Phase II Ground Investigation

Dolcoath, Camborne

28 March 2022

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EXECUTIVE SUMMARY

Objectives	
Wheal Jane Consultancy was commissioned by Ward Williams Associates to undertake an intrusive investigation on the site of a proposed residential development.	
Site Investigation	
Site Works	Samples were taken during an intrusive investigation from eight windowless sample boreholes.
Ground Conditions	Full ground profiles were obtained, showing a distinct presence of made ground, including anthropogenic components overlying the weathered Mylor Slate Formation.
Groundwater	As surface water was encountered across the site which proceeded to percolate down the exploratory holes it was not possible to determine if groundwater was also present.
Conceptual Site Model	
The potential pollutant linkages for the site have been refined as follows: • Risk of ingress of radon gas has been identified as **High.** • Risk from naturally occurring Arsenic is considered to be **Moderate.** • Risk from Arsenic within the Made Ground is considered to be **Moderate.** • Risk from other heavy metals is deemed **Low.** • Risk from PAH contamination is considered to be **Low.** • Risk from TPH contamination is considered to be **Low.** • Risk from SVOCs and VOCs is considered to be **Low.**	
Geotechnical Conclusions	
Foundation Options	It is considered that conventional strip foundations will be appropriate across the majority of the site. In the eastern area all exploratory holes refused on Made Ground suggesting a concrete base is present in this area. It was therefore not possible to get bearing capacity information for the underlying natural material in this area of the site. In the western area of the site, strip foundations taken to a depth of 1.00m, 0.60m wide may be designed to an allowable bearing capacity of 120kPa. There is the potential for differential settlement across differentially weathered horizons, it is therefore recommended that nominal reinforcement be included with foundations.
Floor Slabs	Based on the results of laboratory testing and on-site observations, it is considered that a ground bearing floor slab seated within the weathered Mylor Slate Formation would be appropriate.

Excavations	Excavations to at least 1.20m should be readily achievable with conventional soil excavating machinery. Excavations to this depth are likely to stand unsupported in the short term.
Roads and Hardstanding	It is recommended that for formation prepared in the weathered Mylor Slate Formation, a CBR value of 5% may be adopted for design purposes. Any soft or deleterious material should be excavated and replaced with suitable compacted granular fill.
Buried Concrete	Based on the above results the site may be classified as falling into the Design Sulphate Class DS-1. The Aggressive Chemical Environment for Concrete (ACEC) class is based upon the pH and mobility of groundwater. The results indicate that the soils on site fall into class AC-1.

Recommendations

- A Phase 3 Remediation Strategy Report should be compiled which outlines the scope of remedial works required to reduce the level of contamination to such condition that the site can be deemed suitable for its proposed residential use.
- Once the remediation strategy has been fully implemented and the work concluded to the required specifications, a Phase 4 Verification Report and Certificate must be produced.
- As the site is situated in an area where greater than 30% of the properties are above the action level, it is recommended that full radon protective measures are installed on any proposed building.
- Suitable safety measures should be taken by those working on site to mitigate the risks associated with contaminated media including undertaking the appropriate risk assessments and ensuring all workers are wearing the correct PPE.
- Waste removed from site shall be disposed of at a suitable facility with the appropriate Waste Transfer Notices obtained for future records. Asbestos waste should be handled by a suitable waste contractor.

1 INTRODUCTION

1.1 Instruction

1.1.1 Wheal Jane Consultancy (WJC) was commissioned by Ward Williams Associates, to undertake a Phase II Ground Investigation at a site known as 'Dolcoath, Camborne.'

1.1.2 This report has been prepared by Wheal Jane Consultancy solely for the benefit of the client. It shall not be relied upon or transferred to any third party without the prior written authorisation of WJC.

1.2 Scope and Objectives

1.2.1 The objective of this investigation is to quantify any land contamination based on in-situ data collected from the actual site which will then be interpreted and evaluated.

1.2.2 This investigation was developed to target the possible contamination related to the sites historic use and/or natural geology.

1.2.3 The objective of this investigation is also to evaluate the geotechnical parameters of the sub-surface material in order to aid foundation design.

1.2.4 The conclusions and recommendations of this report are valid for a period of 12 months from the date of issue. Outside of this time frame the report will require reviewing by a suitably qualified geoenvironmental engineer / environmental scientist, to ensure that the report complies with any changes to industry standards, policies and/or guidelines.

1.2.5 It is recommended that a copy of this report be submitted to the local authority for checking, prior to commissioning any further work which may be required.

1.2.6 This assessment has been undertaken with guidance from BS10175:2011 and Environment Agency report CLR11, and as such represents a Phase II Ground Investigation.

1.3 Limitations

1.3.1 Field work consisted of discrete sampling across the site, to assess the character and degree of contamination. Conditions of the ground at locations not included within the investigation may be different from the tested locations.

1.3.2 This report considers site conditions at the time of the ground investigation, but ground conditions may change with time. If future work discovers ground conditions that vary

significantly from the findings available in this report, the conclusions should be reviewed in the context of the new information.

1.3.3 Findings were assessed in the context of standards and methodology current at the time of reporting.

1.3.4 The findings and conclusions in this report are based upon information derived from a variety of sources. WJC cannot accept liability for the accuracy or completeness of any information derived from third party sources.

2 THE SITE

2.1 Site Location and Layout

2.1.1 The site is located either side of Kerrier Way approximately 0.50km to the north east of the town centre of Camborne. The site is approximately centred on National Grid Reference SW 65370 40271.

2.1.2 The site is irregular in shape and covers an area of approximately 0.75ha.

2.1.3 A site location plan (SLP) is contained in Figure 2.1, to the rear of the report.

2.1.4 The current site plan is contained in Figure 2.2, to the rear of the report.

2.2 Surrounding area

Direction	Land Use
North	Residential, Road
East	Residential
South	Residential, Road
West	Supermarket, Fuel Station, Road

2.3 Proposed Development

2.3.1 It is proposed to redevelop the site with residential and/or commercial buildings. A proposed development plan was not finalised at the time of completing this report.

3 SITE INVESTIGATION

3.1 Site Works

3.1.1 An intrusive site investigation was conducted on Wednesday 2nd March 2022. The investigation was overseen by a geoenvironmental engineer from Wheal Jane Consultancy.

3.1.2 The following table summarises the intrusive investigation techniques employed during the site investigation;

Table 3.1: Site Works

Exploratory Hole Type	Exploratory Hole ID	Hole Depths (mBGL)	Comments
Windowless Sample Borehole	WS01 – WS05	0.70 – 5.45	To determine thickness of Made Ground & Depth to Bedrock
CBR Test using DCP Method	CBR01 – CBR10	1.00	To allow design on roads/pavements

3.1.3 Exploratory hole logs are included as Appendix A.

3.1.4 A plan showing the location of the exploratory holes is provided as Figure 3.1.

3.2 Windowless Sample Boring

3.2.1 8nr Windowless Sample Boreholes, designated WS01 – WS08 inclusive, were advanced to depths of between 0.70m to 5.45m using a tracked Terrier rig on the 2nd March 2022. Standard Penetration Tests (SPTs) and representative soil samples were taken at regular intervals for geotechnical and environmental analysis and logged on site by a suitably qualified Geotechnical/Geoenvironmental Engineer.

3.2.2 The locations of all exploratory holes can be seen on the exploratory hole location plan, contained as Figure 3.1.

3.3 CBR Testing undertaken using the DCP method

3.3.1 9nr CBR Tests undertaken using the DCP method, designated CBR01 – CBR09 inclusive, were advanced to a depth of 1.00m on the 2nd March 2022.

3.3.2 The locations of all exploratory holes can be seen on the exploratory hole location plan, contained as Figure 3.1.

3.4 Geotechnical Sampling and Testing

3.4.1 Samples were dispatched to an accredited geotechnical laboratory in order to classify the geotechnical properties of the soils. The following tests were scheduled:

- Moisture Content
- Atterberg Limits (4pt)
- Particle Size Distribution
- pH & Water-Soluble Sulphate

3.4.2 All testing was carried out in accordance with the procedures set out in BS EN ISO/IEC 17025:2005.

3.4.3 All samples were tested by a UKAS accredited laboratory.

3.4.4 The results are included as Appendix B.

3.5 Chemical Sampling and Testing

3.5.1 The proposed end use of the site may be for residential housing and the subsequent data analysis will be conducted using this setting to test for levels of contaminants against generic assessment criteria.

3.5.2 The Phase I report highlighted heavy metals, sulphates, pH, total petroleum hydrocarbons and polycyclic aromatic hydrocarbons as the primary contaminants of concern, the sampling was designed to target the proposed areas of soft landscaping or private gardens. Such areas provide the most exposure to potentially contaminated soils.

3.5.3 All retrieved samples were logged in accordance with BS5930;2015 and BS EN ISO 14689. Collection of media for environmental testing was obtained, stored in plastic tubs and glass jars and kept within a temperature controlled cool box before being dispatched for testing.

3.5.4 Samples were taken at varying depths and tested for potential contaminants including the following;

- Heavy Metals (As, B, Cd, Cr, Cu, Hg, Pb, Ni, Se, Zn)
- Sulphates
- Polyaromatic Hydrocarbons
- pH
- Total Petroleum Hydrocarbons
- Asbestos

3.5.1 All samples were tested by a UKAS and MCERT accredited laboratory.

3.5.2 The results are included as Appendix C.

4 GROUND CONDITIONS

4.1 General

4.1.1 The BGS 1:50,000-scale bedrock geological map Sheet 352, Falmouth of the area shows the site to be underlain by the Mylor Slate Formation.

4.1.2 The following table represents a summary of the strata encountered beneath the site;

Table 4.1: Ground Conditions

Strata	Depth Encountered (mBGL)		Typical Thickness (m)	Brief Description & Comments
	From	To		
Made Ground	0.00	0.80 – 1.90	1.00	Concrete and/or Dark brown gravelly CLAY with anthropogenic components of concrete, brick, glass.
Mylor Slate Formation	0.80 – 1.90	4.45 – 5.45	Unproven	Light brown gravelly CLAY becoming light brown clayey GRAVEL with depth.

4.2 Made Ground

4.2.1 All holes encountered a horizon of Made Ground ranging from 0.80 to 1.90m in thickness. WS05-WS08 inclusive all refused within Made Ground on Concrete at depth.

4.2.2 The unit is generally described as 'Concrete and/or Dark brown gravelly CLAY with anthropogenic components of concrete, brick, glass.'

4.2.3 Standard Penetration Tests (SPTs) were completed at regular intervals within the Made Ground and can be summarised below;

Table 4.2: Standard Penetration Tests within the Made Ground

Depth (mBGL)	**SPT 'N' Value**		
	Min	**Max**	**Average**
1.00	6	50+	***29***

4.3 Weathered Mylor Slate Formation

4.3.1 Material described as Weathered Mylor Slate Formation was encountered across the site to depths of up to 5.45m.

4.3.2 The unit may be generally described as Light brown gravelly CLAY becoming light brown clayey GRAVEL of mudstone with depth.

4.3.3 Standard Penetration Tests (SPTs) were completed at regular intervals within the Weathered Mylor Slate Formation and can be summarised below;

Table 4.3: Standard Penetration Tests within the Weathered Mylor Slate Formation

Depth (mBGL)	SPT 'N' Value		
	Min	Max	Average
1.00	9	9	***9***
2.00	6	33	***20***
3.00	29	50+	***45***
4.00	33	33	***33***
5.00	50+	50+	***50+***

4.3.4 The material was subject to plasticity testing as shown to be a CLAY/SILT of intermediate plasticity.

4.3.5 The Modified Plasticity Index (I'p) is defined by the NHBC Chapter 4.1, as the "Plasticity Index (Ip) of the soil multiplied by the percentage of Particles less than 425µm." In this instance the soil has been shown to be subject to negligible – low volume change potential. This is graphically represented in Appendix B, to the rear of the report.

4.3.6 The material was subject to particle size distribution testing and was shown to contain 22 - 42% gravel, 26 - 32% sand and 31- 42% fines (silt/clay).

4.4 Groundwater

4.4.1 As surface water was encountered across the site which proceeded to percolate down the exploratory holes it was not possible to determine if groundwater was also present.

4.5 Contamination Indications

4.5.1 Evidence of potential replacement contamination includes the anthropogenic components mentioned in section 4.2.2.

5 GEOTECHNICAL ASSESSMENT

5.1 Introduction

5.1.1 It is proposed to redevelop the site with residential and/or commercial buildings. No proposed development plan was finalised at the tie of completing the investigation.

5.1.2 At the time of writing this report, no definitive structural loads have been provided by the client.

5.2 Foundation Options

5.2.1 Based on the ground conditions encountered it is considered that conventional strip foundations will be appropriate across the majority of the site. In the eastern area all exploratory holes refused on Made Ground suggesting a concrete base is present in this area. It was therefore not possible to get bearing capacity information for the underlying natural material in this area of the site.

5.2.2 In the western area of the site, strip foundations taken to a depth of 1.00m, 0.60m wide may be designed to an allowable bearing capacity of 120kPa. There is the potential for differential settlement across differentially weathered horizons, it is therefore recommended that nominal reinforcement be included with foundations. trip foundations should be taken down through any made ground and seated in the weathered Mylor Slate Formation at a depth of at least 1.00m.

5.2.3 Foundations taken to a depth of 1.00m, 0.60m wide may be designed to an allowable bearing capacity of 120kPa. A factor of safety of 3 has been applied to the calculations, settlements should not exceed 25mm.

5.2.4 Moderate variation in strength within the weathered Mylor Slate Formation was observed at 1.00m, as indicated in Table 4.2 and Figure 4.1. The above calculations have been based on an SPT 'N' value of N6, and are thus conservative. There is the potential for differential settlement across differentially weathered horizons, it is therefore recommended that nominal reinforcement be included with foundations.

5.3 Floor Slabs

5.3.1 Based on the results of laboratory testing and on-site observations, it is considered that a ground bearing floor slab seated within the weathered Mylor Slate Formation would be appropriate.

5.3.2 Any Made Ground should be excavated and replaced with suitably compacted granular material.

5.3.3 Full radon protection should be incorporated into the floor slab in accordance with BRE guidelines.

5.4 Excavations and Earthworks

5.4.1 Excavations to at least 1.20m should be readily achievable with conventional soil excavating machinery. Excavations to this depth are likely to stand unsupported in the short term.

5.4.2 Any excavations to greater than 1.20m which require personnel to enter should be supported.

5.4.3 Due to the fines content of the fill material, excavations should be covered during periods of inclement weather to prevent wetting and subsequent degradation.

5.4.4 It is considered that groundwater will not be encountered in shallow excavations.

5.5 Roads and Hardstanding

5.5.1 The structural design of a road or hardstanding is based on the strength of the sub-grade, which is assessed on the California Bearing Ratio [CBR] scale.

5.5.2 It is recommended that for formation prepared in the weathered Mylor Slate Formation, a CBR value of 5% may be adopted for design purposes.

5.5.3 Any soft or deleterious material should be excavated and replaced with suitable compacted granular fill.

5.6 All material within 450mm of the road surface should be non-frost-susceptible

5.7 Chemical Attack on Buried Concrete

5.7.1 Chemical testing indicates water soluble sulphate contents of 0.032 – 0.085g/l, with pH values of 7.5 – 8.1.

5.7.2 Based on the above results the site may be classified as falling into the Design Sulphate Class DS-1. The Aggressive Chemical Environment for Concrete (ACEC) class is based upon the pH and mobility of groundwater. The results indicate that the soils on site fall into class AC-1.

6 CONTAMINATION ASSESSMENT

6.1 Comparison with Generic Assessment Criteria (GACs)

6.1.1 The laboratory results are contained as Appendix C.

6.1.2 Results from the environmental testing can be compared against Generic Assessment Criteria (GAC) to form the basis of a GQRA. The GAC's used are taken from the LQM/CIEH 'Suitable 4 Use Levels' publication. In the absence of a suitable S4UL value (such as Lead), reference has been made to DEFRA's Category 4 Screening Levels (C4SL) where deemed justifiable. Given the proposed land use for this site, the residential with homegrown produce has been chosen for the appropriate set of criteria. A comparison table can be found below.

Table 6.1: Comparison of soil results against GAC's (Res_{WHP} 1% organic matter; based on the average value recorded – all values in mg/kg unless stated)

Contaminant	GAC's: S4UL's - $Resi_{W}$HGP (unless stated)	Minimum	Maximum	Exceedances
Metals				
Arsenic	37	33	990	**12**
Boron	290	<0.2	1.2	0
Cadmium	11	<0.2	<0.2	0
Chromium (III)	910	37	200	0
Chromium (VI)	6	<4.0	<4.0	0
Copper	2400	78	480	0
Mercury (inorganic)	40	<0.3	<0.3	0
Nickel	130	5.1	110	0
Lead	200 (C4SL)	17	100	0
Selenium	250	<1.0	<1.0	0
Zinc	3700	34	1300	0
General				
Asbestos	N/A	Detected		**1**
pH	N/A	7.3	11.6	-

Organic Matter %	N/A	0.10	6.0	-
Sulphates (water soluble, g/l)	N/A	0.0052	0.16	-
Cyanide (total)	23 (USEPA)	<1.00	<1.00	-
Phenols	380	<1.00	<1.00	0
Organics				
Polycyclic Aromatic Hydrocarbons (PAH, 16)				
Acenaphthene	210	<0.05	<0.05	0
Acenaphthylene	170	<0.05	<0.05	0
Anthracene	2400	<0.05	<0.05	0
Benzo(a)anthracene	7.2	<0.05	0.48	0
Benzo(a)pyrene	2.2	<0.05	0.85	0
Benzo(b)fluoranthene	2.6	<0.05	0.79	0
Benzo(ghi)perylene	320	<0.05	0.49	0
Benzo(k)fluoranthene	77	<0.05	0.29	0
Chrysene	15	<0.05	0.53	0
Dibenzo(ah)anthracene	0.24	<0.05	<0.05	0
Fluoranthene	280	<0.05	0.77	0
Fluorene	170	<0.05	<0.05	0
Indeno (123-cd) pyrene	27	<0.05	0.39	0
Naphthalene	2.3	<0.05	<0.05	0
Phenanthrene	95	<0.05	0.29	0
Pyrene	620	<0.05	0.71	0
PAH (Total 16)	N/A	<0.80	5.59	-
Total Petroleum Hydrocarbons (TPH)				
Benzene	0.087	<1.0	<1.0	0
Toluene	130	<1.0	<1.0	0
Ethylbenzene	47	<1.0	<1.0	0
o-xylene	60	<1.0	<1.0	0

m & p-xylene	56	<1.0	<1.0	0
Methyl Tertiary Butyl Ether (MTBE)	160	<1.0	<1.0	0
Aliphatic >C5-C6	42	<0.001	<0.001	0
Aliphatic >C6-C8	100	<0.001	<0.001	0
Aliphatic >C8-C10	27	<0.001	<0.001	0
Aliphatic >C10-C12	130	<1.0	<1.0	0
Aliphatic >C12-C16	1100	<2.0	6.1	0
Aliphatic >C16-C21	65000	<8	25	0
Aliphatic >C21-C35	65000	<8	35	0
Aromatic >C5-C7	70	<0.001	<0.001	0
Aromatic >C7-C8	130	<0.001	<0.001	0
Aromatic >C8-C10	34	<0.001	<0.001	0
Aromatic >C10-C12	74	<1.0	<1.0	0
Aromatic >C12-C16	140	<2.0	13	0
Aromatic >C16-C21	260	<10	32	0
Aromatic >C21-C35	1100	<10	71	0
Aromatic >C35-C44	1100	<10	<10	0
Total TPH	N/A	<10	180	0

6.1.3 All tested VOCs and SVOCs were below the limit of detection is all samples tested.

6.1.4 Soil pH values ranged from 7.30 to 11.60 with an average of 8.30.

6.1.5 Soil Organic Matter (SOM) testing was undertaken on 11 samples. An average value of 1.3% was calculated, resulting in a value of 1% SOM being adopted.

6.1.6 Asbestos was recorded during testing in 1 location. In WS04 at 0.30m depth in the centre of the site. Amosite loose fibres were detected.

6.1.7 Elevated levels of arsenic were noted across the site, in all samples except one. The exceedances were within both the Made Ground and underlying natural material.

6.1.8 The average soil concentrations for arsenic were entered into the CLEA software. This enabled the ratio of Average Daily Exposure to each contaminant with the relevant Health Criteria Value to be determined. This corresponded with the exceedances

reported above when the soil guideline values were used. Site specific data was also entered into the software to model the conditions in a representative manner. Several land use categories are available within CLEA, the most appropriate in this case is the residential with homegrown produce scenario. Values for average soil pH and soil organic matter were also included (8.30 and 1% respectively).

6.1.9 The contaminant pathways for each of the substances were also determined using the CLEA software, and these were expressed as percentages. The distribution pathways varied, as shown in the table below;

Table 6.2: Distribution pathways for metals

	Direct Soil Ingestion	Consumption of Homegrown Produce	Dermal Contact
Arsenic	**80%**	**8%**	**12%**

6.1.10 Levels of arsenic are considerably higher than their respective GAC and therefore bioavailability testing is unlikely to bring them to within acceptable levels.

6.1.11 No elevated levels of TPH or PAH were recorded.

6.2 Refined Conceptual Site Model

Table 6.5: Refined Conceptual Model

Preliminary Conceptual Model							
	Source(s)	**Contaminant(s)**	**Pathway(s)**	**Receptor(s)**	**Probability**	**Consequence**	**Risk Assessment**
On Site	Natural Geology	Radon gas	Ingress into proposed buildings	Future site users	High	Severe	**High Risk** – Development is within an area where greater than 30% of properties are affected.
		Arsenic	Dermal contact Soil and dust ingestion and inhalation Ground & surface waters	Future site users Site workers Site flora and fauna	Likely	Medium	**Moderate Risk –** Levels of arsenic on site are recorded up to 990mg/kg. This greatly exceeds the generic acceptance criteria value of 37mg/kg. A remediation scheme will be required on site.
	Made Ground	Arsenic	Dermal contact Soil and dust ingestion and inhalation Ground & surface waters	Future site users Site workers Site flora and fauna	Likely	Medium	**Moderate Risk –** Levels of arsenic on site are recorded up to 990mg/kg. This greatly exceeds the generic acceptance criteria value of 37mg/kg. A remediation scheme will be required on site.
		Other Heavy Metals	Dermal contact Soil and dust ingestion and inhalation Ground & surface waters	Future site users Site workers Site flora and fauna	Unlikely	Medium	**Low Risk –** Levels of all other heavy metals were found to be within the relevant generic acceptance criteria.
		Polycyclic Aromatic Hydrocarbons Total Petroleum Hydrocarbons VOCs & SVOCs	Dermal contact Soil and dust ingestion and inhalation Ground & surface waters	Future site users Site workers Site flora and fauna	Unlikely	Medium	**Low Risk –** There were no exceedances recorded on site for PAHs, TPHs, VOCs or SVOCs.

7 CONCLUSIONS

7.1.1 The site was subject to a Phase II Ground Investigation to determine the level and risk of potential contamination, as well as the stability and geotechnical parameters of the underlying material.

7.1.2 It can be concluded that arsenic within the soil presents an unacceptable level of risk. The site is likely to be suitable for its intended use, as long as the recommendations set out in this report are adhered to.

7.1.3 It is considered that conventional strip foundations will be appropriate across the majority of the site. In the eastern area all exploratory holes refused on Made Ground suggesting a concrete base is present in this area. It was therefore not possible to get bearing capacity information for the underlying natural material in this area of the site.

8 RECOMMENDATIONS

8.1.1 A Phase 3 Remediation Strategy Report should be compiled which outlines the scope of remedial works required to reduce the level of contamination to such condition that the site can be deemed suitable for its proposed residential use.

8.1.2 Once the remediation strategy has been fully implemented and the work concluded to the required specifications, a Phase 4 Verification Report and Certificate must be produced.

8.1.3 A flow chart detailing the phased approach to land contamination, as set out in CLR11, is contained to the rear of the report.

8.1.4 As the site is situated in an area where greater than 30% of the properties are above the action level, it is recommended that full radon protective measures are installed on any proposed building.

8.1.5 Suitable safety measures should be taken by those working on site to mitigate the risks associated with contaminated media including undertaking the appropriate risk assessments and ensuring all workers are wearing the correct PPE.

8.1.6 Waste removed from site shall be disposed of at a suitable facility with the appropriate Waste Transfer Notices obtained for future records. Asbestos waste should be handled by a suitable waste contractor.

9 REFERENCE LIST

9.1.1 BSI (2011) BS 10175:2011 Investigation of Potentially Contaminated Sites - Code of Practice. London, British Standards Institution

9.1.2 BSI (2015) BS5930:2015. Code of Practice for Site Investigations. London, British Standards Institution

9.1.3 British Research Establishment (BRE) (2005) Special Digest 1 Concrete in Aggressive Ground. 3rd edn. Watford, BRE

9.1.4 Chartered Institute of Environmental Health (CIEH) and Contaminated Land: Applications in Real Environments (CL:AIRE) (2008) Guidance on Comparing Soil Contamination Data with a Critical Concentration. London, CIEH

9.1.5 CIRIA (2001) CIRIA C552 - Contaminated land risk assessment: A guide to good practice. London, CIRIA

9.1.6 CIRIA (2007) CIRIA C665 - Assessing Risks Posed by Hazardous Ground Gases to Buildings. London, CIRIA

9.1.7 Contaminated Land: Applications in Real Environments (CL:AIRE), Association of Geotechnical and Geo-environmental Specialists (AGS) and The Environmental Industries Commission (EIC) (2010) Soil Generic Assessment Criteria for Human Health Risk Assessment. London, CL:AIRE

9.1.8 Contaminated Land: Applications in Real Environments (CL:AIRE) (2012) A Pragmatic Approach to Ground Gas Risk Assessment. Research Bulletin 17

9.1.9 Contaminated Land: Applications in Real Environments (CL:AIRE) (2016) CAR SOIL: Control of Asbestos Regulations 2012. Interpretation for Managing and Working with Asbestos in Soil and Construction and Demolition Materials.

9.1.10 Environment Agency (2004) Contaminated Land Report 11 - Model Procedures for the Management of Land Contamination. Bristol, Environment Agency

9.1.11 Environment Agency (2009) Updated Technical Background to the CLEA Model. Science Report SC050021/SR3. Bristol: Environment Agency

9.1.12 Environment Agency (2009) Human Health Toxicological Assessment of Contaminants in Soil. Science Report SC050021/SR2. Bristol: Environment Agency

9.1.13 Great Britain. Environmental Protection Act (1990). London, The Stationery Office

9.1.14 Great Britain. Water Act (2003) London, The Stationery Office

9.1.15 Great Britain. Environmental Permitting Regulations (2007). London, The Stationery Office

9.1.16 Great Britain. Environmental Damage (Prevention and Remediation) Regulations (2009). London, The Stationery Office

9.1.17 Great Britain. The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015. London, The Stationery Office

9.1.18 National House Building Council (NHBC), Environment Agency and Chartered Institute of Environmental Health (CIEH) (2008) Research & Development Publication 66: Guidance for the Safe Development of Housing on Land Affected by Contamination. Amersham, NHBC

9.1.19 Royal Institution of Chartered Surveyors (RICS) (2012) Japanese Knotweed and Residential Property. Coventry, RICS

10 NOTES

10.1.1 This report is concerned solely with the property, as defined by this report, or parts thereof examined.

10.1.2 The report should not be used in connection with adjacent properties.

10.1.3 In respect of site works, Wheal Jane Consultancy cannot accept any liabilities for any additional mine workings found outside the limits of any areas examined.

10.1.4 The information supplied by third parties which has been used in compiling this Phase 2 ground investigation report, is derived from a number of statutory and non-statutory sources. While every effort is made by the supplier to ensure accuracy, the supplier cannot guarantee the accuracy or completeness of such information or data, nor to identify all the factors that may be relevant.

10.1.5 The conclusions and recommendations relate to the type and extent of development outlined in this report for this specific property only and should not be taken as suitable for any other form or extent of development on this property without further consultation with Wheal Jane Consultancy.

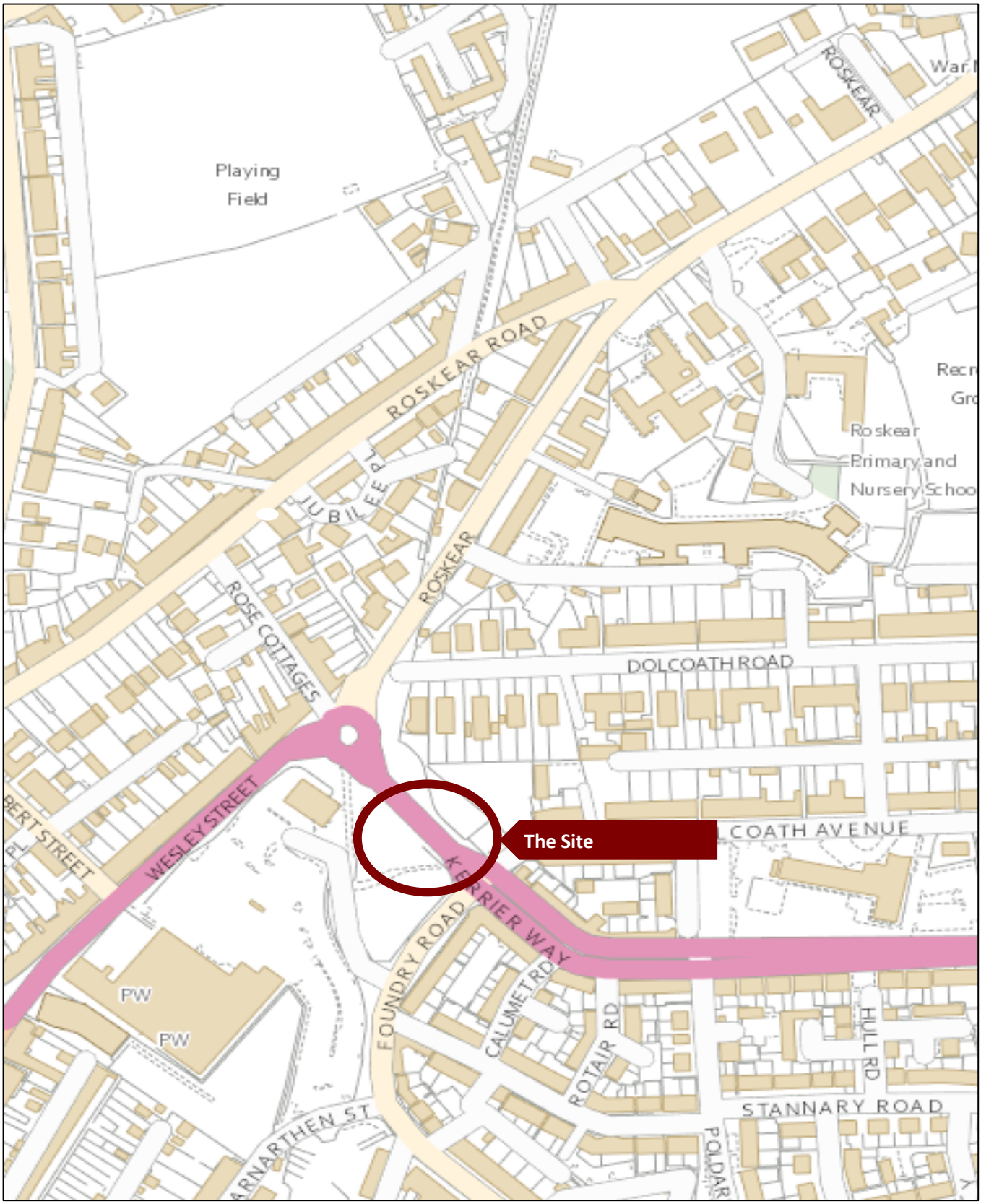
10.1.6 This report is confidential to the client, the client's legal and professional advisors, and may not be reproduced or distributed without our permission other than to directly facilitate the sale or development of the property concerned.

10.1.7 We have no liability toward any person not party to commissioning this report.

10.1.8 Unless otherwise expressly stated, nothing in this report shall create or confer any rights or other benefits pursuant to the Contracts (Rights of Third Parties) Act 1999 in favour of any person other than the person commissioning this report.

10.1.9 This report is not an asbestos inspection that may fall within the control of Control of Asbestos Regulations 2006

FIGURES:



Title: **Site Location Plan**

Project: **Dolcoath, Camborne**

Client: **WWA**

Report Title: **Combined**

Date: **28/03/2022** Ref: **20931** Figure: **2.1**

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

N

Legend:

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

Title:

Current Site Layout

Project:

Dolcoath, Camborne

20931

Client:

WWA

Date:	28/03/2022
Scale:	NTS
Drawn by:	-
Revision:	A
Figure:	2.2

N

Legend:

Mar-22

Windowless Sample Borehole

DCP (CBR Test)

Previous works

Previous Investigation Locations

WHEAL JANE CONSULTANCY

GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

Title:

Exploratory Hole Location Plan

Project:

Dolcoath, Camborne

20931

Client:

WWA

Date:	28/03/2022
Scale:	NTS
Drawn by:	-
Revision:	A
Figure:	3.1

APPENDIX A

Exploratory Hole Logs

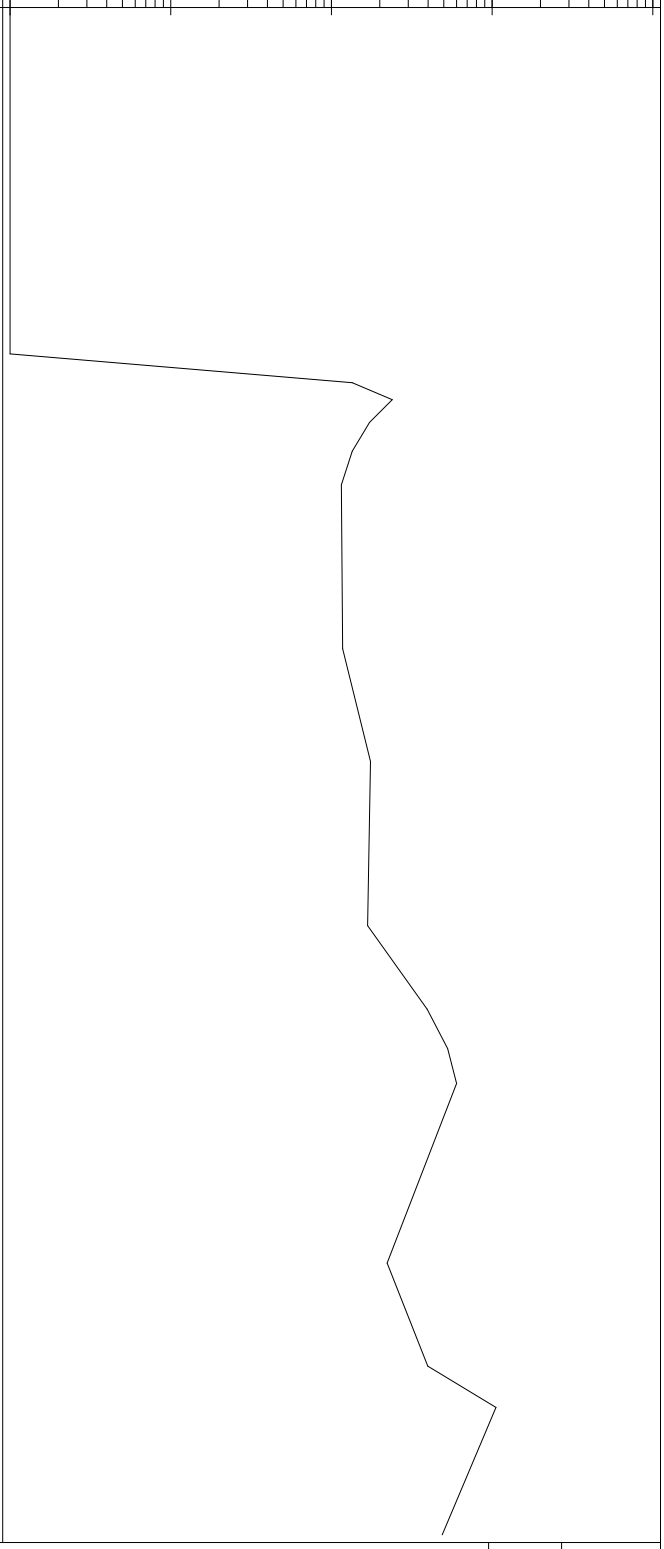
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR01

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR test undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.22				
				0.30
				0.40
	15			
				0.50
0.60				0.60
				0.70
	34			
				0.80
0.82				
				0.90
	54			



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR01

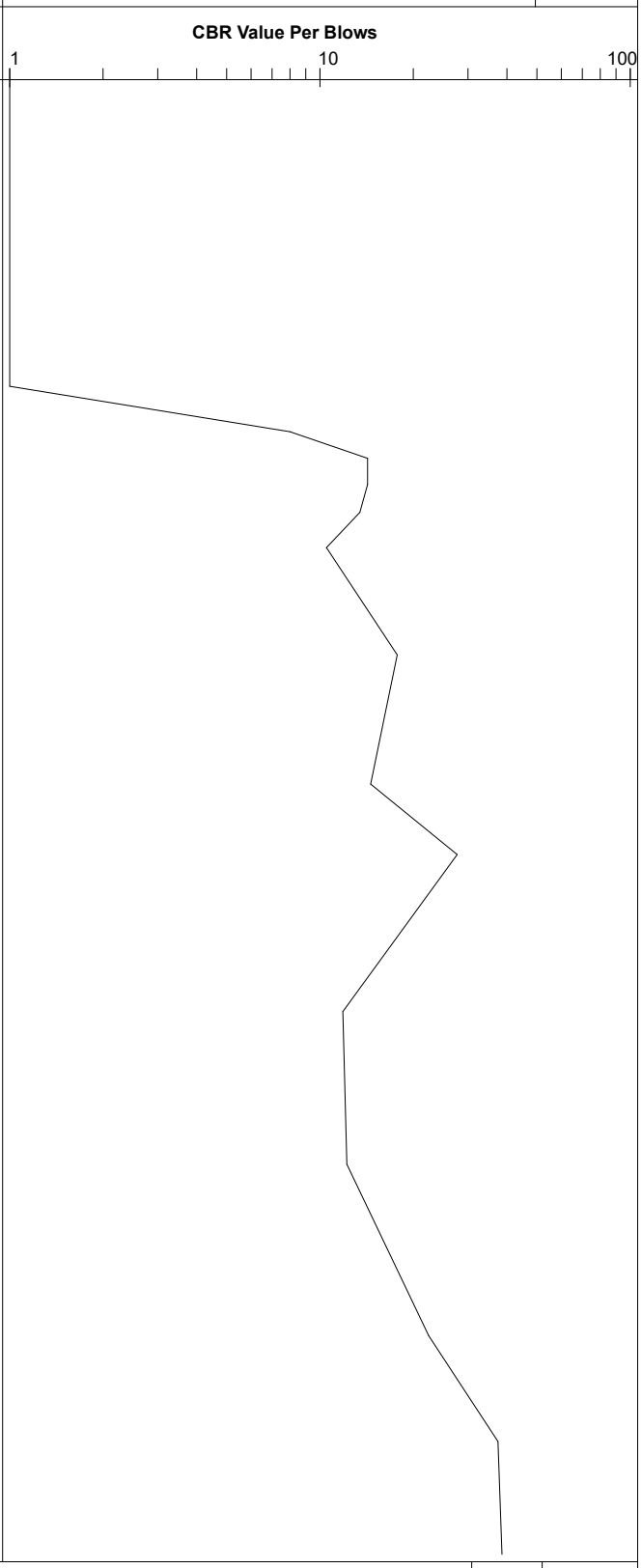
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR02

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
0.20				0.20
	14			0.30
				0.40
0.48				0.50
	15			0.60
				0.70
0.73				0.80
	31			0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR02

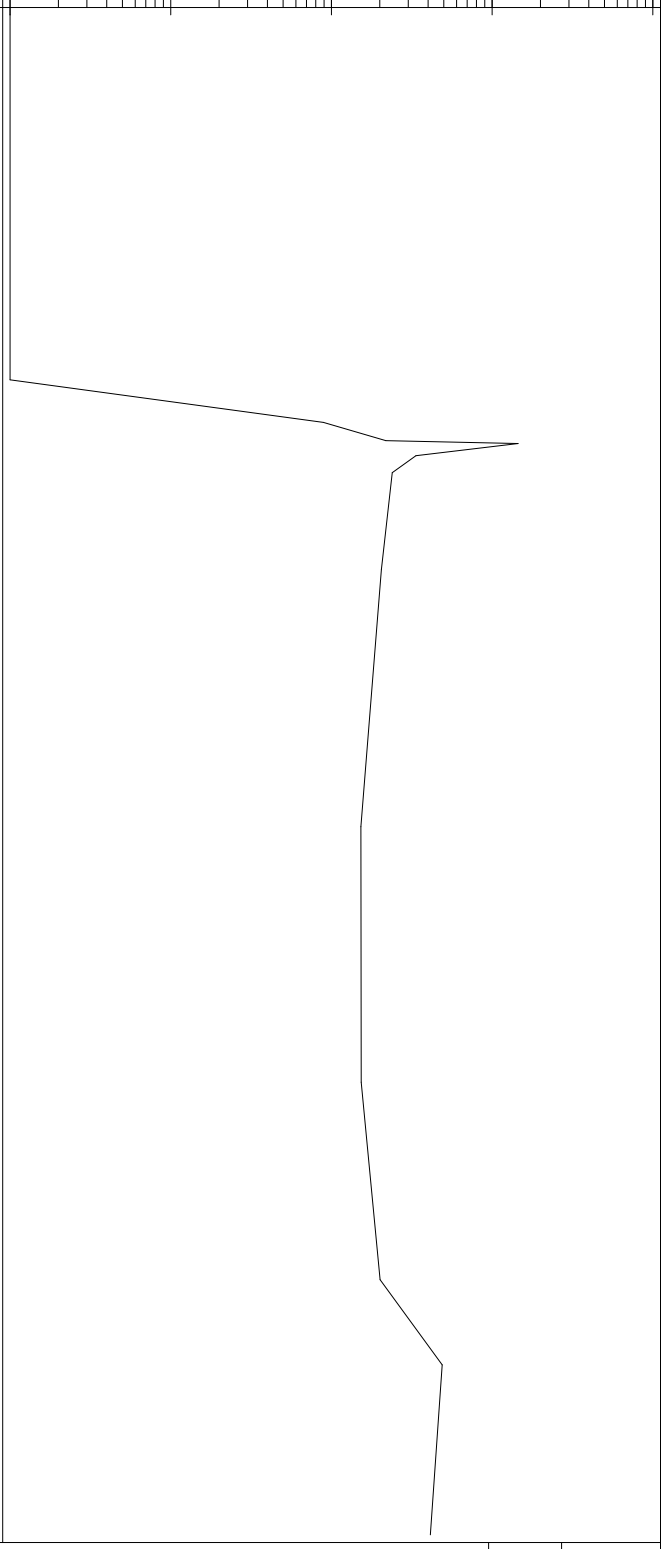
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR03

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.24				
	21			
0.29				0.30
				0.40
				0.50
	17			
				0.60
				0.70
				0.80
0.83				
				0.90
	44			



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR03

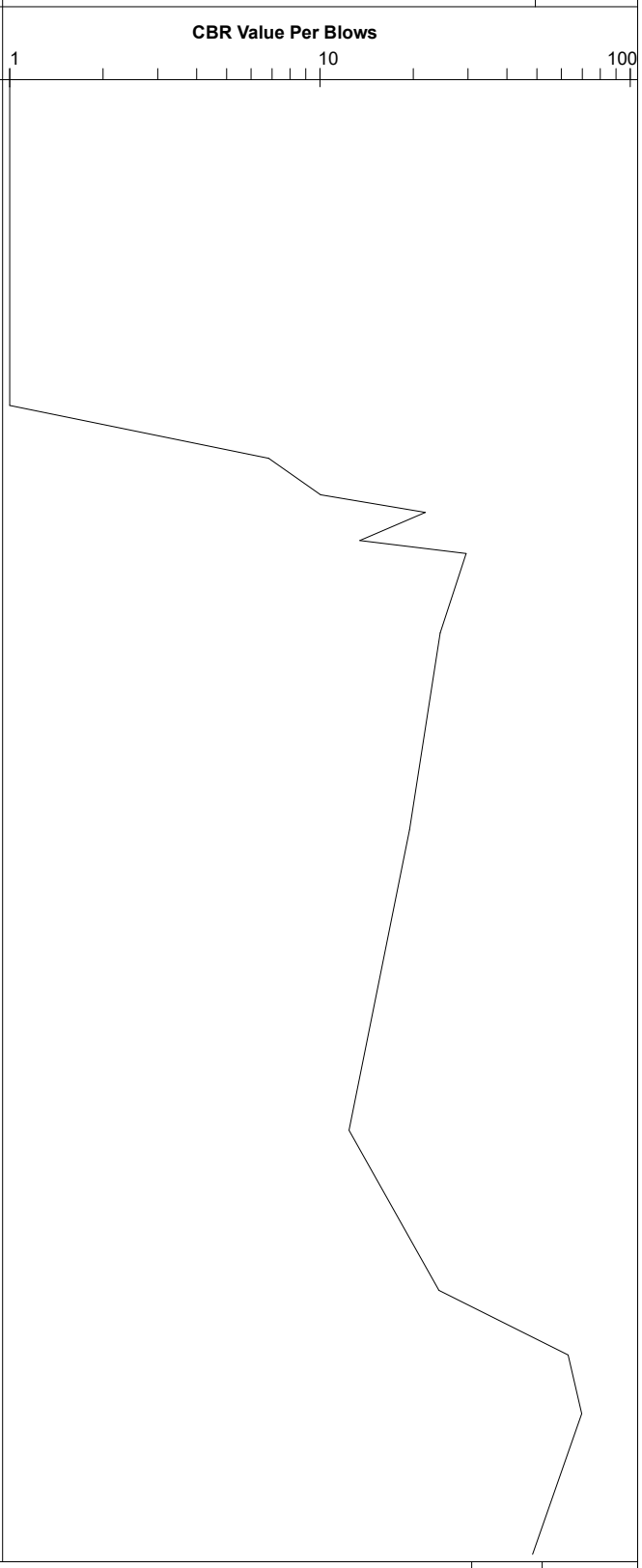
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR04

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR Testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
		02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.22	13			0.30
0.32	16			0.40
				0.50
				0.60
0.71	42			0.70
				0.80
0.90				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR04

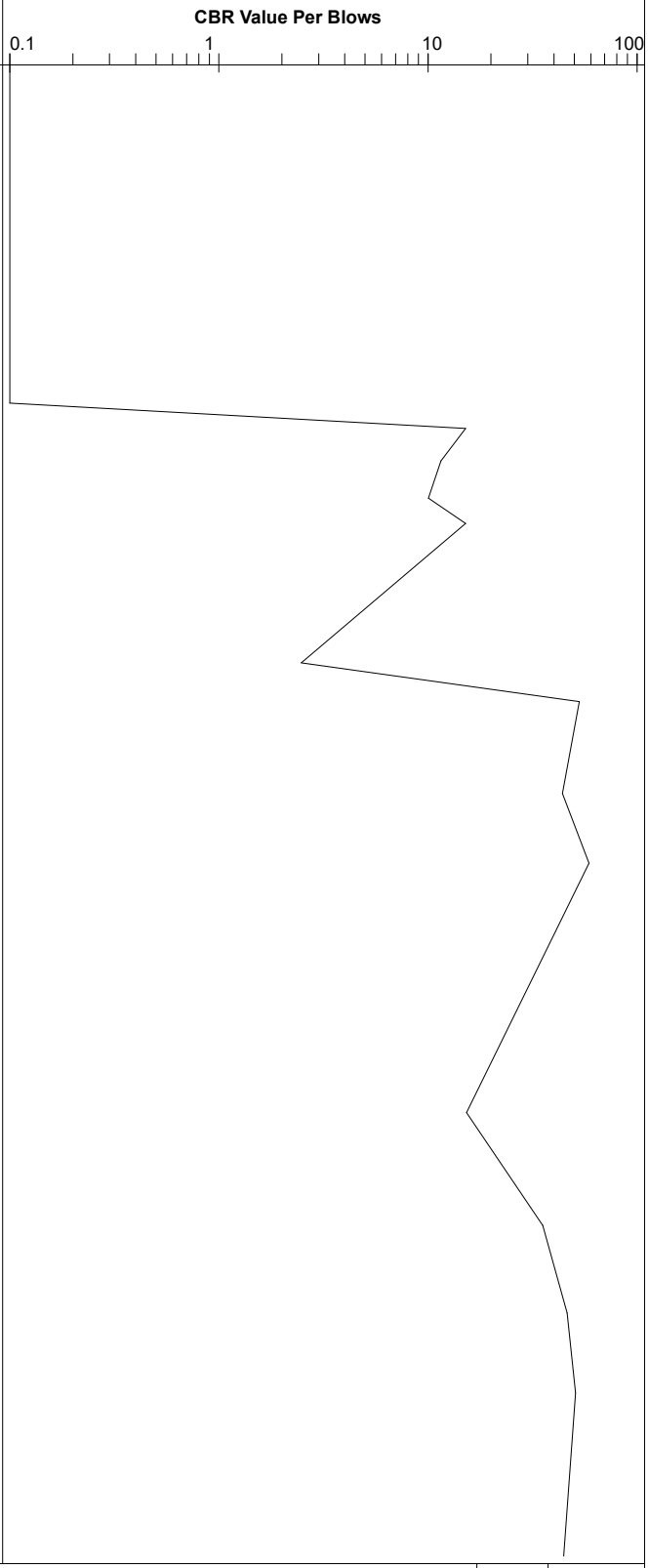
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR05

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using the DCP Method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
0.22				0.00
	13			0.10
0.26				0.20
	13			0.30
0.42				0.40
				0.50
	37			0.60
				0.70
				0.80
				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR05

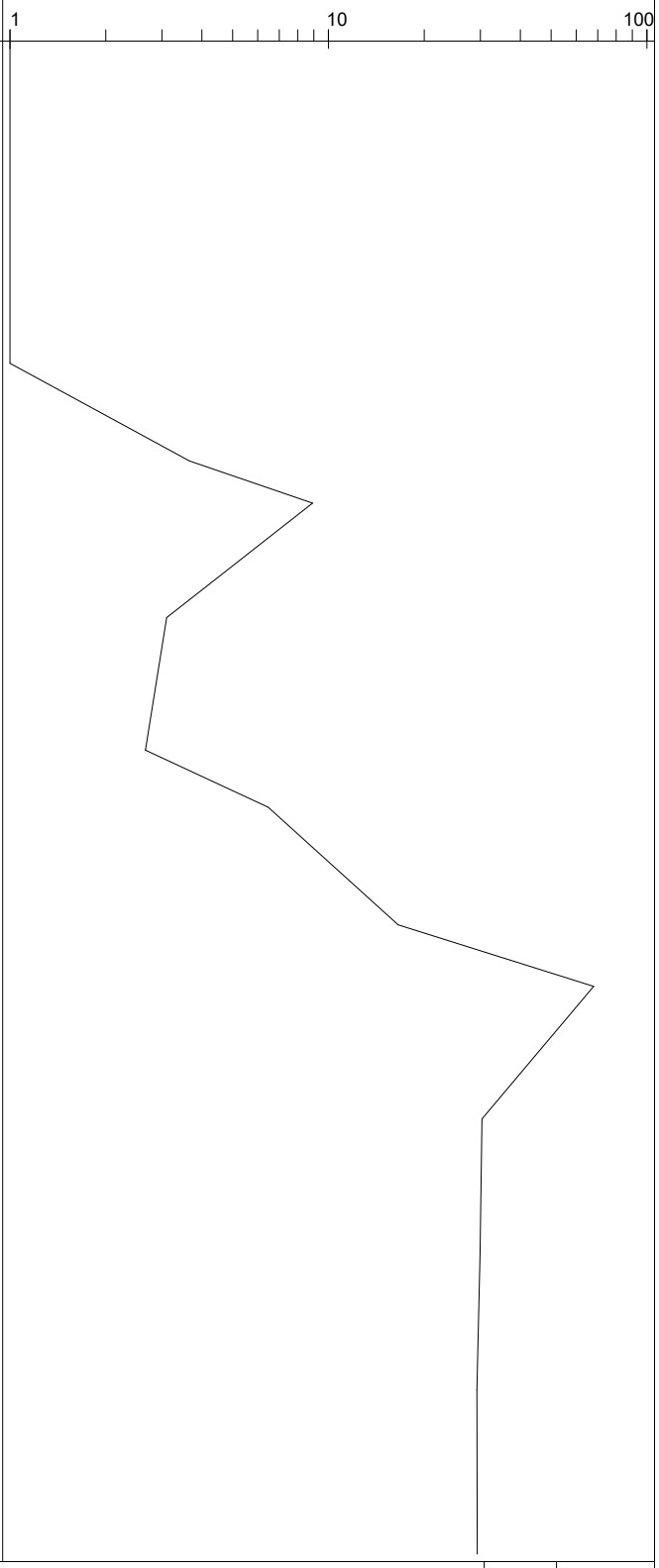
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR06

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.21	5.2			0.30
0.30	3.1			0.40
0.38	25			0.50
				0.60
				0.70
				0.80
				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR06

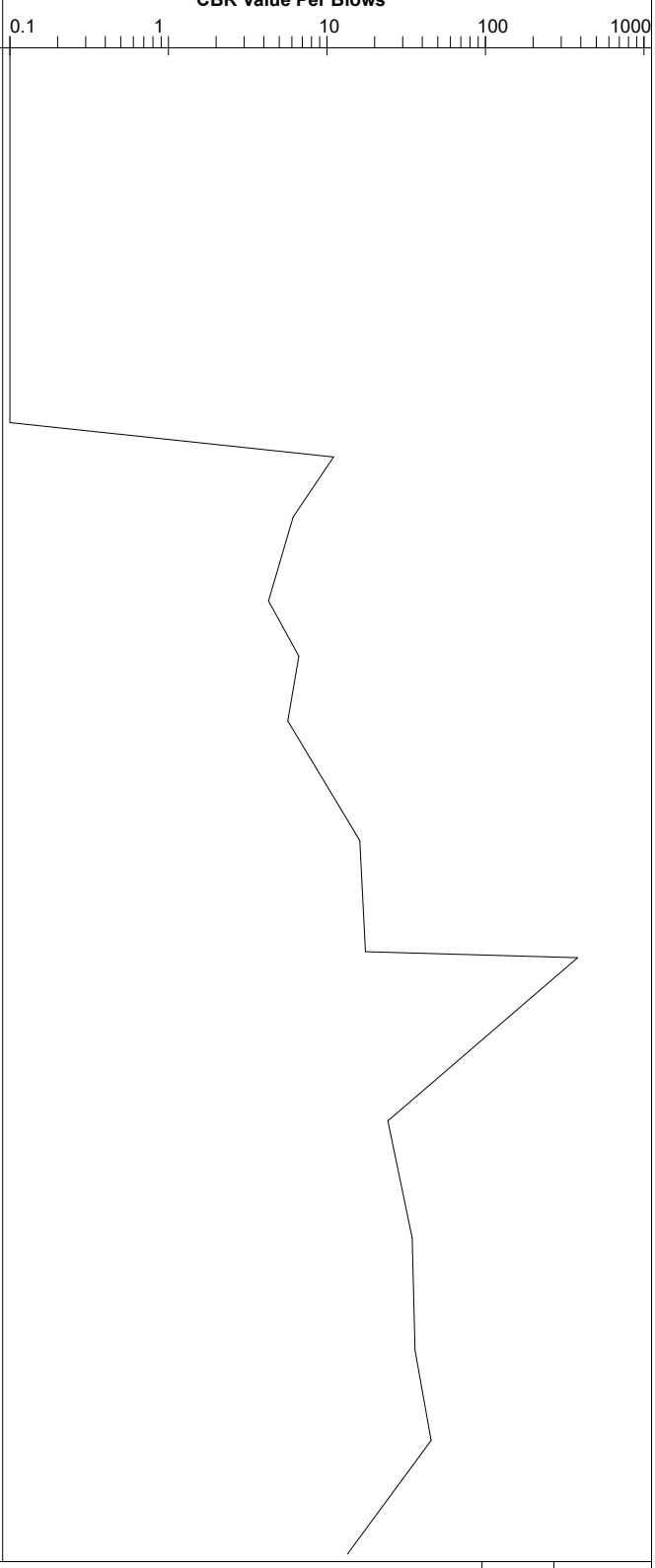
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR07

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.25				
	6.3			0.30
0.40				0.40
	22			0.50
				0.60
0.71				0.70
	31			0.80
				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR07

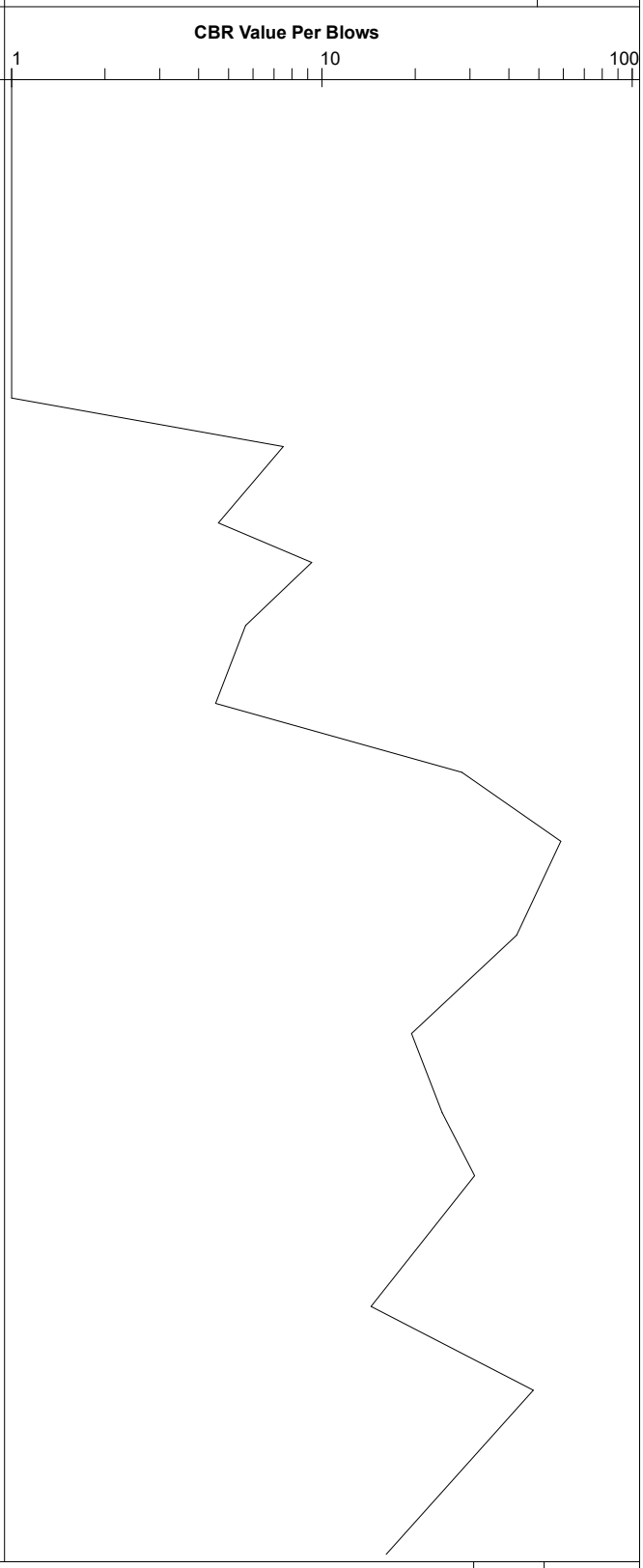
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR08

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.21	5.9			0.30
				0.40
0.42	33			0.50
				0.60
				0.70
0.74	22			0.80
				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR08

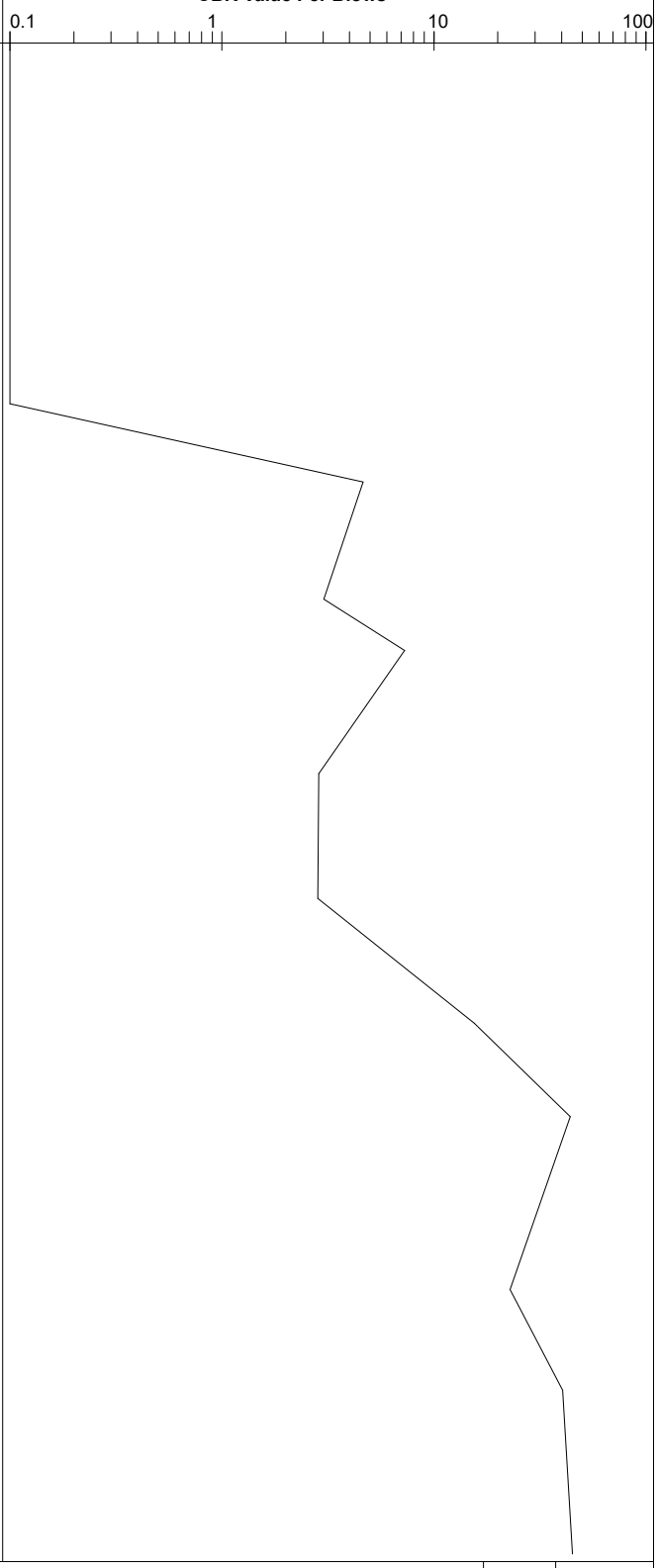
Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Probe Number
Dolcoath, Camborne	CBR09

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
CBR Testing undertaken using DCP method			Ward Williams Associates	20931
	Location	**Dates**	**Engineer**	**Sheet**
	Camborne	02/03/2022	Wheal Jane Consultancy	1/1

Depth (m)	Layer CBR Value %	Field Records	Level (mOD)	Depth (m)
				0.00
				0.10
				0.20
0.24				
	4.6			
0.29				0.30
				0.40
	3.4			
				0.50
0.56				
				0.60
				0.70
	33			
				0.80
				0.90



Remarks

Scale (approx)	Logged By
1:5	BH

Figure No. 20931.CBR09

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS01

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	ES1				(1.90)	Made Ground: Firm dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
1.00-1.45	SPT N=7		1,1/2,1,2,2					
1.10	ES2							
					1.90			
2.00-2.45	SPT N=6		2,2/2,1,1,2			Soft light brown gravelly CLAY. Gravel is angular to subangular, medium to coarse of Mudstone.		
2.00	D4				(0.95)			
2.50	D5							
					2.85			
3.00-3.45	SPT N=50		25,25/50			Very dense light brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
3.00	ES3				(0.60)			
					3.45			
						Complete at 3.45m		

Remarks
Surface water present

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS01

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS02

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.70)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
0.50	ES1							
					0.70 (0.10) 0.80	Made Ground: Black sandy, subrounded, medium to coarse GRAVEL of burnt material including charcoal and tarmac. Sand is medium to coarse.		
0.75	ES5							
1.00-1.45	SPT N=9		1,3/2,2,3,3,2		(1.00)	Loose light brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
1.70	D3							
					1.80 (0.20) 2.00	Medium dense reddish brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
2.00-2.45	SPT N=31		1,1/6,9,8,8			Very dense light brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
2.00-3.00	B4				(1.45)			
3.00-3.45	SPT N=51		7,7/11,13,13,13,14					
3.00	ES2							
					3.45	Complete at 3.45m		

Remarks

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS02

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS03

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(1.00)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
0.40	ES1				1.00			
1.00-1.45	SPT N=8		1,1/2,3,1,2		(0.50)	Soft light brown gravelly CLAY. Gravel is angular to subangular, medium to coarse of Mudstone.		
1.40	D3				1.50			
2.00-2.45 2.00-3.00	SPT N=31 B4		4,4/6,9,7,9		(1.95)	Very dense light brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
3.00-3.45 3.00	SPT N=78 ES2		10,13/15,17,21,25		3.45	Complete at 3.45m		

Remarks
Surface water present.

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS03

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	ES3				(0.90)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
1.00-1.45	SPT N=6		1,1/1,1,2,2		0.90 (0.90)	Soft light brown gravelly CLAY. Gravel is angular to subangular, medium to coarse of Mudstone.		
1.50	D1				1.80 (0.90)	Loose dense light brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
2.00-2.45	SPT N=8		2,2/1,1,2,4		2.70 (0.80)	Firm reddish brown gravelly CLAY. Gravel is angular to subangular, medium to coarse of Mudstone.		
3.00-3.45	SPT N=29		3,3/5,7,8,9		3.50 (1.95)	Very dense reddish brown clayey angular to subangular, medium to coarse GRAVEL of Mudstone.		
3.50	D2							
4.00-4.45	SPT N=33		7,7/7,7,9,10					
4.50	B4							
5.00-5.45	SPT N=50		5,9/11,12,14,13					

Remarks
Surface water present.

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS04

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					5.45	Complete at 5.45m		

Remarks
Surface water present.

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS04

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS05

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in windowless sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.69)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
0.50	ES1							
0.70-1.15	SPT N=50		50/50		0.69 0.70	Concrete Complete at 0.70m		

Remarks
Refused on concrete.

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS05

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS06

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
0.40	ES1				0.60			
					(0.10)	Concrete		
					0.70			
					(0.20)	Made Ground: Dark brown sandy clayey angular, medium to coarse GRAVEL of mudstone, concrete and brick. Sand is medium to coarse.		
					0.90			
1.00-1.45 1.00	SPT N=59 D2		3,5/10,15,16,18		(0.54)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, concrete. Sand is medium to coarse.		
					1.44			
					1.45	Concrete		
						Complete at 1.45m		

Remarks
Surface water present.
Refused on Concrete

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS06

Wheal Jane Consultancy
Geotechnical, environmental & mining services

Wheal Jane Group

Site	Number
Dolcoath, Camborne	WS07

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Drive-in Windowless Sampler			Ward Williams Associates	20931
	Location Camborne	**Dates** 02/03/2022	**Engineer** Wheal Jane Consultancy	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	ES1					Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
0.60	D2				(1.24)			
0.80-1.25	SPT N=56		10,17/24,32					
					1.24	Concrete		
					1.25	Complete at 1.25m		

Remarks
Surface water present
Refused on concrete

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS07

Wheal Jane Consultancy		Site: Dolcoath, Camborne	Number: WS08
Excavation Method: Drive-in Windowless Sampler	**Dimensions**	**Ground Level (mOD)**	**Client**: Ward Williams Associates	**Job Number**: 20931
	Location: Camborne	**Dates**: 02/03/2022	**Engineer**: Wheal Jane Consultancy	**Sheet**: 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	ES1				(1.44)	Made Ground: Dark brown sandy gravelly CLAY. Gravel is angular, medium to coarse of mudstone, granite, glass, concrete and brick. Sand is medium to coarse.		
1.00-1.45	SPT N=71		7,8/12,24,35		1.44	Concrete		
					1.45	Complete at 1.45m		

Remarks
Surface water present
Refused on concrete

Scale (approx)	Logged By
1:25	BH

Figure No. 20931.WS08

APPENDIX B

Geotechnical Laboratory Results

David Trowbridge
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Analytical Report Number : 22-46070

Project / Site name:	Dolcoath	**Samples received on:**	17/03/2022
Your job number:	14022	**Samples instructed on/ Analysis started on:**	17/03/2022
Your order number:	T7349	**Analysis completed by:**	23/03/2022
Report Issue Number:	1	**Report issued on:**	23/03/2022
Samples Analysed:	3 soil samples		

Izabela Wójcik

Signed:

Izabela Wójcik
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-46070
Project / Site name: Dolcoath
Your Order No: T7349

Lab Sample Number				2207638	2207639	2207640
Sample Reference				WS02	WS03	WS04
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				2.00-3.00	2.00-3.00	4.00-5.00
Date Sampled				Deviating	Deviating	Deviating
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	20	33
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.1	7.6	7.5
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.032	0.05	0.085

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number : 22-46070
Project / Site name: Dolcoath

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2207638	WS02	None Supplied	2.00-3.00	Brown clay and sand with gravel.
2207639	WS03	None Supplied	2.00-3.00	Brown clay and sand with gravel.
2207640	WS04	None Supplied	4.00-5.00	Brown clay and sand with gravel.

Analytical Report Number : 22-46070
Project / Site name: Dolcoath

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

Sample Deviation Report

Analytical Report Number : 22-46070
Project / Site name: Dolcoath

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note that the associated result(s) may be unreliable and should be interpreted with care.

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
WS02	None Supplied	S	2207638	a	None Supplied	None Supplied	None Supplied
WS03	None Supplied	S	2207639	a	None Supplied	None Supplied	None Supplied
WS04	None Supplied	S	2207640	a	None Supplied	None Supplied	None Supplied

Key: **a** - No sampling date **b** - Incorrect container
c - Holding time **d** - Headspace **e** - Temperature

Test Report

South West Geotechnical Ltd
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Job No:	14022	**Date Received:**	09/03/22
Job Name:	Dolcoath	**Date Sent:**	28/03/22
Client Name:	Wheal Jane Ltd	**Transmittal Number:**	T7349
Client Job No:	-	**Senders Initials:**	DT
Client Address	Old Mine Offices, Wheal Jane, Baldhu, Truro, Cornwall, TR3 6EE	**Report Revision No.**	1
		Sampled by SWG lab staff?	NO

Ref.	Test Detail	No. of Tests / Report No.
A1	BS EN ISO 17892-1: 2014 - Water Content - UKAS Accredited	8
A5	BS EN ISO 17892-12: 2018 - Atterberg Limits - UKAS Accredited	8
A9	BS EN ISO 17892-4:2016: Clause 5.2 Sieving method - Determination of Particle Size Distribution - UKAS Accredited	3

Sampling not performed by South West Geotechnical laboratory staff. Results apply to the samples as received.

Approved Signatories:

David Trowbridge (Laboratory Manager)

Matt Stokes (Senior Technician)

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ISO/IEC
17025:2017

Summary of Classification Test Results

SOUTH WEST GEOTECHNICAL
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Project No.	Project Name
14022	Dolcoath
Client Job No.	**Client**
20931	Wheal Jane Ltd

UKAS TESTING 8260 Accredited to ISO/IEC 17025:2017

Hole No.	Sample Type	Sample Top	Sample Base	Sample Ref	Soil Description	*wc* %	Passing 425µm %	LL %	PL %	PI %	Particle density Mg/m3	Remarks
WS01	D	2.00			Yellowish brown and brown slightly gravelly slightly sandy silty CLAY	20.9	49 - Sieved	38	25	13	-	
WS01	D	2.50			Yellowish brown and brown slightly gravelly slightly sandy silty CLAY	26.6	57 - Sieved	41	27	14	-	
WS02	D	1.70			Brown and orangish brown slightly gravelly slightly sandy silty CLAY	24.8	75 - Sieved	40	24	16	-	
WS03	D	1.40			Yellowish brown slightly gravelly slightly sandy silty CLAY	19.9	71 - Sieved	39	27	12	-	
WS04	D	1.50			Brown slightly gravelly slightly sandy silty CLAY	31.1	78 - Sieved	44	25	19	-	
WS04	D	3.50			Orangish brown slightly gravelly slightly sandy SILT	47.6	69 - Sieved	45	35	10	-	
WS06	D	1.00			Brown slightly gravelly slightly sandy silty CLAY	25.4	71 - Sieved	43	28	15	-	
WS07	D	0.60			Brown slightly gravelly slightly sandy silty CLAY	19.9	47 - Sieved	37	25	12	-	
						-	-	-	-	-	-	
						-	-	-	-	-	-	

Preparation in accordance with BS1377-1:2016 where applicable. Atterberg 4 point preparation in accordance with BS EN ISO 17892-12:2018

Key

Atterberg Limits
4pt - BS EN ISO 17892-12:2018
(30° cone and increasing water contents) unless :

1pt - BS1377-2:1990 (CL.4.4)

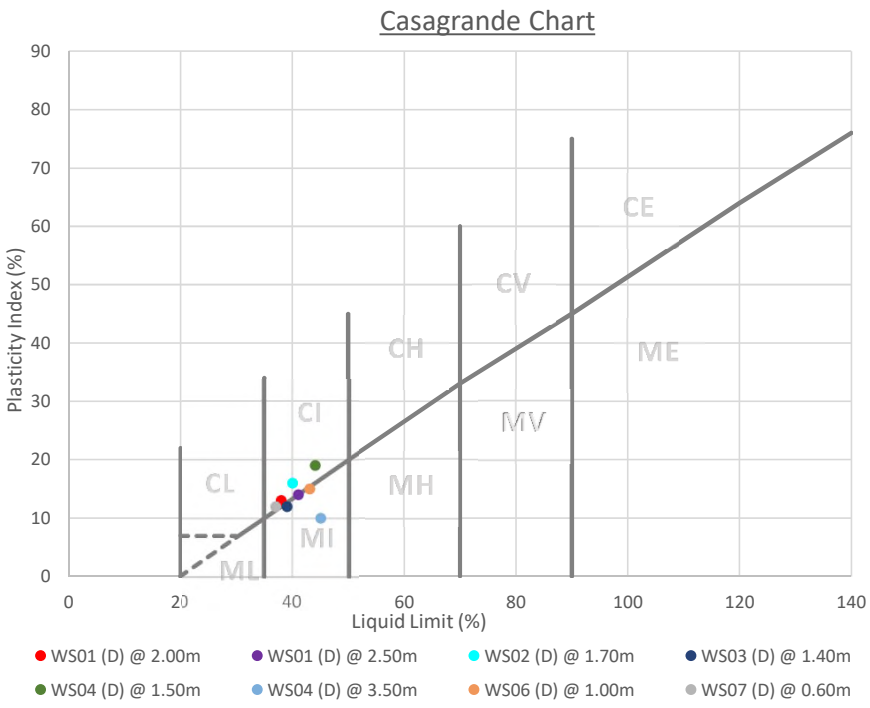
Water Content (wc) % BS EN ISO 17892-1:2014
Particle density BS1377-2:1990
sp - small pyknometer CL.8.3
gj - gas jar CL.8.2

Date	Approved By	Page No.	1
26/03/2022	Matt Stokes - Senior Technician	**KL001R Index Summary**	

Graphical Summary of Atterberg Test Results

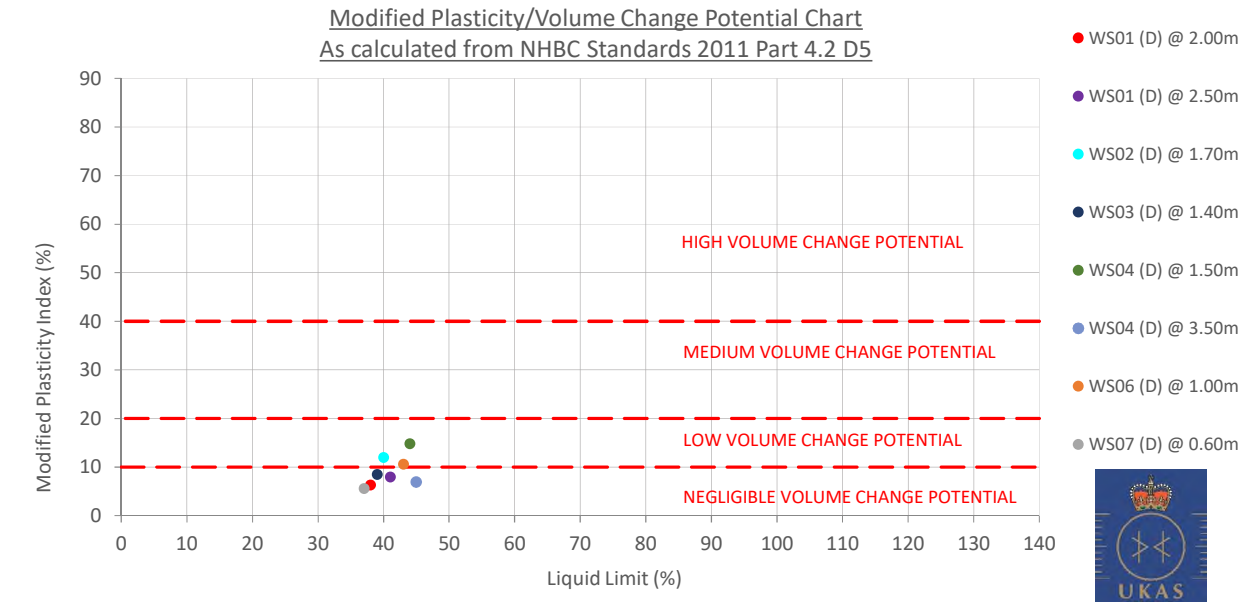
Unit 3 Brooklands,
Howden Road,
Tiverton,
Devon
EX16 5HW

Project No.	Project Name
14022	Dolcoath
Client Job No.	**Client**
-	Wheal Jane Ltd



Sample ID	Plasticity Index (%)	Modified Plasticity Index (%)
WS01 (D) @ 2.00m	13	6
WS01 (D) @ 2.50m	14	8
WS02 (D) @ 1.70m	16	12
WS03 (D) @ 1.40m	12	9
WS04 (D) @ 1.50m	19	15
WS04 (D) @ 3.50m	10	7
WS06 (D) @ 1.00m	15	11
WS07 (D) @ 0.60m	12	6
-	-	-
-	-	-

The Modified Plasticity Index (I'p) is defined as the Plasticity Index (Ip) of the soil multiplied by the percentage of particles less than 425µm.
ie. I'p x % less than 425um/100%



KL001a Index Graphical Summary	Approved By	Date
	David Trowbridge - Laboratory Manager	26/03/2022 15:03

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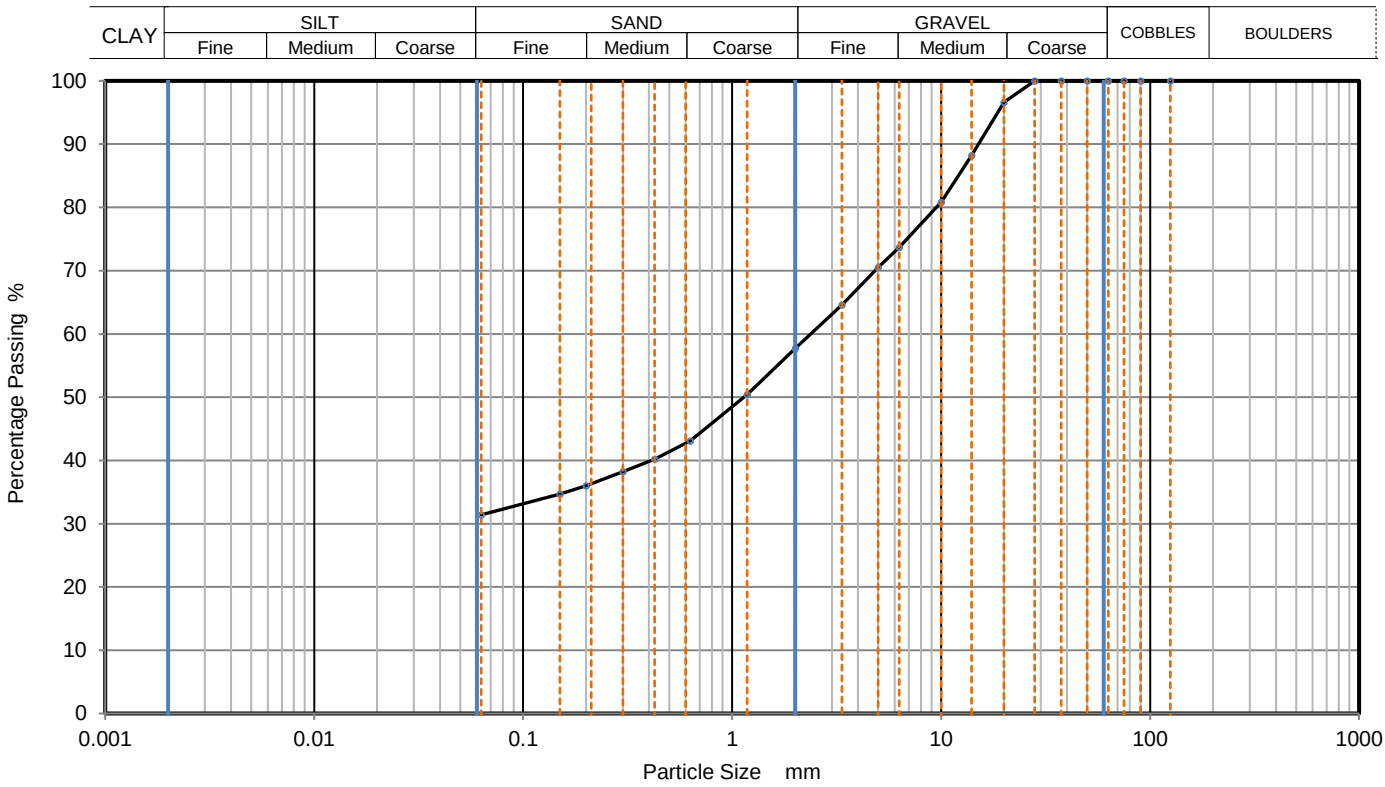
PARTICLE SIZE DISTRIBUTION

				Project No.	14022
				Borehole/Pit No.	WS02
Project Name	Dolcoath			Sample No.	
Soil Description	Brown very sandy very silty/clayey GRAVEL			Depth, m	2.00
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Test Method	BS EN ISO 17892-4: 2016, clause 5.2				



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	97		
14	88		
10	81		
6.3	74		
5	71		
3.35	65		
2	58		
1.18	50		
0.63	43		
0.425	40		
0.3	38		
0.2	36		
0.15	35		
0.063	31		

Dry Mass of sample, g	4388

Sample Proportions	% dry mass
Very coarse	0
Gravel	42
Sand	26
Fines <0.063mm	31

Grading Analysis		
D100	mm	
D60	mm	2.37
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks

Preparation and testing in accordance with BS EN ISO 17892-4: 2016

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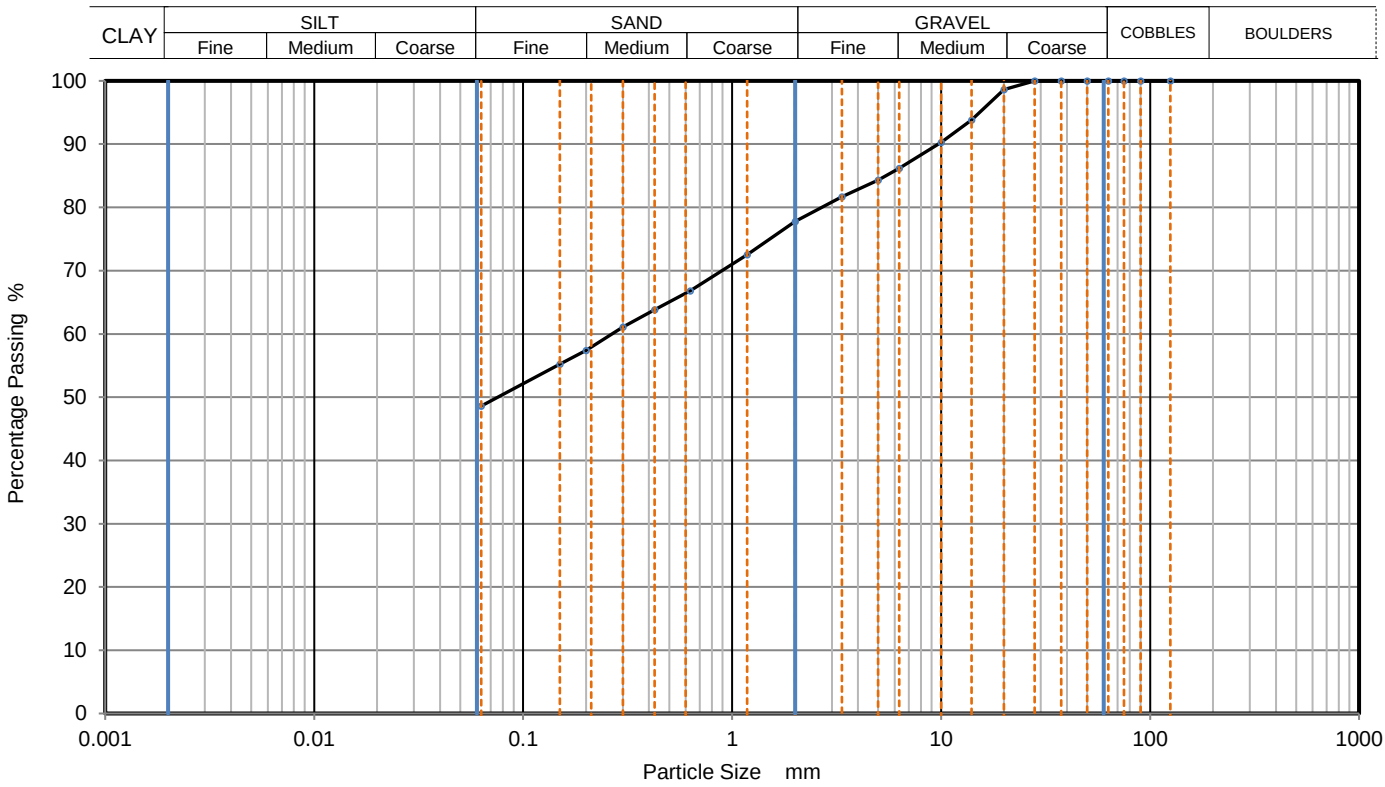
Approved by	Date	Sheet ID:
Matt Stokes - Senior Technician	26/03/2022	KL002R PSD

PARTICLE SIZE DISTRIBUTION

				Project No.	14022
				Borehole/Pit No.	WS03
Project Name	Dolcoath			Sample No.	
Soil Description	Yellowish brown slightly gravelly slightly sandy silty CLAY			Depth, m	2.00
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Test Method	BS EN ISO 17892-4: 2016, clause 5.2				



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	99		
14	94		
10	90		
6.3	86		
5	84		
3.35	82		
2	78		
1.18	73		
0.63	67		
0.425	64		
0.3	61		
0.2	57		
0.15	55		
0.063	49		

Dry Mass of sample, g	1673

Sample Proportions	% dry mass
Very coarse	0
Gravel	22
Sand	29
Fines <0.063mm	49

Grading Analysis		
D100	mm	
D60	mm	0.266
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS EN ISO 17892-4: 2016

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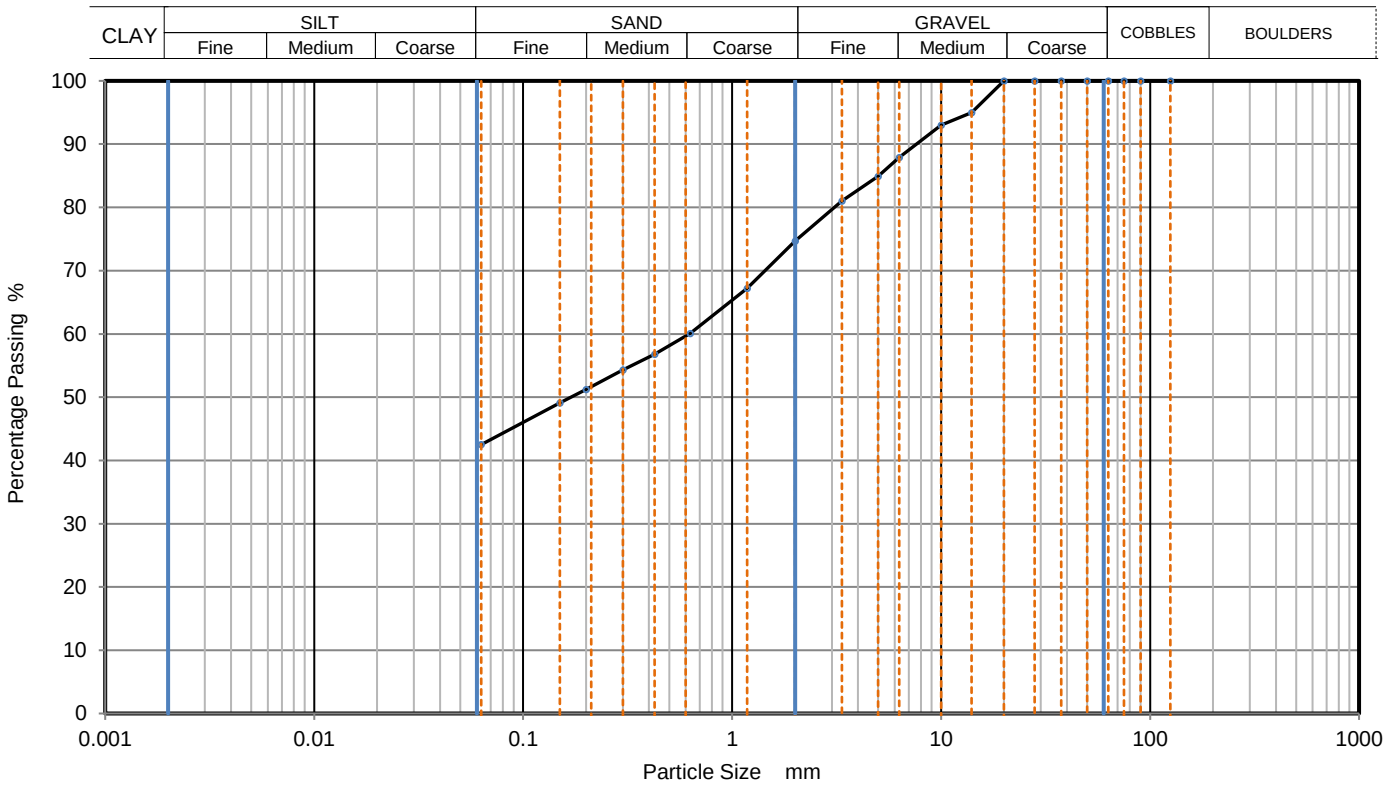
Approved by	Date	Sheet ID:
Matt Stokes - Senior Technician	26/03/2022	KL002R PSD

PARTICLE SIZE DISTRIBUTION

				Project No.	14022
				Borehole/Pit No.	WS04
Project Name	Dolcoath			Sample No.	
Soil Description	Yellowish brown and orangish brown slightly gravelly slightly sandy silty CLAY			Depth, m	4.00
Specimen Reference	2	Specimen Depth	m	Sample Type	B
Test Method	BS EN ISO 17892-4: 2016, clause 5.2				



Sieving		Sedimentation	
Particle Size mm	% Passing	Particle Size mm	% Passing
125	100		
90	100		
75	100		
63	100		
50	100		
37.5	100		
28	100		
20	100		
14	95		
10	93		
6.3	88		
5	85		
3.35	81		
2	75		
1.18	67		
0.63	60		
0.425	57		
0.3	54		
0.2	51		
0.15	49		
0.063	43		

Dry Mass of sample, g	891

Sample Proportions	% dry mass
Very coarse	0
Gravel	25
Sand	32
Fines <0.063mm	42

Grading Analysis		
D100	mm	
D60	mm	0.625
D30	mm	
D10	mm	
Uniformity Coefficient		
Curvature Coefficient		

Remarks
Preparation and testing in accordance with BS EN ISO 17892-4: 2016

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Accredited to ISO/IEC 17025:2017

Approved by	Date	Sheet ID:
Matt Stokes - Senior Technician	26/03/2022	KL002R PSD

APPENDIX C

Chemical Laboratory Results

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Analytical Report Number : 22-43293

Project / Site name:	Dolcaoth	**Samples received on:**	04/03/2022
Your job number:	20931	**Samples instructed on/ Analysis started on:**	04/03/2022
Your order number:	20931	**Analysis completed by:**	14/03/2022
Report Issue Number:	1	**Report issued on:**	14/03/2022
Samples Analysed:	13 soil samples		

Signed:

Anna Goc
Technical Reviewer (Reporting Team)
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193057	2193058	2193059	2193060	2193061
Sample Reference				WS01	WS01	WS01	WS02	WS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.10	3.00	0.50	0.75
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	24	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	13	33	18	16	12
Total mass of sample received	kg	0.001	NONE	0.7	0.8	0.9	0.8	0.7
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	Not-detected	-	-	Not-detected	-
Asbestos Analyst ID	N/A	N/A	N/A	EC			EC	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	7.3	8.4	8.2	7.9
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	440	700	220	220	590
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	61	39	85	99	320
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.03	0.019	0.043	0.05	0.16
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	30.3	19.3	42.7	49.7	161
Sulphide	mg/kg	1	MCERTS	< 1.0	1.8	< 1.0	< 1.0	4.9
Organic Matter (automated)	%	0.1	MCERTS	2.5	6	0.3	0.6	0.7
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.23	0.29	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.62	0.77	< 0.05	< 0.05	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.54	0.71	< 0.05	< 0.05	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.37	0.48	< 0.05	< 0.05	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.29	0.53	< 0.05	< 0.05	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.34	0.79	< 0.05	< 0.05	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.21	0.29	< 0.05	< 0.05	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.39	0.85	< 0.05	< 0.05	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.39	< 0.05	< 0.05	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.49	< 0.05	< 0.05	< 0.05
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	2.99	5.59	< 0.80	< 0.80	< 0.80

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193057	2193058	2193059	2193060	2193061
Sample Reference				WS01	WS01	WS01	WS02	WS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.10	3.00	0.50	0.75
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	300	120	990	720	630
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.2	< 0.2	0.4	0.5
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	46	37	110	110	110
Copper (aqua regia extractable)	mg/kg	1	MCERTS	180	78	410	350	300
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	57	18	57	61
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	33	26	110	71	72
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	240	140	1300	540	470
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-	< 10	< 10	< 10	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	< 2.0	-	-	-	6.1
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	-	25
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	< 8.0	-	-	-	35
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	MCERTS	< 10	-	-	-	65
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	< 0.001	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	< 2.0	-	-	-	13
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	-	-	-	32
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	< 10	-	-	-	71
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	MCERTS	< 10	-	-	-	120
VOCs								
Chloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193057	2193058	2193059	2193060	2193061
Sample Reference				WS01	WS01	WS01	WS02	WS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.10	3.00	0.50	0.75
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
2,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	< 1.0	-	-	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	< 1.0	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	< 1.0	-	-	-	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	< 0.2	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2

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Lab Sample Number				2193057	2193058	2193059	2193060	2193061
Sample Reference				WS01	WS01	WS01	WS02	WS02
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.10	1.10	3.00	0.50	0.75
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	< 0.2	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	< 0.1	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	< 0.1	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	0.23	-	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Carbazole	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	< 0.2	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	< 0.3	-	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	0.62	-	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	0.54	-	-	-	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	< 0.3	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.37	-	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	0.29	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	0.34	-	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	0.21	-	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.39	-	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	-	-	-	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

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Lab Sample Number				2193062	2193063	2193064	2193065	2193066
Sample Reference				WS02	WS03	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	0.40	3.00	0.30	0.50
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	16	10	17	15	5.8
Total mass of sample received	kg	0.001	NONE	0.8	0.8	0.9	0.9	0.7
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-	Amosite- Loose Fibres	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	Detected	-
Asbestos Analyst ID	N/A	N/A	N/A		EC		EC	

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8	8	-	-	7.6
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	-	-	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	180	200	-	-	54
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	30	56	-	-	10
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.015	0.028	-	-	0.0052
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	14.8	28	-	-	5.2
Sulphide	mg/kg	1	MCERTS	< 1.0	1.3	-	-	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	0.1	0.4	-	-	0.4

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	-	< 1.0

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	-	-	< 0.05

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	-	-	< 0.80

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Lab Sample Number				2193062	2193063	2193064	2193065	2193066
Sample Reference				WS02	WS03	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	0.40	3.00	0.30	0.50
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	240	690	760	440	33
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.3	< 0.2	0.4	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	-	-	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	78	200	91	110	6.7
Copper (aqua regia extractable)	mg/kg	1	MCERTS	420	440	480	280	22
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	45	17	100	13
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	47	79	69	110	5.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	620	590	550	450	34
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Petroleum Hydrocarbons								
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	< 10	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	-	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	-	-	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	-	-	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	MCERTS	-	-	-	-	< 10
VOCs								
Chloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	-	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193062	2193063	2193064	2193065	2193066
Sample Reference				WS02	WS03	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	0.40	3.00	0.30	0.50
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	-	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	-	-	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193062	2193063	2193064	2193065	2193066
Sample Reference				WS02	WS03	WS03	WS04	WS05
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				3.00	0.40	3.00	0.30	0.50
Date Sampled				02/03/2022	02/03/2022	02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193067	2193068	2193069
Sample Reference				WS06	WS07	WS08
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.30
Date Sampled				02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	25	< 0.1
Moisture Content	%	0.01	NONE	13	9	14
Total mass of sample received	kg	0.001	NONE	0.7	0.8	0.8
Asbestos in Soil Screen / Identification Name	Type	N/A	ISO 17025	-	-	-
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A		EC	EC
General Inorganics						
pH - Automated	pH Units	N/A	MCERTS	8.5	11.6	8.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Free Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Thiocyanate as SCN	mg/kg	5	NONE	< 5.0	< 5.0	< 5.0
Total Sulphate as SO4	mg/kg	50	MCERTS	630	3600	470
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	120	61	130
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.059	0.031	0.064
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	58.6	30.6	64.3
Sulphide	mg/kg	1	MCERTS	< 1.0	1.1	6.8
Organic Matter (automated)	%	0.1	MCERTS	1.4	0.8	1.6
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.4	< 0.05
Pyrene	mg/kg	0.05	MCERTS	< 0.05	0.37	< 0.05
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	0.24	< 0.05
Chrysene	mg/kg	0.05	MCERTS	< 0.05	0.2	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.22	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	0.16	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.21	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	0.09	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	0.14	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	2.03	< 0.80

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193067	2193068	2193069
Sample Reference				WS06	WS07	WS08
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.30
Date Sampled				02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	440	320	650
Boron (water soluble)	mg/kg	0.2	MCERTS	0.6	0.8	0.3
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	4	NONE	< 4.0	< 4.0	< 4.0
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	95	51	94
Copper (aqua regia extractable)	mg/kg	1	MCERTS	420	270	280
Lead (aqua regia extractable)	mg/kg	1	MCERTS	89	56	81
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	66	49	62
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	450	260	460
Monoaromatics & Oxygenates						
Benzene	µg/kg	1	MCERTS	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
p & m-xylene	µg/kg	1	MCERTS	-	-	< 1.0
o-xylene	µg/kg	1	MCERTS	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0
Petroleum Hydrocarbons						
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	< 10	180	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	-	-	< 1.0
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	-	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	< 8.0
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	MCERTS	-	-	< 10
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.001	MCERTS	-	-	< 0.001
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	-	-	< 1.0
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	-	-	< 2.0
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	< 10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	MCERTS	-	-	< 10
VOCs						
Chloromethane	µg/kg	1	ISO 17025	-	-	< 1.0
Chloroethane	µg/kg	1	NONE	-	-	< 1.0
Bromomethane	µg/kg	1	ISO 17025	-	-	< 1.0
Vinyl Chloride	µg/kg	1	NONE	-	-	< 1.0
Trichlorofluoromethane	µg/kg	1	NONE	-	-	< 1.0
1,1-Dichloroethene	µg/kg	1	NONE	-	-	< 1.0
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	1	ISO 17025	-	-	< 1.0
Cis-1,2-dichloroethene	µg/kg	1	MCERTS	-	-	< 1.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	-	-	< 1.0
1,1-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0

Analytical Report Number: 22-43293
Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193067	2193068	2193069
Sample Reference				WS06	WS07	WS08
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.30
Date Sampled				02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
2,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0
Trichloromethane	µg/kg	1	MCERTS	-	-	< 1.0
1,1,1-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0
1,2-Dichloroethane	µg/kg	1	MCERTS	-	-	< 1.0
1,1-Dichloropropene	µg/kg	1	MCERTS	-	-	< 1.0
Trans-1,2-dichloroethene	µg/kg	1	NONE	-	-	< 1.0
Benzene	µg/kg	1	MCERTS	-	-	< 1.0
Tetrachloromethane	µg/kg	1	MCERTS	-	-	< 1.0
1,2-Dichloropropane	µg/kg	1	MCERTS	-	-	< 1.0
Trichloroethene	µg/kg	1	MCERTS	-	-	< 1.0
Dibromomethane	µg/kg	1	MCERTS	-	-	< 1.0
Bromodichloromethane	µg/kg	1	MCERTS	-	-	< 1.0
Cis-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0
Trans-1,3-dichloropropene	µg/kg	1	ISO 17025	-	-	< 1.0
Toluene	µg/kg	1	MCERTS	-	-	< 1.0
1,1,2-Trichloroethane	µg/kg	1	MCERTS	-	-	< 1.0
1,3-Dichloropropane	µg/kg	1	ISO 17025	-	-	< 1.0
Dibromochloromethane	µg/kg	1	ISO 17025	-	-	< 1.0
Tetrachloroethene	µg/kg	1	NONE	-	-	< 1.0
1,2-Dibromoethane	µg/kg	1	ISO 17025	-	-	< 1.0
Chlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0
1,1,1,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0
Ethylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
p & m-Xylene	µg/kg	1	MCERTS	-	-	< 1.0
Styrene	µg/kg	1	MCERTS	-	-	< 1.0
Tribromomethane	µg/kg	1	NONE	-	-	< 1.0
o-Xylene	µg/kg	1	MCERTS	-	-	< 1.0
1,1,2,2-Tetrachloroethane	µg/kg	1	MCERTS	-	-	< 1.0
Isopropylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
Bromobenzene	µg/kg	1	MCERTS	-	-	< 1.0
n-Propylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0
2-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0
4-Chlorotoluene	µg/kg	1	MCERTS	-	-	< 1.0
1,3,5-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0
tert-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
1,2,4-Trimethylbenzene	µg/kg	1	ISO 17025	-	-	< 1.0
sec-Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
1,3-Dichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0
p-Isopropyltoluene	µg/kg	1	ISO 17025	-	-	< 1.0
1,2-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0
1,4-Dichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0
Butylbenzene	µg/kg	1	MCERTS	-	-	< 1.0
1,2-Dibromo-3-chloropropane	µg/kg	1	ISO 17025	-	-	< 1.0
1,2,4-Trichlorobenzene	µg/kg	1	MCERTS	-	-	< 1.0
Hexachlorobutadiene	µg/kg	1	MCERTS	-	-	< 1.0
1,2,3-Trichlorobenzene	µg/kg	1	ISO 17025	-	-	< 1.0

SVOCs

Aniline	mg/kg	0.1	NONE	-	-	< 0.1
Phenol	mg/kg	0.2	ISO 17025	-	-	< 0.2
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	< 0.2
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2

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Project / Site name: Dolcaoth
Your Order No: 20931

Lab Sample Number				2193067	2193068	2193069
Sample Reference				WS06	WS07	WS08
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				0.40	0.20	0.30
Date Sampled				02/03/2022	02/03/2022	02/03/2022
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	< 0.1
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	< 0.2
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	< 0.1
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3
Hexachloroethane	mg/kg	0.05	MCERTS	-	-	< 0.05
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3
4-Methylphenol	mg/kg	0.2	NONE	-	-	< 0.2
Isophorone	mg/kg	0.2	MCERTS	-	-	< 0.2
2-Nitrophenol	mg/kg	0.3	MCERTS	-	-	< 0.3
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	< 0.3
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	< 0.3
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3
Naphthalene	mg/kg	0.05	MCERTS	-	-	< 0.05
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	< 0.3
4-Chloroaniline	mg/kg	0.1	NONE	-	-	< 0.1
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	< 0.1
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	< 0.1
2,4,6-Trichlorophenol	mg/kg	0.1	MCERTS	-	-	< 0.1
2,4,5-Trichlorophenol	mg/kg	0.2	MCERTS	-	-	< 0.2
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	< 0.1
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	< 0.1
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	< 0.1
2,6-Dinitrotoluene	mg/kg	0.1	MCERTS	-	-	< 0.1
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	-	-	< 0.05
2,4-Dinitrotoluene	mg/kg	0.2	MCERTS	-	-	< 0.2
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	< 0.2
4-Chlorophenyl phenyl ether	mg/kg	0.3	ISO 17025	-	-	< 0.3
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2
4-Nitroaniline	mg/kg	0.2	MCERTS	-	-	< 0.2
Fluorene	mg/kg	0.05	MCERTS	-	-	< 0.05
Azobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	< 0.2
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	< 0.3
Phenanthrene	mg/kg	0.05	MCERTS	-	-	< 0.05
Anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05
Carbazole	mg/kg	0.3	MCERTS	-	-	< 0.3
Dibutyl phthalate	mg/kg	0.2	MCERTS	-	-	< 0.2
Anthraquinone	mg/kg	0.3	MCERTS	-	-	< 0.3
Fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05
Pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05
Butyl benzyl phthalate	mg/kg	0.3	ISO 17025	-	-	< 0.3
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05
Chrysene	mg/kg	0.05	MCERTS	-	-	< 0.05
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	-	-	< 0.05
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	< 0.05
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	< 0.05

U/S = Unsuitable Sample I/S = Insufficient Sample

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* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2193057	WS01	None Supplied	0.1	Brown clay and loam with gravel and stones.
2193058	WS01	None Supplied	1.1	Brown clay and loam with gravel and vegetation.
2193059	WS01	None Supplied	3	Brown clay and sand with gravel.
2193060	WS02	None Supplied	0.5	Brown clay and sand with gravel.
2193061	WS02	None Supplied	0.75	Brown clay and sand with gravel.
2193062	WS02	None Supplied	3	Brown clay and sand with gravel.
2193063	WS03	None Supplied	0.4	Brown clay and sand with gravel.
2193064	WS03	None Supplied	3	Brown clay and sand with gravel.
2193065	WS04	None Supplied	0.3	Brown clay and loam with gravel and vegetation.
2193066	WS05	None Supplied	0.5	Brown sandy loam with gravel and vegetation.
2193067	WS06	None Supplied	0.4	Brown clay and loam with gravel and vegetation.
2193068	WS07	None Supplied	0.2	Brown loam and sand with gravel and stones.
2193069	WS08	None Supplied	0.3	Brown clay and loam with gravel and vegetation.

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with disperion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	NONE
Free cyanide in soil	Determination of free cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Thiocyanate in soil	Determination of thiocyanate in soil by extraction in water followed by acidification followed by addition of ferric nitrate followed by discrete analyser (spectrophotometer).	In-house method	L082-PL	D	NONE
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds in soil by extraction in dichloromethane and hexane followed by GC-MS.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS

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Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

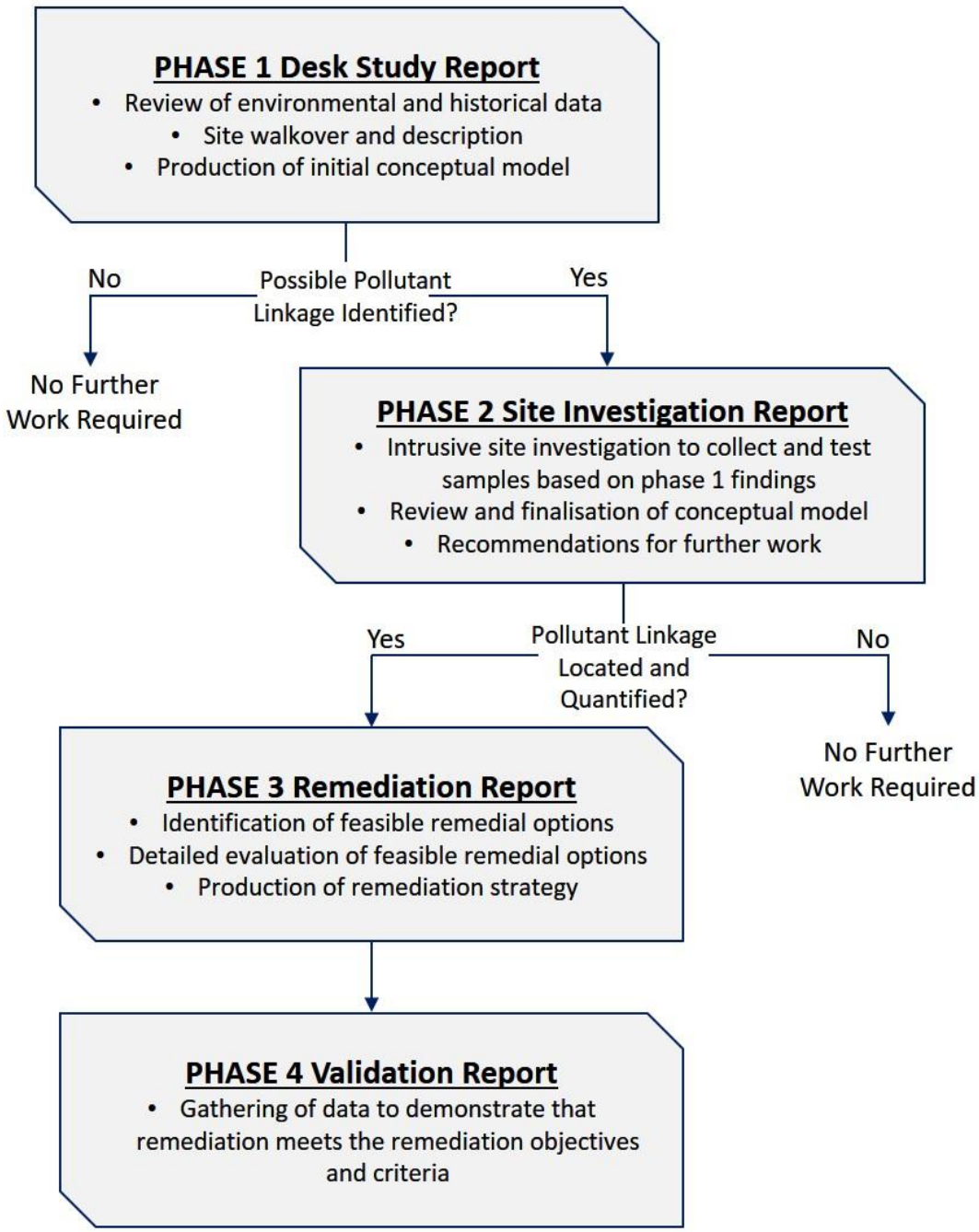
Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

The Phased Approach to Land Contamination

As set out in Contaminated Land Report 11 - Model Procedures for the Management of Land Contamination. Environment Agency Guidelines

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