling personnel used disposable nitrile gloves during sampling activities. The samples were labelled with the job number, sampling location, sampling depth and date.

4.3 Screening for Volatile Organic Compounds (VOCs)

A portable Photoionisation Detector (PID) was used to screen the samples for the presence of VOCs and to assist with selection of samples for further analysis for petroleum hydrocarbons. PID screening for VOCs was undertaken on soil samples using the soil sample headspace method. VOC data was obtained from partly filled zip-lock plastic bags following equilibration of the headspace gases.

The sensitivity of the PID is dependent on the organic compound and varies for different mixtures of hydrocarbons. Some compounds give relatively high readings and some can be undetectable even though present in identical concentrations. The portable PID is best used semi-quantitatively to compare samples contaminated by the same hydrocarbon source. The PID is calibrated before use by measurement of an isobutylene standard gas. All the PID measurements are quoted as parts per million (ppm) isobutylene equivalents.

4.4 Decontamination and Sample Preservation

Soil samples were preserved by immediate storage in an insulated sample container with ice in accordance with AS4482.1-2005[6] and AS4482.2-1999[7] as summarised in the following table:

Table 4-2: Soil Sample Preservation and Storage

Analyte	Preservation	Storage
Heavy metals	Unpreserved glass jar with Teflon lined lid	Store at <4°, analysis within 28 days (mercury and Cr[VI]) and 180 days (other metals)
Hydrocarbons, pesticides and other organics	As above	Store at <4°, analysis within 14 days
Asbestos	Sealed plastic bag	None

On completion of the fieldwork, the samples were delivered in the insulated sample container to a NATA registered laboratory for analysis under standard Chain of Custody (COC) procedures.

4.5 Laboratory Analysis

Samples were analysed for a range of potential contaminants based on the site information presented in Section 2.2. The site history information was limited, however the limitations were compensated for by analysing the samples for a broad range of contaminants. The analytical schedule is summarised in the following table:

Table 4-3: Analytical Schedule (Primary Samples)

Analyte	N - Fill Samples	N - Natural Soil (and/or rock) Samples
Heavy Metals (arsenic, cadmium, chromium^, copper, lead, mercury, nickel and zinc)	4	2
Total Recoverable Hydrocarbons (TRHs) and monocyclic aromatic hydrocarbons including benzene, toluene, ethylbenzene and xylene (BTEX);	4	2
Polycyclic Aromatic Hydrocarbons (PAHs)	4	2
Organochlorine pesticides (OCPs)	4	-
Organophosphate pesticides (OPPs)	4	-
Polychlorinated biphenyls (PCBs)	4	-

[6] Standards Australia, (2015). *Guide to the investigation and sampling of sites with potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds*

[7] Standards Australia, (1999). *Guide to the investigation and sampling of potentially contaminated soil, Part 2: Volatile Substances*

Analyte	N - Fill Samples	N - Natural Soil (and/or rock) Samples
Asbestos	4	-
Toxicity characteristic leachate procedure (TCLP) heavy metals	4	-
TCLP PAHs	4	-

Notes:

N: Total number (primary samples)

^ Samples for the waste classification assessment were analysed for total chromium not hexavalent chromium. There are no CT and SCC criteria for total chromium, therefore the results have been assessed against the hexavalent chromium criteria.

Samples were analysed by Envirolab Services (NATA Accreditation Number – 2901) using the analytical methods detailed in the National Environmental Protection (Assessment of Site Contamination) Measure 1999 (as amended 2013)[8] and relevant Australian Standards. Reference should be made to the laboratory reports (Ref: 259721) attached in the appendices for further information.

5 RESULTS

5.1 Subsurface Conditions/Description of Waste

The subsurface conditions encountered generally consisted of fill material from the surface or beneath concrete pavement (BH4 – 20mm) to a maximum depth of 0.75m, underlain by natural silty clay to a maximum depth of approximately 1.5m. The natural soil was underlain by siltstone bedrock to the termination depth of the boreholes at a maximum depth of approximately 10.47m. The fill material typically consisted of silty sand or silty clay with inclusions of concrete fragments, igneous and ironstone gravel, ash and slag. Reference should be made to the borehole logs attached in the appendices for further details.

5.2 VOC Screening

PID soil sample headspace readings are presented in the COC documents attached in the appendices. All results were 0ppm equivalent isobutylene which indicates a lack of PID detectable VOCs.

5.3 Laboratory Results

The laboratory results were assessed against the criteria referenced in Section 3. The results are presented in the report tables attached in the appendices. A summary of the results is presented in the following table:

Table 5-1: Summary of Soil Laboratory Results Compared to CT and SCC Criteria

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Arsenic	6	0	0	-
Cadmium	6	0	0	-

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

Analyte	N	N > CT Criteria	N > SCC Criteria	Comments
Chromium	6	0	0	-
Copper	6	NSL	NSL	-
Lead	6	0	0	-
Mercury	6	0	0	-
Nickel	6	0	0	-
Zinc	6	NSL	NSL	-
TRH (C_6-C_9)	6	0	0	-
TRH (C_{10}-C_{36})	6	0	0	-
BTEX	6	0	0	-
Total PAHs	6	0	0	-
Benzo(a)pyrene	6	0	0	-
OCPs & OPPs	4	0	0	-
PCBs	4	0	0	-
Asbestos	4	-	-	Asbestos was not detected in the samples analysed.

N: Total number (primary samples)

NSL: No set limit

Table 5-2: Summary of Soil Laboratory Results Compared to TCLP Criteria

Analyte	N	N > TCLP Criteria	Comments
Arsenic	4	0	-
Cadmium	4	0	-
Chromium	4	0	-
Lead	4	0	-
Mercury	4	0	-
Nickel	4	0	-
Benzo(a)pyrene	4	0	-

N: Total number (primary samples)

6 CONCLUSIONS

6.1 Preliminary Waste Classification of Fill and Estimate of Waste Quantities

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)**. 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.

6.2 Preliminary Classification of Natural Soil/Bedrock

Based on the scope of work undertaken for this assessment, and at the time of reporting, JKE are of the opinion that the natural soil and bedrock at the site is likely to meet the definition of **VENM** for off-site disposal or re-use purposes. 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.

6.3 Recommendations

Further investigation should be undertaken following removal of the demountable buildings at the site. Due to the presence of concrete fragments in the fill, the investigation should include excavation of test pits to allow better assessment of the presence/absence of asbestos in the fill. The status of the VENM classification of natural soil and bedrock should be confirmed at this stage.

Any unexpected finds encountered during the site works should be inspected by a suitably qualified contaminated land consultant[9]. In the event that the find has the potential to alter the waste classification documented in this report, additional testing and reporting should be undertaken.

6.4 General Information

The waste must be disposed of to a facility licensed to accept the waste. It is the responsibility of the receiving facility to ensure that the waste material meets their licence conditions. JKE accepts no liability whatsoever for illegal or inappropriate disposal of material.

Fill and soil disposal costs can be significant and should be assessed at an early stage of the project development to avoid significant future unexpected additional costs.

Material classed as VENM must not be mixed with any fill material (including building rubble) as this will invalidate the VENM classification. Where doubt exists about the difference between fill and VENM material an environmental/geotechnical engineer should be contacted to inspect the site and provide further advice during excavation.

[9] JKE recommend that the consultancy engaged for the work be a member of the Australian Contaminated Land Consultants Associated (ACLCA), and/or the individual undertaking the works be certified under one of the NSW EPA endorsed certified practitioner schemes

Section 143 of the POEO Act 1997 states that if waste is transported to a place that cannot lawfully be used as a waste facility for that waste, then the transporter and owner of the waste are each guilty of an offence. The transporter and owner of the waste have a duty to ensure that the waste is disposed of in an appropriate manner. JKE accepts no liability whatsoever for the unlawful disposal of any waste from any site.

7 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;
- 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 screening 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;
- 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;
- Copyright in this report is the property of JKE. JKE has used a degree of care, skill and diligence normally exercised by consulting professionals in similar circumstances and locality. No other warranty expressed or implied is made or intended. Subject to payment of all fees due for the investigation, the client alone shall have a licence to use this report;

- If the client, or any person, provides a copy of this report to any third party, such third party must not rely on this report except with the express written consent of JKE; and
- Any third party who seeks to rely on this report without the express written consent of JKE does so entirely at their own risk and to the fullest extent permitted by law, JKE accepts no liability whatsoever, in respect of any loss or damage suffered by any such third party.

If you have any questions concerning the contents of this letter please do not hesitate to contact us.

Kind Regards

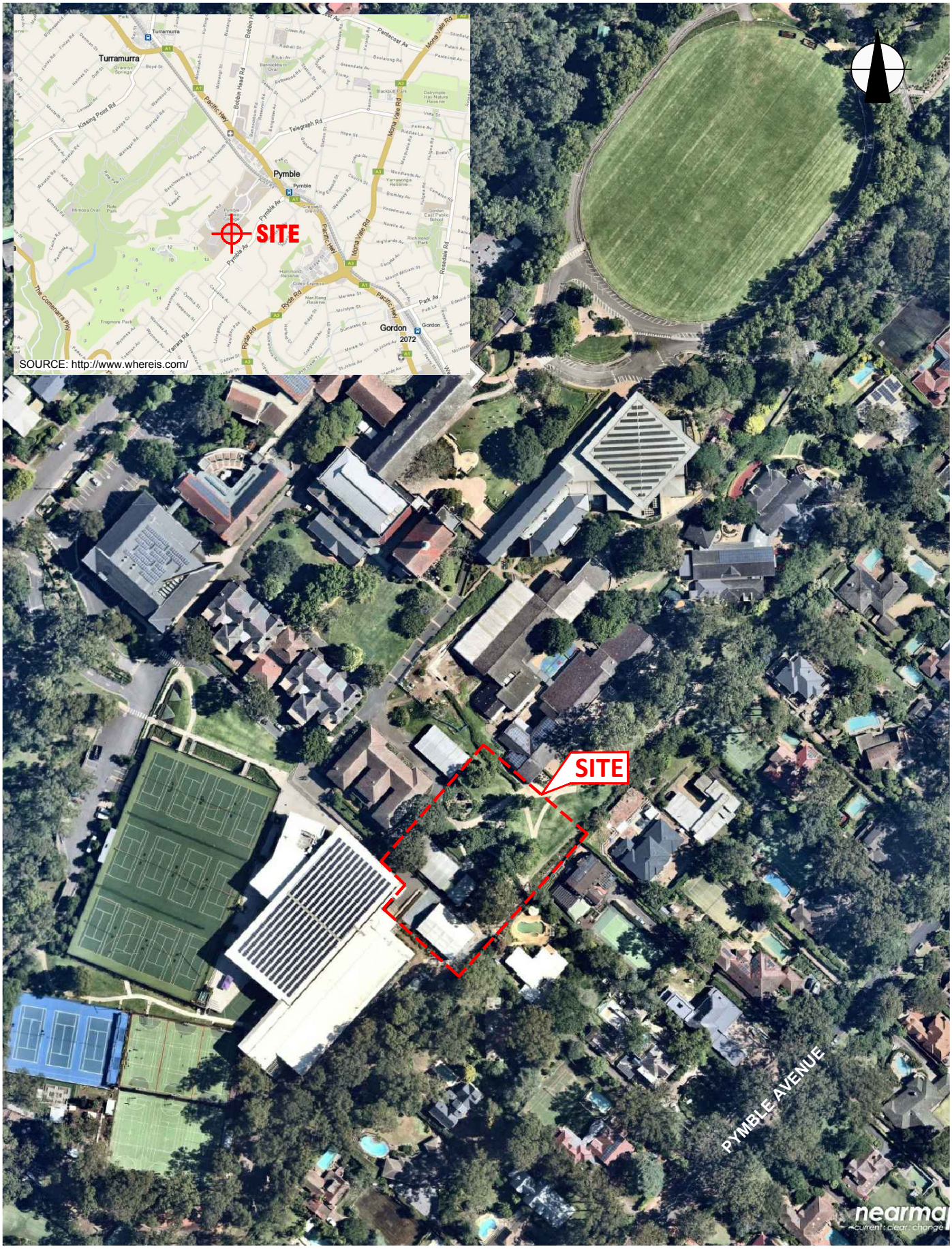
Todd Hore
Senior Associate Environmental Engineer

Brendan Page
Principal Associate

Appendices:

Appendix A: Report Figures
Appendix B: Laboratory Results Summary Tables
Appendix C: Borehole Logs
Appendix D: Laboratory Report & COC Documents

Appendix A: Report Figures



AERIAL IMAGE SOURCE: MAPS.AU.NEARMAP.COM

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

Title: **SITE LOCATION PLAN**

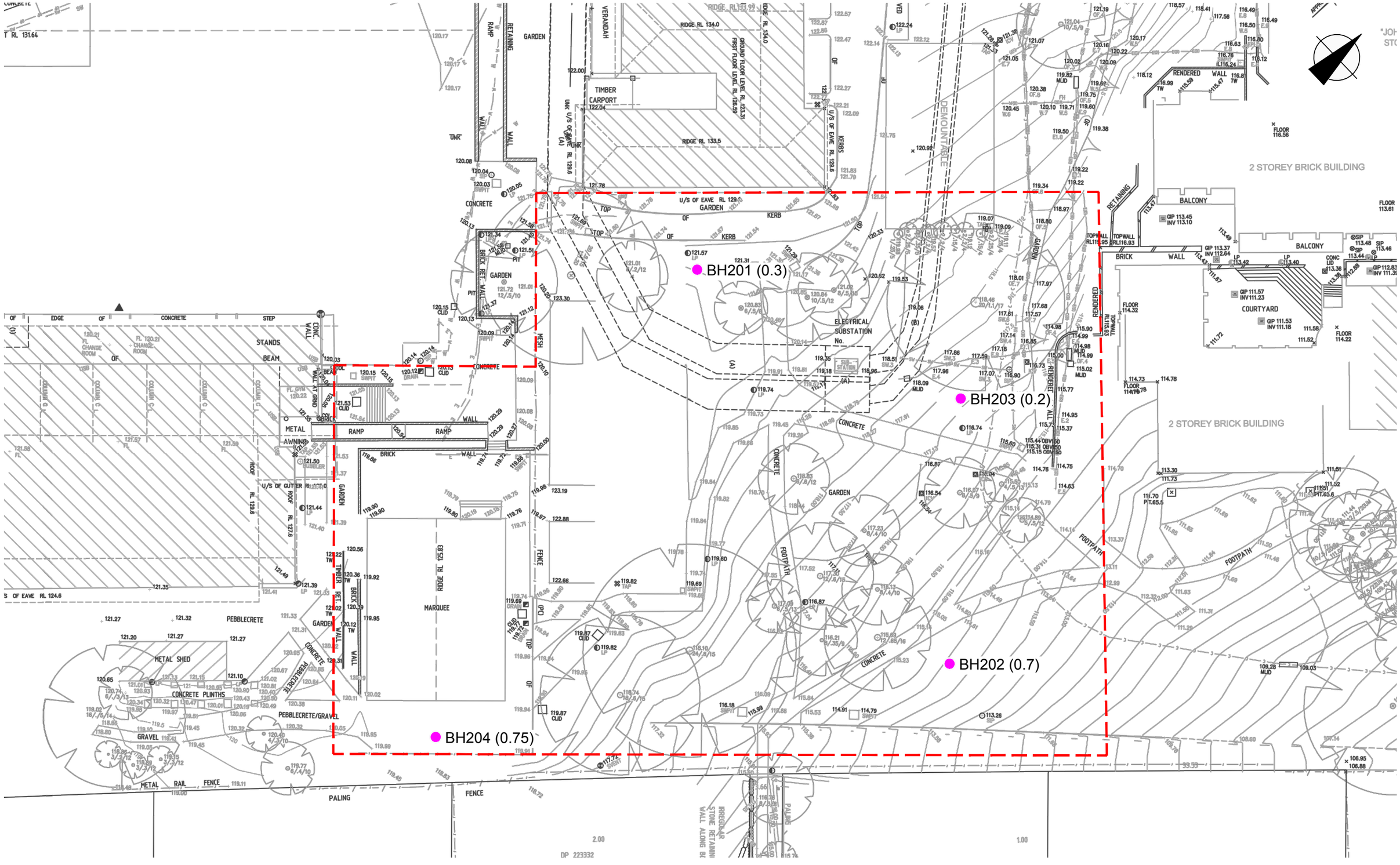
Location: 20 AVON ROAD, PYMBLE, NSW

Project No: E33775PH

Figure No: 1

JKEnvironments

PLOT DATE: 27/01/2021 12:38:13 PM DWG FILE: Z:\5 EIS\5C EIS JOBS\33000'S\E33775PH PYMBLE\CAD\E33775PH.DWG



LEGEND

- APPROXIMATE SITE BOUNDARY
- BH(Fill Depth) BOREHOLE LOCATION, NUMBER AND DEPTH OF FILL (m)

0 4 8 12 16 20

SCALE 1:400 @A3 METRES

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

Title: **SAMPLE LOCATION PLAN**

Location: 20 AVON ROAD, PYMBLE, NSW

Project No: E33775PH

Figure No: 2

JKEnvironments

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Appendix B: Laboratory Results Summary Tables

TABLE S1
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	Chloropyrifos	Total Moderately Harmful	Total Scheduled	PCBs	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**																									
BH201	0-0.1	F: silty clay	**6**	<0.4	**12**	**19**	**38**	<0.1	**7**	**45**	**1.5**	**0.2**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH201	0.4-0.5	Silty clay	**5**	<0.4	**11**	**14**	**15**	<0.1	**10**	**46**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
BH202	0-0.1	F: silty clay	**5**	<0.4	**12**	**22**	**25**	<0.1	**5**	**37**	**0.4**	**0.07**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH203	0-0.1	F: silty clay	**6**	<0.4	**14**	**34**	**18**	<0.1	**6**	**37**	<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
BH204	0.5-0.6	F: silty clay	**6**	<0.4	**12**	**19**	**16**	<0.1	**6**	**23**	**1.2**	**0.1**	<0.1	<0.1	<0.1	<0.1	<0.1	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	Not Detected
BH204	1-1.1	Silty clay	**6**	<0.4	**12**	**15**	**13**	<0.1	**3**	**13**	<0.05	<0.05	NA	NA	NA	NA	NA	<25	<50	<100	<100	<50	<0.2	<0.5	<1	<3	NA
Total Number of Samples			6	6	6	6	6	6	6	6	6	6	4	4	4	4	4	6	6	6	6	6	6	6	6	6	4
Maximum Value			6	<PQL	14	34	38	<PQL	10	46	1.5	0.2	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	Not Detected

Concentration above the CT1 — **VALUE**
Concentration above SCC1 — **VALUE**
Concentration above the SCC2 — **VALUE**
Concentration above PQL — **Bold**

TABLE S2
SOIL LABORATORY TCLP RESULTS
All data in mg/L unless stated otherwise

			Arsenic	Cadmium	Chromium	Lead	Mercury	Nickel	B(a)P
PQL - Envirolab Services			0.05	0.01	0.01	0.03	0.0005	0.02	0.001
TCLP1 - General Solid Waste			5	1	5	5	0.2	2	0.04
TCLP2 - Restricted Solid Waste			20	4	20	20	0.8	8	0.16
TCLP3 - Hazardous Waste			>20	>4	>20	>20	>0.8	>8	>0.16
Sample Reference	**Sample Depth**	**Sample Description**							
BH201	0-0.1	F: silty clay	<0.05	<0.01	<0.01	<0.03	<0.0005	<0.02	<0.001
BH202	0-0.1	F: silty clay	<0.05	<0.01	<0.01	<0.03	<0.0005	<0.02	<0.001
BH203	0-0.1	F: silty clay	<0.05	<0.01	<0.01	<0.03	<0.0005	<0.02	<0.001
BH204	0.5-0.6	F: silty clay	<0.05	<0.01	<0.01	<0.03	<0.0005	<0.02	<0.001
Total Number of samples			4	4	4	4	4	4	4
Maximum Value			<PQL	<PQL	<PQL	<PQL	<PQL	<PQL	<PQL

General Solid Waste	**VALUE**
Restricted Solid Waste	**VALUE**
Hazardous Waste	**VALUE**
Concentration above PQL	**Bold**

Appendix C: Borehole Logs

JKGeotechnics

BOREHOLE LOG

Borehole No. 201

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Method:** SPIRAL AUGER **R.L. Surface:** ~121 m

Date: 14/1/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** B.S./T.C.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING										FILL: Silty clay, medium plasticity, dark brown, with root fibres, trace of fine grained sand, fine to medium grained ironstone gravel.	w~PL			GRASS COVER
									CI-CH		w~PL	Hd		RESIDUAL
					N = 13 5,6,7					Silty CLAY: medium to high plasticity, orange brown, trace of fine to medium grained ironstone gravel, ash and root fibres.			510 >600 590	
						120	1							
									-	Extremely Weathered siltstone: silty CLAY, high plasticity, light grey and grey, with iron indurated and very low strength bands.	XW	Hd		ASHFIELD SHALE
					N=SPT 11/ 50mm REFUSAL								>600 >600 >600	VERY LOW 'TC' BIT RESISTANCE
						119	2			SILTSTONE: grey and brown, with iron indurated bands.	DW	VL - L		LOW RESISTANCE
										REFER TO CORED BOREHOLE LOG				
						118	3							
						117	4							
						116	5							
						115	6							

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CORED BOREHOLE LOG

Borehole No. 201

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Core Size:** NMLC **R.L. Surface:** ~121 m

Date: 14/1/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** B.S./T.C.

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 $I_s(50)$ (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	SPACING (mm) (600, 200, 60, 20)	DEFECT DETAILS — DESCRIPTION (Type, orientation, defect shape and roughness, defect coatings and seams, openness and thickness) Specific / General	Formation
					START CORING AT 2.20m						
50% RETURN		118	3		NO CORE 0.09m SILTSTONE: dark grey and brown, with iron indurated bands and laminae up to 5°.	HW	VL - L	0.30		(2.29-2.40m) Highly Fractured, Numerious Be, P, S, Cn (2.42m) XWS, 0°, 4 mm.t (2.45m) XWS, 0°, 3 mm.t (2.49m) XWS, 0°, 4 mm.t (2.62m) XWS, 0°, 4 mm.t (2.69m) J, 90°, Ir, R, Fe Sn, and Be, 0°, P R, Fe, St (2.71m) Be, 0°, P, R, Fe Sn (2.72m) XWS, 0°, 20 mm.t (2.78m) XWS, 0°, 7 mm.t (2.82m) XWS, 0°, 10 mm.t (2.85m) J, 70 - 90°, Ir, R, Clay Ct (2.95m) J x 2, 70 - 80°, P, S, XWS FILLED, and XWS, 0°, 110mm.t (3.14m) J, 80 - 90°, St, R, Fe Sn (3.30m) XWS, 0°, 5 mm.t (3.38m) XWS, 0°, 20 mm.t (3.41m) Be, 0°, P, R, Cn (3.58m) J, 90°, P, R, Fe Sn (3.60m) J, 0°, P, R, Fe Sn (3.66m) Be, 0°, P, R, Fe Sn, and J, 90°, P R, Cn (3.74m) XWS, 0°, 4 mm.t (3.88m) XWS, 0°, 12 mm.t (3.92m) Be, 5°, Un, R, Fe Sn (3.96m) CS, 0°, 6 mm.t (4.13m) Be, 5°, Un, R, Fe Sn (4.25m) J, 60°, P, R, XWS FILLED, 15 mm.t	Ashfield Shale
							L - M	0.30			
		117	4					0.70			
								0.60			
								0.60			
					Extremely Weathered siltstone: silty CLAY, medium plasticity, with light grey laminae up to 10°.	XW	Hd			(4.70m) J, 90°, Un, R, XW Fines, 15 mm.t	
						MW	L - M			(4.84m) XWS, 0°, 35 mm.t	
		116	5		SILTSTONE: dark grey and brown, with iron indurated bands and laminae up to 5°.	SW	M	1.3		(5.08m) Be, 0°, P, R, Cn	
					SILTSTONE: dark grey, with light grey laminae up to 10°.					(5.35m) J x 3, 70 - 90°, C, Cn	
										(5.54m) J, 80°, P, R, Fe Sn	
		115	6					2.0		(5.93m) Be, 0°, P, R, Cn	
							M - H			(6.17m) J, 70°, Un, R, Fe Sn	
								2.4			
										(6.56m) J, 70°, Un, R, Cn	
								2.2			
		114	7					3.3		(7.11m) J, 15°, Un, R, Cn	
										(7.21m) Be, 0°, Un, R, Fe Sn	
										(7.27m) J, 60°, Un, R, Fe Sn	
						FR	M				
								2.3			
		113	8					1.8			
								2.6			

JK 9.02.4 LIB GLB Log JK CORED BOREHOLE - MASTER 33775BC PYMBLE.GPJ <<DrawingFile>> 02/02/2021 11:05 10.01.00.01 Datgel Lab and In Situ Tool - DGD | Lib: JK 9.02.4 2019-05-31 Prj: JK 9.01.0 2018-03-20

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

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CORED BOREHOLE LOG

Borehole No. 201

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Core Size:** NMLC **R.L. Surface:** ~121 m

Date: 14/1/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** B.S./T.C.

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 $I_s(50)$ (VL -0.1, L -0.3, M -1, H -3, VH -10, EH)	DEFECT DETAILS: SPACING (mm) (600, 200, 60, 20)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
50% RETURN					SILTSTONE: dark grey, with light grey laminae up to 10°. *(continued)*	FR	M	•1.5 •2.1			Ashfield Shale
					END OF BOREHOLE AT 9.72 m						

111 10
110 11
109 12
108 13
107 14
106 15

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

JKGeotechnics

BOREHOLE LOG

Borehole No. 202

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Method:** SPIRAL AUGER **R.L. Surface:** ~114.5 m

Date: 14/1/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** B.S./T.C.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION OF AUGERING						114				FILL: silty clay, low plasticity, dark brown, trace of fine grained sand, fine grained ironstone gravel, concrete fragments and root fibres.	w>PL			GRASS COVER APPEARS MODERATELY COMPACTED
					N = 9 5,4,5					as above, but without concrete fragments.				
							1		CI	Silty CLAY: medium plasticity, orange brown and brown, trace of fine grained ironstone gravel and root fibres.	w>PL	VSt	290 300 240	RESIDUAL
						113			CH	Silty CLAY: high plasticity, orange brown, red brown and grey, with fine grained ironstone gravel, trace of root fibres.	w~PL	Hd	>600 >600 >600	
					N = 16 6,6,10		2							
						112			-	Extremely Weathered siltstone: silty CLAY, high plasticity, grey brown, with iron indurated bands and very low strength brands.	XW	(Hd)		ASHFIELD SHALE VERY LOW 'TC' BIT RESISTANCE
							3							
						111								
							4			SILTSTONE: grey and brown, with extremely weathered bands and iron indurated bands.	DW	VL		VERY LOW TO LOW BANDED RESISTANCE
										REFER TO CORED BOREHOLE LOG				
						110								
							5							
						109								
							6							
						108								

JKGeotechnics

CORED BOREHOLE LOG

Borehole No. 202 **2 / 2**

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Core Size:** NMLC **R.L. Surface:** ~114.5 m

Date: 14/1/21 **Inclination:** VERTICAL **Datum:** AHD

Plant Type: JK305 **Bearing:** N/A **Logged/Checked By:** B.S./T.C.

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 $I_s(50)$	DEFECT DETAILS: SPACING (mm)	DEFECT DETAILS: DESCRIPTION (Specific / General)	Formation
					START CORING AT 4.33m						
50% RETURN		110	5		NO CORE 0.82m						
		109	6		Extremely Weathered siltstone: silty CLAY, high plasticity, grey, with high strength bands and iron indurated bands.	XW	Hd			(5.80m) HP: >600 kPa (6.08m) HP: >600 kPa	Ashfield Shale
		108	7		NO CORE 0.43m						
		107			SILTSTONE: grey and brown.	HW	VL	0.040 0.30		(7.14m) XWS, 0°, 45 mm.t (7.40m) XWS, 0°, 30 mm.t (7.43-7.62m) Numerous, Be, 0°, P, R, Fe, and J, 20-80°, P, R, Fe, St (7.78m) Be, 5°, P, R, Fe Sn	
		106	8		Extremely Weathered siltstone: silty CLAY, high plasticity, with iron indurated bands.	XW	Hd			(8.24m) HP: >600 kPa (8.40m) HP: >600 kPa	
		105	9		SILTSTONE: dark grey.	HW	VL	0.020 0.040		(9.10m) XWS, 0°, 100 mm.t (9.20m) J, 90°, P, R, Fe Sn	Ashfield Shale
			10		Interbedded SILTSTONE: grey and brown and SANDSTONE: fine to medium grained, grey, with iron indurated bands.	MW	VL - L	0.60 0.090 0.20		(9.55m) XWS, 0°, 50 mm.t (10.10m) Be, 0°, Un, R, Fe Sn, and XWS, 0°, 75mm.t	
		104			SANDSTONE: fine grained, grey, with siltstone bands.	SW	M	4.2		(10.37m) J, 30°, Un, R, Fe Sn (10.42m) Ji, 30°	
					END OF BOREHOLE AT 10.47 m						

FRACTURES NOT MARKED ARE CONSIDERED TO BE DRILLING AND HANDLING BREAKS

JKGeotechnics

BOREHOLE LOG

Borehole No. 203

1 / 1

Client: PYMBLE LADIES COLLEGE

Project: PROPOSED SCHOOL BUILDING

Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Method:** SPIRAL AUGER **R.L. Surface:** ~117 m

Date: 15/1/21 **Datum:** AHD

Plant Type: JK305 **Logged/Checked By:** B.S./T.C.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION	■									FILL: Silty clay, dark brown, trace of fine to medium grained sand, fine to medium grained ironstone gravel, concrete fragments and root fibres.	w~PL			GRASS COVER
									CH		w~PL	Hd		RESIDUAL
				■	N = 14 6,6,8					Silty CLAY: high plasticity, orange brown, trace of fine to coarse grained ironstone gravel, ash and root fibres.			>600 >600 >600	
						116	1							
				■					-	SILTSTONE: dark grey, with extremely weathered bands and iron indurated bands.	DW	L		ASHFIELD SHALE
												L		VERY LOW TO LOW 'TC' BIT RESISTANCE LOW RESISTANCE WITH MODERATE BANDS
				■		115	2							
				■		114	3			SILTSTONE: dark grey and grey, with extremely weathered seams.		M		MODERATE RESISTANCE
				■		113	4							
				■		112	5			as above, but iron indurated bands.		M - H		MODERATE RESISTANCE WITH HIGH BANDS
				■		111	6			END OF BOREHOLE AT 6.00 m				

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BOREHOLE LOG

Borehole No. 204
1 / 1

Client: PYMBLE LADIES COLLEGE
Project: PROPOSED SCHOOL BUILDING
Location: 20 AVON ROAD, PYMBLE, NSW

Job No.: 33775BC **Method:** SPIRAL AUGER **R.L. Surface:** ~119.9 m
Date: 15/1/21 **Datum:** AHD
Plant Type: JK305 **Logged/Checked By:** B.S./T.C.

Groundwater Record	SAMPLES ES	SAMPLES U50	SAMPLES DB	SAMPLES DS	Field Tests	RL (m AHD)	Depth (m)	Graphic Log	Unified Classification	DESCRIPTION	Moisture Condition/ Weathering	Strength/ Rel Density	Hand Penetrometer Readings (kPa)	Remarks
DRY ON COMPLETION									-	CONCRETE:20mm.t	M			APPEARS MODERATELY COMPACTED
										FILL: Silty sand, fine to medium grained, dark brown, trace of concrete fragments and clay nodules.	w<PL			
					N = 11 4,6,5					FILL: Silty clay, low plasticity, brown, trace of fine to coarse grained igneous and ironstone gravel, ash and slag fragments.				
						119	1		CI	Silty CLAY: medium plasticity, orange brown, trace of fine to medium grained ironstone gavel, ash and root fibres.	w<PL	Hd	>600 >600 >600	RESIDUAL
									CH	Silty CLAY: high plasticity, light grey and red brown, trace of fine to coarse grained ironstone gravel.	w~PL			
					N = 16 7,7,9								>600 >600 >600	
						118	2		-	Extremely Weathered siltstone: silty CLAY, medium to high plasticity, grey, with iron indurated bands.	XW	Hd		ASHFIELD SHALE VERY LOW 'TC' BIT RESISTANCE
										SILTSTONE: dark grey and brown, with iron indurated bands and extremely weathered bands.	DW	L		LOW RESISTANCE WITH MODERATE BANDS
						117	3					M		MODERATE RESISTANCE WITH LOW BANDS
						116	4							
						115	5			as above, but without extremely weathered bands.		M - H		MODERATE RESISTANCE WITH HIGH BANDS
						114	6			END OF BOREHOLE AT 6.00 m				
						113								

Appendix D: Laboratory Report & COC Documents

Envirolab Services Pty Ltd
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CERTIFICATE OF ANALYSIS 259721

Client Details

Client	JK Environments
Attention	Todd Hore
Address	PO Box 976, North Ryde BC, NSW, 1670

Sample Details

Your Reference	**E3375PH, Pymble**
Number of Samples	11 Soil
Date samples received	19/01/2021
Date completed instructions received	19/01/2021

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	27/01/2021
Date of Issue	22/01/2021

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

Results Approved By
Dragana Tomas, Senior Chemist
Hannah Nguyen, Senior Chemist
Jaimie Loa-Kum-Cheung, Metals Supervisor
Lucy Zhu, Asbestos Supervisor
Manju Dewendrage, Chemist

Authorised By

Nancy Zhang, Laboratory Manager

vTRH(C6-C10)/BTEXN in Soil						
Our Reference		259721-1	259721-2	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH201	BH202	BH203	BH204
Depth		0-0.1	0.4-0.5	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
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	%	99	95	109	109	106

vTRH(C6-C10)/BTEXN in Soil		
Our Reference		259721-11
Your Reference	UNITS	BH204
Depth		1-1.1
Date Sampled		14/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	20/01/2021
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	%	108

svTRH (C10-C40) in Soil						
Our Reference		259721-1	259721-2	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH201	BH202	BH203	BH204
Depth		0-0.1	0.4-0.5	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	21/01/2021	21/01/2021
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	88	93	86	89

svTRH (C10-C40) in Soil		
Our Reference		259721-11
Your Reference	UNITS	BH204
Depth		1-1.1
Date Sampled		14/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	21/01/2021
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	%	86

PAHs in Soil						
Our Reference		259721-1	259721-2	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH201	BH202	BH203	BH204
Depth		0-0.1	0.4-0.5	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
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	0.2
Anthracene	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Fluoranthene	mg/kg	0.2	<0.1	0.1	<0.1	0.3
Pyrene	mg/kg	0.2	<0.1	0.1	<0.1	0.2
Benzo(a)anthracene	mg/kg	0.2	<0.1	<0.1	<0.1	0.1
Chrysene	mg/kg	0.2	<0.1	0.1	<0.1	0.1
Benzo(b,j+k)fluoranthene	mg/kg	0.3	<0.2	<0.2	<0.2	<0.2
Benzo(a)pyrene	mg/kg	0.2	<0.05	0.07	<0.05	0.1
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	1.5	<0.05	0.4	<0.05	1.2
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	%	97	96	94	101	100

PAHs in Soil		
Our Reference		259721-11
Your Reference	UNITS	BH204
Depth		1-1.1
Date Sampled		14/01/2021
Type of sample		Soil
Date extracted	-	20/01/2021
Date analysed	-	20/01/2021
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 p-Terphenyl-d14	%	99

Organochlorine Pesticides in soil					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
alpha-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
HCB	mg/kg	<0.1	<0.1	<0.1	<0.1
beta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor	mg/kg	<0.1	<0.1	<0.1	<0.1
delta-BHC	mg/kg	<0.1	<0.1	<0.1	<0.1
Aldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Heptachlor Epoxide	mg/kg	<0.1	<0.1	<0.1	<0.1
gamma-Chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
alpha-chlordane	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan I	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Dieldrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan II	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDD	mg/kg	<0.1	<0.1	<0.1	<0.1
Endrin Aldehyde	mg/kg	<0.1	<0.1	<0.1	<0.1
pp-DDT	mg/kg	<0.1	<0.1	<0.1	<0.1
Endosulfan Sulphate	mg/kg	<0.1	<0.1	<0.1	<0.1
Methoxychlor	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve DDT+DDD+DDE	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	92	92	93

Organophosphorus Pesticides in Soil					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Dichlorvos	mg/kg	<0.1	<0.1	<0.1	<0.1
Dimethoate	mg/kg	<0.1	<0.1	<0.1	<0.1
Diazinon	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos-methyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ronnel	mg/kg	<0.1	<0.1	<0.1	<0.1
Fenitrothion	mg/kg	<0.1	<0.1	<0.1	<0.1
Malathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Chlorpyriphos	mg/kg	<0.1	<0.1	<0.1	<0.1
Parathion	mg/kg	<0.1	<0.1	<0.1	<0.1
Bromophos-ethyl	mg/kg	<0.1	<0.1	<0.1	<0.1
Ethion	mg/kg	<0.1	<0.1	<0.1	<0.1
Azinphos-methyl (Guthion)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	92	92	93

PCBs in Soil					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Aroclor 1016	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1221	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1232	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1242	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1248	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1254	mg/kg	<0.1	<0.1	<0.1	<0.1
Aroclor 1260	mg/kg	<0.1	<0.1	<0.1	<0.1
Total +ve PCBs (1016-1260)	mg/kg	<0.1	<0.1	<0.1	<0.1
Surrogate TCMX	%	96	92	92	93

Acid Extractable metals in soil						
Our Reference		259721-1	259721-2	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH201	BH202	BH203	BH204
Depth		0-0.1	0.4-0.5	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021	21/01/2021
Arsenic	mg/kg	6	5	5	6	6
Cadmium	mg/kg	<0.4	<0.4	<0.4	<0.4	<0.4
Chromium	mg/kg	12	11	12	14	12
Copper	mg/kg	19	14	22	34	19
Lead	mg/kg	38	15	25	18	16
Mercury	mg/kg	<0.1	<0.1	<0.1	<0.1	<0.1
Nickel	mg/kg	7	10	5	6	6
Zinc	mg/kg	45	46	37	37	23

Acid Extractable metals in soil		
Our Reference		259721-11
Your Reference	UNITS	BH204
Depth		1-1.1
Date Sampled		14/01/2021
Type of sample		Soil
Date prepared	-	20/01/2021
Date analysed	-	21/01/2021
Arsenic	mg/kg	6
Cadmium	mg/kg	<0.4
Chromium	mg/kg	12
Copper	mg/kg	15
Lead	mg/kg	13
Mercury	mg/kg	<0.1
Nickel	mg/kg	3
Zinc	mg/kg	13

Moisture						
Our Reference		259721-1	259721-2	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH201	BH202	BH203	BH204
Depth		0-0.1	0.4-0.5	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil	Soil
Date prepared	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Date analysed	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021	21/01/2021
Moisture	%	26	20	20	19	12

Moisture		
Our Reference		259721-11
Your Reference	UNITS	BH204
Depth		1-1.1
Date Sampled		14/01/2021
Type of sample		Soil
Date prepared	-	20/01/2021
Date analysed	-	21/01/2021
Moisture	%	15

Metals in TCLP USEPA1311					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021
Date analysed	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021
pH of soil for fluid# determ.	pH units	7.9	7.7	7.5	7.4
pH of soil TCLP (after HCl)	pH units	1.7	1.7	1.7	1.7
Extraction fluid used	-	1	1	1	1
pH of final Leachate	pH units	5.0	4.9	4.9	5.0
Arsenic in TCLP	mg/L	<0.05	<0.05	<0.05	<0.05
Cadmium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01
Chromium in TCLP	mg/L	<0.01	<0.01	<0.01	<0.01
Lead in TCLP	mg/L	<0.03	<0.03	<0.03	<0.03
Mercury in TCLP	mg/L	<0.0005	<0.0005	<0.0005	<0.0005
Nickel in TCLP	mg/L	<0.02	<0.02	<0.02	<0.02

PAHs in TCLP (USEPA 1311)					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date extracted	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021
Date analysed	-	21/01/2021	21/01/2021	21/01/2021	21/01/2021
Naphthalene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Acenaphthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluorene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Phenanthrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Fluoranthene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(a)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Chrysene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(bjk)fluoranthene in TCLP	mg/L	<0.002	<0.002	<0.002	<0.002
Benzo(a)pyrene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Dibenzo(a,h)anthracene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Benzo(g,h,i)perylene in TCLP	mg/L	<0.001	<0.001	<0.001	<0.001
Total +ve PAH's	mg/L	NIL (+)VE	NIL (+)VE	NIL (+)VE	NIL (+)VE
Surrogate p-Terphenyl-d14	%	92	86	88	88

Asbestos ID - soils					
Our Reference		259721-1	259721-4	259721-7	259721-10
Your Reference	UNITS	BH201	BH202	BH203	BH204
Depth		0-0.1	0-0.1	0-0.1	0.5-0.6
Date Sampled		14/01/2021	14/01/2021	14/01/2021	14/01/2021
Type of sample		Soil	Soil	Soil	Soil
Date analysed	-	20/01/2021	20/01/2021	20/01/2021	20/01/2021
Sample mass tested	g	Approx. 30g	Approx. 50g	Approx. 30g	Approx. 40
Sample Description	-	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
Trace Analysis	-	No asbestos detected	No asbestos detected	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.
EXTRACT.7	Toxicity Characteristic Leaching Procedure (TCLP) using Zero Headspace Extraction (zHE) using AS4439 and USEPA 1311.
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-004	Toxicity Characteristic Leaching Procedure (TCLP) using in house method INORG-004. Please note that the mass used may be scaled down from the default based on sample mass available.
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-020 ICP-AES	Determination of various metals by ICP-AES.
Metals-021	Determination of Mercury by Cold Vapour AAS.
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.
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.

Method ID	Methodology Summary
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	Leachates are extracted 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 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-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
TRH C_6 - C_9	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH C_6 - C_{10}	mg/kg	25	Org-023	<25	[NT]	[NT]	[NT]	[NT]	92	[NT]
Benzene	mg/kg	0.2	Org-023	<0.2	[NT]	[NT]	[NT]	[NT]	80	[NT]
Toluene	mg/kg	0.5	Org-023	<0.5	[NT]	[NT]	[NT]	[NT]	94	[NT]
Ethylbenzene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
m+p-xylene	mg/kg	2	Org-023	<2	[NT]	[NT]	[NT]	[NT]	91	[NT]
o-Xylene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	91	[NT]
naphthalene	mg/kg	1	Org-023	<1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate aaa-Trifluorotoluene	%		Org-023	113	[NT]	[NT]	[NT]	[NT]	102	[NT]

QUALITY CONTROL: svTRH (C10-C40) in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
TRH C_{10} - C_{14}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH C_{15} - C_{28}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH C_{29} - C_{36}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
TRH >C_{10} -C_{16}	mg/kg	50	Org-020	<50	[NT]	[NT]	[NT]	[NT]	107	[NT]
TRH >C_{16} -C_{34}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	77	[NT]
TRH >C_{34} -C_{40}	mg/kg	100	Org-020	<100	[NT]	[NT]	[NT]	[NT]	92	[NT]
Surrogate o-Terphenyl	%		Org-020	89	[NT]	[NT]	[NT]	[NT]	89	[NT]

QUALITY CONTROL: PAHs in Soil						Duplicate			Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Naphthalene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	88	[NT]
Acenaphthylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	89	[NT]
Fluorene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Phenanthrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	98	[NT]
Pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	95	[NT]
Benzo(a)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	120	[NT]
Benzo(b,j+k)fluoranthene	mg/kg	0.2	Org-022/025	<0.2	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene	mg/kg	0.05	Org-022/025	<0.05	[NT]	[NT]	[NT]	[NT]	105	[NT]
Indeno(1,2,3-c,d)pyrene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	92	[NT]	[NT]	[NT]	[NT]	97	[NT]

QUALITY CONTROL: Organochlorine Pesticides in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
alpha-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	92	[NT]
HCB	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
beta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
gamma-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Heptachlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
delta-BHC	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	97	[NT]
Heptachlor Epoxide	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	107	[NT]
gamma-Chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
alpha-chlordane	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan I	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDE	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Dieldrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	111	[NT]
Endrin	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	105	[NT]
Endosulfan II	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDD	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Endrin Aldehyde	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
pp-DDT	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Endosulfan Sulphate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	114	[NT]
Methoxychlor	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Organophosphorus Pesticides in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Dichlorvos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	112	[NT]
Dimethoate	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Diazinon	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chlorpyriphos-methyl	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ronnel	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	109	[NT]
Fenitrothion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Malathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	122	[NT]
Chlorpyriphos	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	115	[NT]
Parathion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Bromophos-ethyl	mg/kg	0.1	Org-022	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Ethion	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	119	[NT]
Azinphos-methyl (Guthion)	mg/kg	0.1	Org-022/025	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-022/025	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: PCBs in Soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-8	[NT]
Date extracted	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Aroclor 1016	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1221	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1232	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1242	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1248	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Aroclor 1254	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	100	[NT]
Aroclor 1260	mg/kg	0.1	Org-021	<0.1	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate TCMX	%		Org-021	88	[NT]	[NT]	[NT]	[NT]	90	[NT]

QUALITY CONTROL: Acid Extractable metals in soil					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-9	[NT]
Date prepared	-			20/01/2021	[NT]	[NT]	[NT]	[NT]	20/01/2021	[NT]
Date analysed	-			21/01/2021	[NT]	[NT]	[NT]	[NT]	21/01/2021	[NT]
Arsenic	mg/kg	4	Metals-020	<4	[NT]	[NT]	[NT]	[NT]	104	[NT]
Cadmium	mg/kg	0.4	Metals-020	<0.4	[NT]	[NT]	[NT]	[NT]	104	[NT]
Chromium	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	104	[NT]
Copper	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	103	[NT]
Lead	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Mercury	mg/kg	0.1	Metals-021	<0.1	[NT]	[NT]	[NT]	[NT]	106	[NT]
Nickel	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	102	[NT]
Zinc	mg/kg	1	Metals-020	<1	[NT]	[NT]	[NT]	[NT]	109	[NT]

QUALITY CONTROL: Metals in TCLP USEPA1311					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W1	[NT]
Date extracted	-			21/01/2021	[NT]	[NT]	[NT]	[NT]	21/01/2021	[NT]
Date analysed	-			21/01/2021	[NT]	[NT]	[NT]	[NT]	21/01/2021	[NT]
Arsenic in TCLP	mg/L	0.05	Metals-020 ICP-AES	<0.05	[NT]	[NT]	[NT]	[NT]	115	[NT]
Cadmium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	97	[NT]
Chromium in TCLP	mg/L	0.01	Metals-020 ICP-AES	<0.01	[NT]	[NT]	[NT]	[NT]	101	[NT]
Lead in TCLP	mg/L	0.03	Metals-020 ICP-AES	<0.03	[NT]	[NT]	[NT]	[NT]	96	[NT]
Mercury in TCLP	mg/L	0.0005	Metals-021 CV-AAS	<0.0005	[NT]	[NT]	[NT]	[NT]	116	[NT]
Nickel in TCLP	mg/L	0.02	Metals-020 ICP-AES	<0.02	[NT]	[NT]	[NT]	[NT]	98	[NT]

QUALITY CONTROL: PAHs in TCLP (USEPA 1311)					Duplicate				Spike Recovery %	
Test Description	Units	PQL	Method	Blank	#	Base	Dup.	RPD	LCS-W3	[NT]
Date extracted	-			21/01/2021	[NT]	[NT]	[NT]	[NT]	21/01/2021	[NT]
Date analysed	-			21/01/2021	[NT]	[NT]	[NT]	[NT]	21/01/2021	[NT]
Naphthalene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Acenaphthylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Acenaphthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	70	[NT]
Fluorene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	75	[NT]
Phenanthrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	86	[NT]
Anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Fluoranthene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	75	[NT]
Benzo(a)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Chrysene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	72	[NT]
Benzo(bjk)fluoranthene in TCLP	mg/L	0.002	Org-022/025	<0.002	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(a)pyrene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	77	[NT]
Indeno(1,2,3-c,d)pyrene - TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Dibenzo(a,h)anthracene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Benzo(g,h,i)perylene in TCLP	mg/L	0.001	Org-022/025	<0.001	[NT]	[NT]	[NT]	[NT]	[NT]	[NT]
Surrogate p-Terphenyl-d14	%		Org-022/025	90	[NT]	[NT]	[NT]	[NT]	72	[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: Excessive sample volumes were provided for asbestos analysis.
A portion of the supplied samples were sub-sampled according to Envirolab procedures.
We cannot guarantee that these sub-samples are indicative of the entire sample.
Envirolab recommends supplying 40-50g (50mL) of sample in its own container as per AS4964-2004.
Note: Samples 259721-1,4,7,10 were sub-sampled from bags provided by the client.

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 RECEIPT ADVICE

Client Details

Client	JK Environments
Attention	Todd Hore

Sample Login Details

Your reference	E3375PH, Pymble
Envirolab Reference	259721
Date Sample Received	19/01/2021
Date Instructions Received	19/01/2021
Date Results Expected to be Reported	27/01/2021

Sample Condition

Samples received in appropriate condition for analysis	Yes
No. of Samples Provided	11 Soil
Turnaround Time Requested	Standard
Temperature on Receipt (°C)	8.2
Cooling Method	Ice Pack
Sampling Date Provided	YES

Comments

Incorrect sample date on COC.

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 Soil	svTRH (C10-C40) in Soil	PAHs in Soil	Organochlorine Pesticides in soil	Organophosphorus Pesticides in Soil	PCBsin Soil	Acid Extractable metalsin soil	Metals in TCLP USEPA1311	Naphthalene in TCLP	Acenaphthylene in TCLP	Acenaphthene in TCLP	Fluorene in TCLP	Phenanthrene in TCLP	Anthracene in TCLP	Fluoranthene in TCLP	Pyrene in TCLP	Benzo(a)anthracene in TCLP	Chrysene in TCLP	Benzo(bjk)fluoranthene in TCLP	Benzo(a)pyrene in TCLP	Indeno(1,2,3-c,d)pyrene - TCLP	Dibenzo(a,h)anthracene in TCLP	Benzo(g,h,i)perylene in TCLP	Total +vePAH's	Surrogate p-Terphenyl-d14	Asbestos ID - soils	On Hold
BH201-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH201-0.4-0.5	✓	✓	✓				✓																				
BH201-1.1-1.2																											✓
BH202-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH202-0.6-0.7																											✓
BH202-1-1.1																											✓
BH203-0-0.1	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH203-0.5-0.6																											✓
BH204-0-0.1																											✓
BH204-0.5-0.6	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
BH204-1-1.1	✓	✓	✓				✓																				

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	JKE Job Number: E33775PH Date Results Required: STANDARD Page: 1/1	**FROM:** JKEnvir… nts REAR OF 115 WICKS ROAD SCA0551 MACQUARIE PARK, NSW 21… P: 02-9888 5000 F: 02-9888 5001 Attention: Todd Hore

Location:	Pymble	Sample Preserved in Esky on Ice
Sampler:	BS	Tests Required

Date Sampled	Lab Ref:	Sample Number	Depth (m)	Sample Container	PID	Sample Description	Combo 3	Combo 13a	Combo 6	Combo 6a	8 Metals	PAHs	TRH/BTEX	BTEX	Asbestos			
14/02/2021	1	BH201	0-0.1	G, A	0	F: silty clay		X										
14/02/2021	2	BH201	0.4-0.5	G, A	0	Silty clay	X											
14/02/2021	3	BH201	1.1-1.2	G, A	0	Silty clay												
14/02/2021	4	BH202	0-0.1	G, A	0	F: silty clay		X										
14/02/2021	5	BH202	0.6-0.7	G, A	0	F: silty clay												
14/02/2021	6	BH202	1-1.1	G, A	0	Silty clay												
14/02/2021	7	BH203	0-0.1	G, A	0	F: silty clay		X										
14/02/2021	8	BH203	0.5-0.6	G, A	0	Silty clay												
14/02/2021	9	BH204	0-0.1	G, A	0	F: silty sand												
14/02/2021	10	BH204	0.5-0.6	G, A	0	F: silty clay		X										
14/02/2021	11	BH204	1-1.1	G, A	0	Silty clay	X											

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

Job No: 259721
Date Received: 19/1/21
Time Received: 1030
Received By: CM
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: 19/1/21	Time: 9am	Received By:	Date:
Hore		1030.	CMullane	19/1/21