Phase 2 Ground Investigation

Boscawen Park, Malpas Road, Truro TR1 1SG

21 February 2024

Wheal Jane Consultancy

Old Mine Offices, Wheal Jane, Baldhu, Truro, Cornwall, TR3 6EE

01872 560200www.wheal-jane-consultancy.co.uk

consultancy@wheal-jane.co.uk

SI21757/PH2

DOCUMENT CONTROL SHEET

Client	Ward Williams Associates
Project Title	Boscawen Park, Malpas Road, Truro TR1 1SG
Document Title	Phase 2 Site Investigation
Document No.	SI21757/PH2

Date	Status	Revision	Prepared By	Approved By
21 February 2024	Final	-	TG/MV	WJC

Contents

FIGURES

APPENDICES

TABLES

EXECUTIVE SUMMARY

Objectives	
Wheal Jane Consultancy was commissioned by Ward Williams Associates to undertake an intrusive investigation on the site of a public park and commercial development.	
Site Investigation	
Previous Investigations	A Phase 1 environmental risk assessment was undertaken by Wheal Jane Consultancy on 7th November 2023.
Site Works	Samples were taken during an intrusive investigation from 8 machine excavated trial pits and 10 windowless sampling boreholes. 5 DCP (Dynamic Cone Penetrometer) tests were also conducted to obtain CBR values.
Ground Conditions	Partial ground profiles were obtained, showing three distinct compositions of made ground (topsoil, gravel and landfill waste) overlying deposits of alluvium.
Groundwater	Groundwater was encountered during the site investigation in all exploratory holes and trial pits between 0.40 – 0.50 m.

Conclusions

- The site was subject to a Phase 2 Ground Investigation to determine the level and risk of potential contamination, as well as the stability and geotechnical parameters of the underlying material.
- **All tested contaminants, excluding Arsenic within the Public Park scenario, were recorded to occur in concentrations below the relevant guideline values.**
- Additional bioaccessibility testing for Arsenic was conducted and used to produce a revised site-specific assessment criterion of 3710 mg/kg. **The average concentration for Arsenic on site is 220 mg/kg, which significantly below the site-specific assessment criterion, and is thus considered to present a Low Risk.**
- Due to the type of fill material and the high organic matter content (up to 20%) encountered within the landfill deposits, the site is considered to have a **high ground gas generation potential. The historic landfill site use therefore presents a Moderate Risk to the proposed development.**
- It is considered that **the site is likely to be suitable for the proposed development, once the recommendations within this report have been carried out**.
- It is considered **that conventional strip foundations will not be appropriate at the site**, **due to the extent and geotechnical properties of the Made Ground across the site**.
- Based on the In-situ and laboratory testing, **it is considered that a piled foundation solution is appropriate, with end-bearing piles driven through the Made Ground and Alluvium and socketed in the underlying Porthscatho Formation at an undetermined depth**.
- **SPT testing for the majority of exploratory boreholes did not reach the required 'N' values for refusal**. This is due to the advancement of exploratory holes being abandoned on safety grounds on advice provided by a UXO specialist during the

site works. **To determine bedrock depth and competency, additional testing would be required with appropriate equipment such as Nonmetallic (NM) Composite materials used for windowless sampler casing to advance the exploratory holes to greater depths, and downhole UXO scanning equipment.**

Recommendations

- **It is recommended that a course of ground gas monitoring is conducted in the areas of the proposed Sports Hub and Café** (and any other enclosed structures).
- According to the guidance published in CIRIA 665, for a low sensitivity (commercial) development with a high gas generation potential, 12 monitoring visits over a period of 6 months may be considered appropriate.
- **Pending the outcome from a course of gas monitoring, gas protection measures may be required for the proposed Sports Hub and Café building.**
- **It may be prudent to conduct further ground testing to determine the depth of bedrock on site with appropriate drilling and UXO equipment.** Due to the potential presence of UXO on site any further investigation is not guaranteed to reach competent bedrock.
- 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 2 Ground Investigation at a site known as Boscawen Park, Malpas Road, Truro TR1 1SG.

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 2 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 at Malpas Road approximately 1.4 km to the southeast of the city centre of Truro. The site is approximately centred on National Grid Reference SW 8345 4358.

2.1.2 The site is irregular in shape and covers an area of approximately 10.8 ha.

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	Malpas road with residential dwellings beyond
East	Malpas road with trees and fields beyond
South	Truro river and Calenick Creek
West	Truro river and Newham Industrial Estate

2.3 Proposed Development

2.3.1 It is proposed to develop the site with improved play areas, performance spaces, a new 3G all-weather sports pitch, water play area, and a new sports hub/café.

2.3.2 An indicative proposed site plan is contained in Figure 2.3, to the rear of the report.

3 SITE INVESTIGATION

3.1 Phase 1 Findings

3.1.1 A Phase 1 Desk Study was undertaken by Wheal Jane Consultancy in November 2023. (Ref: 21757/PH1; dated 17/11/23).

3.1.2 The risks identified in the desk study were summarised within the Conceptual Site Model (CSM). It was concluded that an investigation would be required involving soil sampling and testing; focussing specifically on contaminants associated with historic landfill, including Metals, Total Petroleum Hydrocarbons (TPH), and Polycyclic Aromatic Hydrocarbons (PAH).

3.2 Site Works

3.2.1 An intrusive site investigation was conducted over two days from 30/11/23 to 01/12/23. The investigation was overseen by a geoenvironmental engineer from Wheal Jane Consultancy.

3.2.2 All borehole and trial pit locations were scanned at regular intervals by an appropriately qualified UXO specialist, with the holes further advanced or abandoned on their advice. As a result, many exploratory holes did not reach refusal and were terminated on the grounds of safety advice given by the UXO specialist.

3.2.3 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
Trial Pit	TP01 – TP08	1.00 – 2.80	Undertaken for site coverage.
Windowless Sample Borehole	WS01 – WS10	1.00 – 4.20	Undertaken for site coverage and to aid foundation design.
CBR Testing (DCP Method)	DCP01-05	0.81 – 0.96	Undertaken to aid 3G pitch design.

3.2.4 Exploratory hole logs are included as Appendix A.

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

3.3 Trial Pitting

3.3.1 8 nr. Trial Pits, designated TP01-TP08, were advanced to depths of between 1.00 – 2.80 mBGL using a JCB 3CX excavator on the 30/11/23 and 01/12/23. Representative soil samples were taken at regular intervals for geotechnical and environmental analysis, and logged on site by a suitably qualified Geoenvironmental Engineer.

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

3.3.3 All trial pits were backfilled with arisings upon completion.

3.3.4 Trial Pit photographs are included as Appendix B.

3.4 Infiltration Testing

3.4.1 The execution of infiltration testing, in accordance with BRE 365, was initially planned within the Trial Pits. However, the presence of shallow groundwater and Made Ground across the site precluded the possibility of conducting this testing.

3.5 Windowless Sample Boring

3.5.1 10 nr. Windowless Sample Boreholes, designated WS01 – WS10, were advanced to depths of between 1.00 – 4.20 mBGL using a Premier 110 Windowless Sampler on the 30/11/23 and 01/12/23. 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 Geoenvironmental Engineer.

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

3.6 CBR Testing (DCP Method)

3.6.1 CBR Testing using the Dynamic Cone Penetrometer method was employed across the site to calculate the California Bearing Ratio (CBR) of the strata.

3.6.2 5 nr. DCP tests, designated DCP01 – DCP05, were advanced to depths of up to approximately 0.81 – 0.96 m BGL using a hand operated Dynamic Cone Penetrometer on 01/12/23.

3.6.3 The locations of all DCP tests can be seen on the exploratory hole location plan, contained as Figure 3.1.

3.6.4 CBR logs are contained as Appendix A.

3.7 Geotechnical Sampling and Testing

3.7.1 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

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

3.7.3 All samples were tested by a UKAS accredited laboratory.

3.7.4 The results are included as Appendix C.

3.8 Chemical Sampling and Testing

3.8.1 The proposed end use of the majority of site is for a public park, including a 3G sports pitch. For the eastern area of the site, approximately above the present grounds team yard, it is proposed to construct support facilities and commercial café. The subsequent data analysis will be conducted using these settings to test for levels of contaminants against generic assessment criteria.

3.8.2 The Phase 1 report highlighted Metals, Total Petroleum Hydrocarbons (TPH), and Polycyclic Aromatic Hydrocarbons (PAH) as the primary contaminants of concern, the sampling was designed to target the proposed areas of soft landscaping, as well as to provide site coverage. Such areas of soft landscaping provide the most exposure to potentially contaminated soils.

3.8.3 The ground investigation works also encountered a significant presence of Made Ground therefore further testing for asbestos were undertaken.

3.8.4 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.

3.8.5 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
- VOCs and SVOCs
- Arsenic Bioaccessibility

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

3.8.2 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 Made Ground across the entire footprint of the site. This Made Ground is anticipated to overlie superficial deposits of Marine and Estuarine Alluvium of unknown thickness.

4.1.2 The bedrock underlying the superficial deposits is anticipated to be the Portscatho Formation of Devonian Age, described as "Interbedded sandstone beds (up to 2 m) and slaty mudstone".

4.1.3 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 (Topsoil)	0.00	0.40	0.20	MADE GROUND. Grass over mid-brown, very clayey, sandy, gravelly TOPSOIL.
Made Ground (Gravel)	0.10	1.50	1.00	MADE GROUND. Light to mid-brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast.
Made Ground (Landfill Waste)	0.80	2.80	Unproven	Black, clayey, sandy, cobbly, fine to coarse, angular to sub-angular GRAVEL of mudstone and anthropogenic components including ceramics and glass
Superficial Alluvium	1.20	3.0	Unproven	Very soft, grey to black, slightly silty organic CLAY. Preserved roots and tree branches. Rich in organic material.

4.2 Made Ground (Topsoil)

4.2.1 Made Ground (Topsoil) was encountered in all grassed areas of the site to depths of between 0.0 – 0.40 mBGL.

4.2.2 The unit can be generally described as "MADE GROUND. Grass over mid-brown, very clayey, sandy, gravelly TOPSOIL. Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common Rootlets."

4.2.3 No anthropogenic components were noted within the material. It is likely that this is imported fill material, used to create a level surface suitable for a playing field.

4.2.4 Standard Penetration Tests (SPTs) were not completed within the Made Ground (Topsoil).

4.3 Made Ground (Gravel)

4.3.1 Made Ground (Gravel) was encountered across the site to depths of between 0.10 – 1.50 mBGL.

4.3.2 The unit can be generally described as "MADE GROUND. Light to mid-brown, very clayey, sandy, angular to sub-rounded, fine to coarse GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast."

4.3.3 Occasional cobbles of mudstone, granite, and ballast were noted.

4.3.4 Anthropogenic components were noted within the material including bricks, ballast, and road planings.

4.3.5 Olfactory signs of hydrocarbons were noted from this stratum.

4.3.6 Standard Penetration Tests (SPTs) were not completed within the Made Ground (Gravel) and are summarised below.

Table 4.3: Standard Penetration Tests within Made Ground (Gravel)

Depth (mBGL)	SPT 'N' Value		
	Min	Max	Average
2.20	3	19	***11***

4.4 Made Ground (Landfill Waste)

4.4.1 Made Ground (Landfill Waste) was encountered across the site to depths of between 0.80 – 2.80 mBGL.

4.4.2 The unit can be generally described as "MADE GROUND. Black clayey, sandy, angular to

4.4.3 sub-angular, fine to coarse GRAVEL of anthropogenic fill materials, including glass bottles, ceramics, and metal. Landfill waste."

4.4.4 Anthropogenic components were noted within the material including glass bottles, ceramics, clay water pipes, wires, bricks, and concrete blocks.

4.4.5 Olfactory signs of contamination were noted from this stratum.

4.4.6 Standard Penetration Tests (SPTs) were completed at regular intervals within the Made Ground (Landfill Waste) and are summarised below.

Table 4.4: Standard Penetration Tests within Made Ground (Landfill Waste)

Depth (mBGL)	SPT 'N' Value		
	Min	Max	Average
1.00	4	15	***9.5***

4.5 Alluvium

4.5.1 Material described as Alluvium was encountered in the northwestern area of the site in TP03 at 1.20 mBGL, and in WS01 at 1.90 mBGL.

4.5.2 The unit may be generally described as "Soft to very soft, grey to black, silty, sandy CLAY. Preserved roots and tree branches. Rich in organic material."

4.5.3 The material was subject to plasticity testing as shown to be a CLAY of high plasticity.

4.5.4 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 Medium volume change potential.

4.6 Groundwater

4.6.1 Groundwater was encountered all exploratory holes at depths of between 0.40 – 1.50 mBGL. The depth groundwater was encountered in each hole is included below.

Table 4.6: Groundwater Encountered

Exploratory Hole	Groundwater Level (mBGL)	Stratum
TP01	0.75	MADE GROUND (Gravel)

TP02	1.00	MADE GROUND (Landfill Waste)
TP03	1.30	Alluvium
TP04	0.90	MADE GROUND (Gravel)
TP05	1.50	MADE GROUND (Gravel)
TP06	1.10	MADE GROUND (Landfill Waste)
TP07	0.40	MADE GROUND (Gravel)
TP08	1.30	MADE GROUND (Landfill Waste)
WS01	0.50	MADE GROUND (Gravel)
WS02	0.50	MADE GROUND (Gravel)
WS03	0.50	MADE GROUND (Gravel)
WS04	0.40	MADE GROUND (Gravel)
WS05	0.40	MADE GROUND (Gravel)
WS06	1.40	MADE GROUND (Landfill Waste)
WS07	1.50	MADE GROUND (Landfill Waste)
WS08	1.30	MADE GROUND (Landfill Waste)
WS09	1.50	MADE GROUND (Landfill Waste)
WS10	1.40	MADE GROUND (Landfill Waste)

4.7 Contamination Indications

4.7.1 Evidence of potential contamination includes the anthropogenic components mentioned in sections 4.2, 4.3, and 4.4, as well as the hydrocarbon odour described in TP02.

5 GEOTECHNICAL ASSESSMENT

5.1 Introduction

5.1.1 It is proposed to develop the site with improved play areas, performance spaces, a new 3G all-weather sports pitch, water play area, and a new sports hub/café.

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

5.2 3G Pitch Design

5.2.1 Geotechnical testing in accordance with the 3G pitch ground investigation specifications can be found in Appendix E. Specifically, testing completed on samples from TP01 – TP05, WS01 – WS05, and DCP01 – DCP05 are the results relevant to this aspect of the ground investigation and proposed development in this area of the site. See Figure 3.1 for a plan of the exploratory hole locations.

5.3 Foundation Options

5.3.1 Based on the ground conditions encountered it is considered that conventional strip foundations would not be suitable to support the proposed new structures.

5.3.2 Raft foundations are a solution often applied to soils with a low bearing capacity such as alluvial deposits, with the aim of spreading the foundation pressure over as large an area as possible.

5.3.3 Based on the ground conditions encountered in the absence of definitive loads and dimensions it is considered that a minimum of a 300 mm raft foundation, placed at approximately 2.00 mBGL, may be appropriate to support the new 3G sports pitch. The raft should be founded on granular infill placed and fully compacted in layers in accordance with the engineer's specification. It is recommended that the infill is not less than 50% of the foundation depth and should not exceed 1.25 m. It is recommended that the infill extends beyond the edge of the foundation by a distance equal to the natural angle of response of in the infill plus 0.50 m. Design of a raft foundation would be undertaken by the structural engineers.

5.3.4 Due to the presence of Made Ground across the site to a depth of at least 2.80 m a piled raft solution may be more suitable to limit the potential for differential settlement. This method is often employed where competent strata is not present until a depth >2.00 mBGL.

5.3.5 The possible presence of UXO may result in a piled foundation being unsuitable.

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

5.4 Excavations and Earthworks

5.4.1 Excavations to at least 1.20 m 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 1.20 m 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 be encountered in shallow excavations.

5.5 Drainage

5.5.1 Due to the encountered Made Ground across all areas of the site, and the presence of shallow groundwater, BRE 365 soakaway tests could not be completed on site.

5.6 Roads and Hardstanding

5.6.1 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.

5.6.2 It is recommended that for formation prepared in the Made Ground (Gravel), a CBR value of 9 % may be adopted for design purposes, derived from CBR (DCP) testing on-site.

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

5.6.4 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 across the site of <10 to 1600 mg/l, with pH values of 5.5 – 7.7.

5.7.2 Based on the above results, the Design Sulphate Class varies across the site. The majority of the site may be classified as Design Sulphate Class DS-1, in the areas of TP01, TP02, TP04, WS03, WS04, WS05, WS06, WS07, WS08, WS09,

5.7.3 The areas surrounding TP03, TP05, and WS10, may be classified as DS-2.

5.7.4 The Aggressive Chemical Environment for Concrete (ACEC) class is based upon the pH and mobility of groundwater, as groundwater was encountered across the site mobile groundwater was considered. The results indicate that the soils on site may generally fall into class AC-1s (surrounding TP01, TP02, TP04, WS03, WS04, WS05, WS06, WS07, WS08).

5.7.5 The soils in the area of TP03, TP05, and WS10, may be classified as ACEC class AC-2.

6 CONTAMINATION ASSESSMENT

6.1 Comparison with Generic Assessment Criteria (GACs) – 3G Pitch and Playing Fields

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 the sports and playing fields, the Public Open Space scenario 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 (Public Open Space, 6% organic matter; based on the average value recorded – all values in mg/kg unless stated)*

Contaminant	GAC's: S4UL's – POS (unless stated)	Minimum	Maximum	Exceedances
Metals				
Arsenic	170	35	1800	**4**
Boron	46000	0.5	9.6	0
Cadmium	560	< 0.2	< 0.2	0
Chromium (III)	33000	16	36	0
Chromium (VI)	220	< 1.8	< 1.8	0
Copper	44000	45	1100	0
Lead	1300 (C4SL)	39	1100	0
Mercury (inorganic)	240	< 0.3	2.5	0
Nickel	800	22	358	0
Selenium	1800	< 1.0	< 1.0	0
Zinc	170000	100	1800	0
General				
Asbestos	N/A	Not detected		N/A
pH	N/A	5.6	7.7	N/A

Organic Matter %	N/A	2.7	14	N/A
Sulphates (water soluble, g/l)	N/A	0.0278	1.6	N/A
Cyanide (total)	23 (USEPA)	< 1.0	3	0
Phenols	1300	< 1.0	< 1.0	0
Organics				
Polycyclic Aromatic Hydrocarbons (PAH, 16)				
Naphthalene	3000	0.08	2.3	0
Acenaphthylene	30000	< 0.05	0.31	0
Acenaphthene	30000	< 0.05	0.48	0
Fluorene	20000	< 0.05	0.73	0
Phenanthrene	6300	0.12	1.6	0
Anthracene	150000	< 0.05	0.4	0
Fluoranthene	6400	0.17	2.5	0
Pyrene	15000	0.15	2.3	0
Benzo(a)anthracene	62	0.08	1.5	0
Chrysene	120	0.12	1.5	0
Benzo(b)fluoranthene	16	0.14	2.2	0
Benzo(k)fluoranthene	440	0.06	1.1	0
Benzo(a)pyrene	13	0.07	1.7	0
Indeno (123-cd) pyrene	180	< 0.05	1.2	0
Dibenzo(ah)anthracene	1.4	< 0.05	0.21	0
Benzo(ghi)perylene	1600	< 0.05	1.1	0
PAH (Total 16)	N/A	1.01	20	0
Total Petroleum Hydrocarbons (TPH)				
Benzene	110	< 0.05	< 0.05	0
Toluene	100000	< 0.05	< 0.05	0
Ethylbenzene	27000	< 0.05	< 0.05	0
o-xylene	33000	< 0.05	< 0.05	0

m & p-xylene	31000	< 0.05	< 0.05	0
Methyl Tertiary Butyl Ether (MTBE) (EIC/AGS/CL:AIRE)	120	< 0.05	< 0.05	0
Aliphatic >C5-C6	180000	< 0.020	< 0.020	0
Aliphatic >C6-C8	320000	< 0.020	< 0.020	0
Aliphatic >C8-C10	21000	< 0.050	< 0.050	0
Aliphatic >C10-C12	24000	< 1.0	< 1.0	0
Aliphatic >C12-C16	26000	< 2.0	< 2.0	0
Aliphatic >C16-C21	490000	< 8.0	< 8.0	0
Aliphatic >C21-C35	490000	< 8.0	150	0
Aromatic >C5-C7	92000	< 0.010	<0.010	0
Aromatic >C7-C8	100000	< 0.010	< 0.010	0
Aromatic >C8-C10	9300	< 0.050	< 0.050	0
Aromatic >C10-C12	10000	< 1.0	< 1.0	0
Aromatic >C12-C16	10000	< 2.0	4.6	0
Aromatic >C16-C21	7800	< 10	25	0
Aromatic >C21-C35	7900	16	92	0

6.1.3 VOCs and SVOCs were also tested from TP05 at 2.00 mBGL, all of which were below their respective guideline concentrations.

6.1.4 Soil pH values ranged from 5.6 to 7.7 with an average of 6.6.

6.1.5 Soil Organic Matter (SOM) testing was undertaken on 6 no. samples. An average value of 7.4 % was calculated, resulting in a value of 6 % SOM being adopted.

6.1.6 No asbestos was recorded during testing.

6.1.7 Elevated levels of heavy metals were noted across the site, in particular Arsenic. Exceedances were within the MADE GROUND (Landfill), Tarmac, and Superficial Alluvium Strata. A maximum Arsenic level of 1800 mg/kg was recorded in TP02 at 1.00 m, within the MADE GROUND (Landfill) stratum, although this is considered to be anomalous. Typical exceedances ranged from 230 –

770 mg/kg, with an average concentration across the site of 220 mg/kg when the anomalous value is removed.

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 Public Open Space scenario. Values for average soil pH and soil organic matter were also included (6.6, and 7.4 %, 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	**36.43 %**	**0.00 %**	**63.57 %**

6.1.10 The above information is also contained as Appendix D.

6.1.11 The bioaccessibility of arsenic was tested on samples from TP02, TP03, TP05, and TP07, at depths of between 0.30 to 1.40 mBGL. This type of testing shows the extent to which ingested contaminants are likely to be absorbed by the body. The testing produced maximum bioaccessible fraction values of 1.7 % for arsenic. The CLEA Software (Environment Agency) was then used to produce new site-specific assessment criteria for arsenic in the soil. The site-specific parameters listed below were entered into the software based on the plans and original site investigation.

6.1.12 **Table 6.3**: CLEA Software Inputs

CLEA Inputs	
Land Use Setting	Public Open Space (Park C4SL)
Receptor	Female child
Building	No building
Soil Type	Sandy Loam

pH	6.60
Soil Organic Matter	7.40 %
Relative Bioaccessibility Arsenic	1.7 %

6.1.13 A revised site-specific assessment criterion of 3710 mg/kg for Arsenic in the soil was produced by the software. The average concentration for Arsenic on site is 220 mg/kg, which significantly below the site-specific assessment criterion.

6.2 Comparison with Generic Assessment Criteria (GACs) – Sports Hub and Café

6.2.1 The laboratory results are contained as Appendix C.

6.2.2 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 the eastern area of the site to include a sport support facility and café, the Commercial scenario has been chosen for the appropriate set of criteria. A comparison table can be found below.

Table 6.4: *Comparison of soil results against GAC's (Commercial, 6% organic matter; based on the average value recorded – all values in mg/kg unless stated)*

Contaminant	GAC's: S4UL's - Comm (unless stated)	Minimum	Maximum	Exceedances
Metals				
Arsenic	640	160	160	0
Boron	240000	0.7	3.3	0
Cadmium	190	< 0.2	< 0.2	0
Chromium (III)	8600	25	25	0
Chromium (VI)	33	< 1.8	< 1.8	0
Copper	68000	220	280	0
Lead	2300 (C4SL)	290	1900	0
Mercury (inorganic)	1100	0.6	6.9	0

Nickel	980	24	40	0
Selenium	12000	< 1.0	< 1.0	0
Zinc	730000	620	890	0
General				
Asbestos	N/A	Not detected		N/A
pH	N/A	7.5		N/A
Organic Matter %	N/A	5.5		N/A
Sulphates (water soluble, g/l)	N/A	0.488		N/A
Cyanide (total)	23 (USEPA)	< 1.0		N/A
Phenols	1300	< 1.0		N/A
Organics				
Polycyclic Aromatic Hydrocarbons (PAH, 16)				
Naphthalene	1100	0.54		0
Acenaphthylene	100000	0.28		0
Acenaphthene	100000	0.08		0
Fluorene	71000	0.25		0
Phenanthrene	23000	3.9		0
Anthracene	540000	0.52		0
Fluoranthene	23000	5.6		0
Pyrene	54000	4.4		0
Benzo(a)anthracene	180	1.9		0
Chrysene	350	2.4		0
Benzo(b)fluoranthene	45	2.4		0
Benzo(k)fluoranthene	1200	1.2		0
Benzo(a)pyrene	36	1.9		0
Indeno (123-cd) pyrene	510	1.1		0
Dibenzo(ah)anthracene	3.6	< 0.05		0
Benzo(ghi)perylene	4000	1.1		0

PAH (Total 16)	N/A	27.5	0
	Total Petroleum Hydrocarbons (TPH)		
Benzene	90	< 5.0	0
Toluene	180000	< 5.0	0
Ethylbenzene	27000	< 5.0	0
o-xylene	33000	< 5.0	0
m & p-xylene	30000	< 5.0	0
Methyl Tertiary Butyl Ether (MTBE)	24000	< 5.0	0
Aliphatic >C5-C6	12000	< 0.020	0
Aliphatic >C6-C8	40000	< 0.020	0
Aliphatic >C8-C10	11000	< 0.050	0
Aliphatic >C10-C12	47000	< 1.0	0
Aliphatic >C12-C16	90000	< 2.0	0
Aliphatic >C16-C21	1800000	< 8.0	0
Aliphatic >C21-C35	1800000	9.1	0
Aromatic >C5-C7	86000	< 0.010	0
Aromatic >C7-C8	180000	< 0.010	0
Aromatic >C8-C10	17000	< 0.050	0
Aromatic >C10-C12	34000	< 1.0	0
Aromatic >C12-C16	38000	2.6	0
Aromatic >C16-C21	28000	10	0
Aromatic >C21-C35	28000	< 10	0
Aromatic >C35-C44	28000	23	0

6.2.3 Soil pH values in this area of the site were 7.5.

6.2.4 Soil Organic Matter (SOM) testing was undertaken on 1 no. samples, yielding a value of 5.5 %, resulting in a value of 6 % SOM being adopted.

6.2.5 No asbestos was recorded during testing.

6.2.6 All tested contaminants were recorded to occur in concentrations significantly below the relevant guideline values for commercial end uses.

6.2.7 The above information is also contained as Appendix C.

6.3 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	Low Likelihood	Medium	**Moderate/Low Risk** – The site is in a Higher probability radon area (10 to 30% of homes are estimated to be at or above the Action Level). However, as no dwellings are included in the proposed development, significant exposure to Radon for the proposed end users is considered unlikely. It may be prudent to install radon protective measures in any permanent enclosed structures on the site.
		Heavy Metals	Dermal contact Soil and dust ingestion and inhalation	Future site users Site workers Site flora and fauna	Unlikely	Medium	**Low Risk** – One exceedance of Arsenic was recorded within natural ground of 350 mg/kg in TP03 at 1.40 mBGL. Bioaccessibility testing in this area yielded a maximum value of 1.7 %, resulting in a site-specific assessment criterion of 3710 mg/kg for Arsenic. The measured concentrations of Arsenic within the natural ground fall within the site specific assessment criterion.
	Historic Landfill and Potentially Infilled Land	Metals Total Petroleum Hydrocarbons (TPH)	Dermal contact Soil and dust ingestion and inhalation	Future site users Site Workers	Likely	Medium	**Moderate Risk –** The majority of the site has a history of being used as a landfill, with deposited waste including inert, industrial, commercial, and household waste. The

	Polycyclic Aromatic Hydrocarbons (PAH) Ground Gas: Carbon Dioxide, Methane	Ground & surface waters Ingress into proposed buildings			intrusive site investigation encountered Made Ground consisting of anthropogenic materials including glass bottles, clay water pipes, bricks, concrete blocks, and organic matter contents of up to 20 %. All contaminants tested for were recorded to occur below the generic guideline concentrations or, in the case of arsenic as described above, were below the calculated site-specific assessment criterion when bioaccessibility was considered. Due to the incusion of household waste and high organic matter content, the site has a high ground gas generation potential. A contamination pathway from Ground Gas is considered to be unlikely for areas of the site where there are no proposed structures, however, there is a likely contamination pathway into the proposed Sports Hub and Café.
Made Ground	Metals Total Petroleum Hydrocarbons (TPH) Polycyclic Aromatic Hydrocarbons (PAH) Asbestos	Dermal contact Soil and dust ingestion and inhalation Ground & surface waters Ingress into proposed buildings	Future site users Site Workers		**Low Risk –** Significant Made Ground of varying types was encountered across the site in all exploratory holes. In the Public Park area of the site, concentrations of Arsenic were recorded to exceed the relevant generic assessment criterion of 170 mg/kg within several horizons of Made Ground. Subsequent

	bioaccessibility testing of samples from this area produced a maximum bioaccessible fraction of 1.7 %. Bioaccessibility data and site-specific information were used to create a new assessment criterion of 3710 mg/kg using the CLEA software. No samples were recorded to be in exceedance of the new site-specific assessment criterion. In the area of the proposed support facility and café area, designated as Commercial for risk assessment purposes, no concentrations were recorded to occur in exceedance of the generic assessment criterion of 640 mg/kg. No asbestos was detected within the Made Ground, and all other tested contaminants were within guideline concentrations.

7 CONCLUSIONS

7.1.1 The site was subject to a Phase 2 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 All tested contaminants, excluding Arsenic within the Public Park scenario were recorded to occur in concentrations below the relevant guideline values.

7.1.3 Additional bioaccessibility testing for Arsenic was conducted and used to produce a revised site-specific assessment criterion of 3710 mg/kg. The average concentration for Arsenic on site is 220 mg/kg, which significantly below the site-specific assessment criterion, and is thus considered to present a Low Risk.

7.1.4 Due to the type of fill material and the high organic matter content (up to 20%) encountered within the landfill deposits, the site is considered to have a high ground gas generation potential. The historic landfill site use therefore presents a Moderate Risk to the proposed development.

7.1.5 It is considered that the site is likely to be suitable for the proposed development, once the recommendations within this report have been carried out.

7.1.6 It is considered that conventional strip foundations will not be appropriate at the site, due to the extent and geotechnical properties of the Made Ground across the site.

7.1.7 Based on the In-situ and laboratory testing, it is considered that a piled foundation solution is appropriate, with end-bearing piles driven through the Made Ground and Alluvium and socketed in the underlying Porthscatho Formation at an undetermined depth.

7.1.8 SPT testing for the majority of exploratory boreholes did not reach the required 'N' values for refusal. This is due to the advancement of exploratory holes being abandoned on safety grounds on advice provided by a UXO specialist during the site works. To determine bedrock depth and competency, additional testing would be required with appropriate equipment such as Nonmetallic (NM) Composite materials used for windowless sampler casing to advance the exploratory holes to greater depths, and downhole UXO scanning equipment.

8 RECOMMENDATIONS

8.1.1 The site was subject to a Phase 2 Ground Investigation to determine the level and risk of potential contamination and geotechnical aspects of the site.

8.1.2 It is recommended that a course of ground gas monitoring is conducted in the areas of the proposed Sports Hub and Café (and any other enclosed structures).

8.1.3 According to the guidance published in CIRIA 665, for a low sensitivity (commercial) development with a high gas generation potential, 12 monitoring visits over a period of 6 months may be considered appropriate.

8.1.4 Pending the outcome from a course of gas monitoring, gas protection measures may be required for the proposed Sports Hub and Café building.

8.1.5 It may be prudent to conduct further ground testing to determine the depth of bedrock on site with appropriate drilling and UXO equipment. Due to the potential presence of UXO on site any further investigation is not guaranteed to reach competent bedrock.

8.1.6 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.

8.1.7 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.

8.1.8 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.

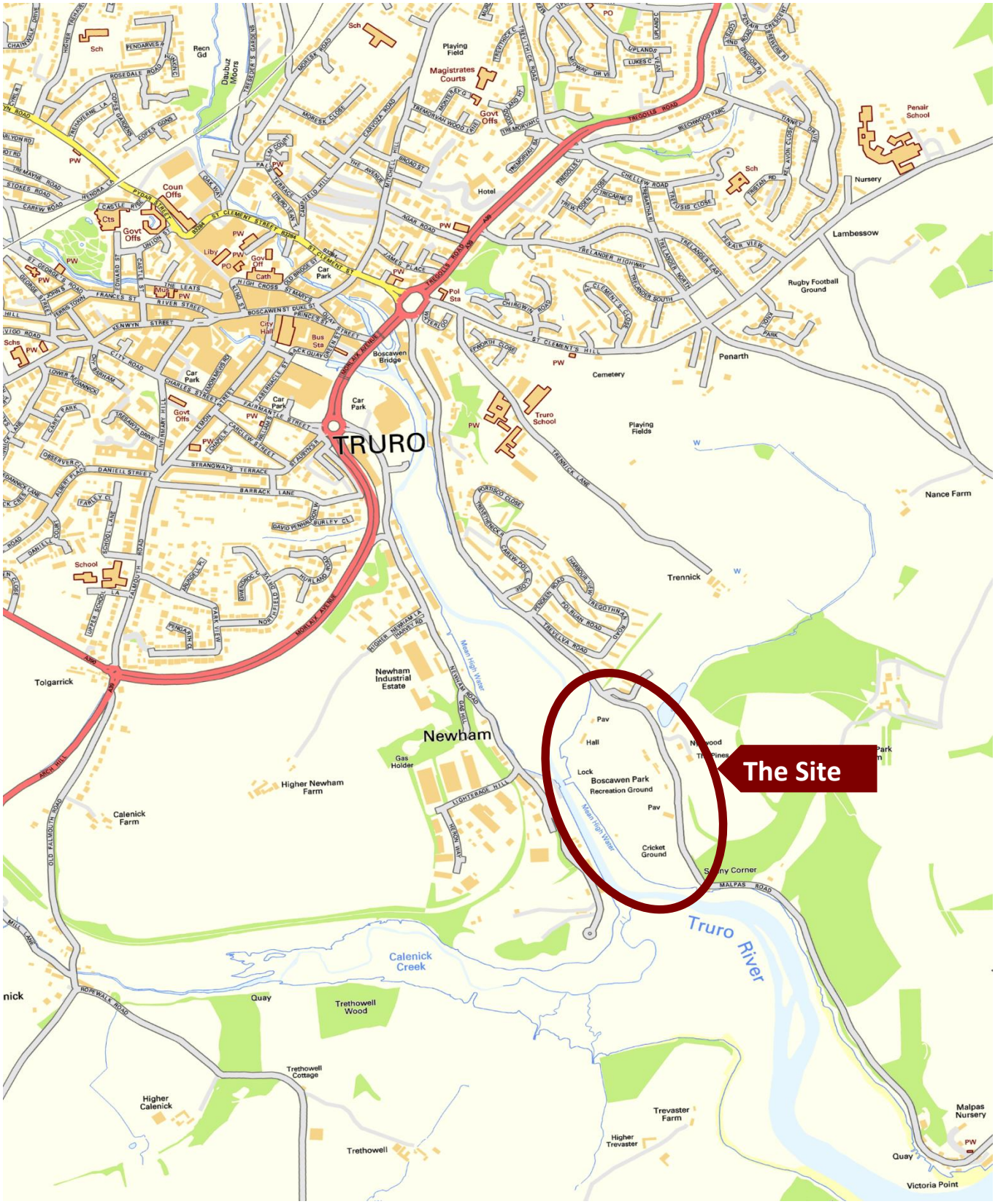
10.1.6 This report is confidential to the client, the client's legal and professional advisors, and may not be reproduced or distributed without our permission other than to directly facilitate the sale or development of the property concerned.

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**

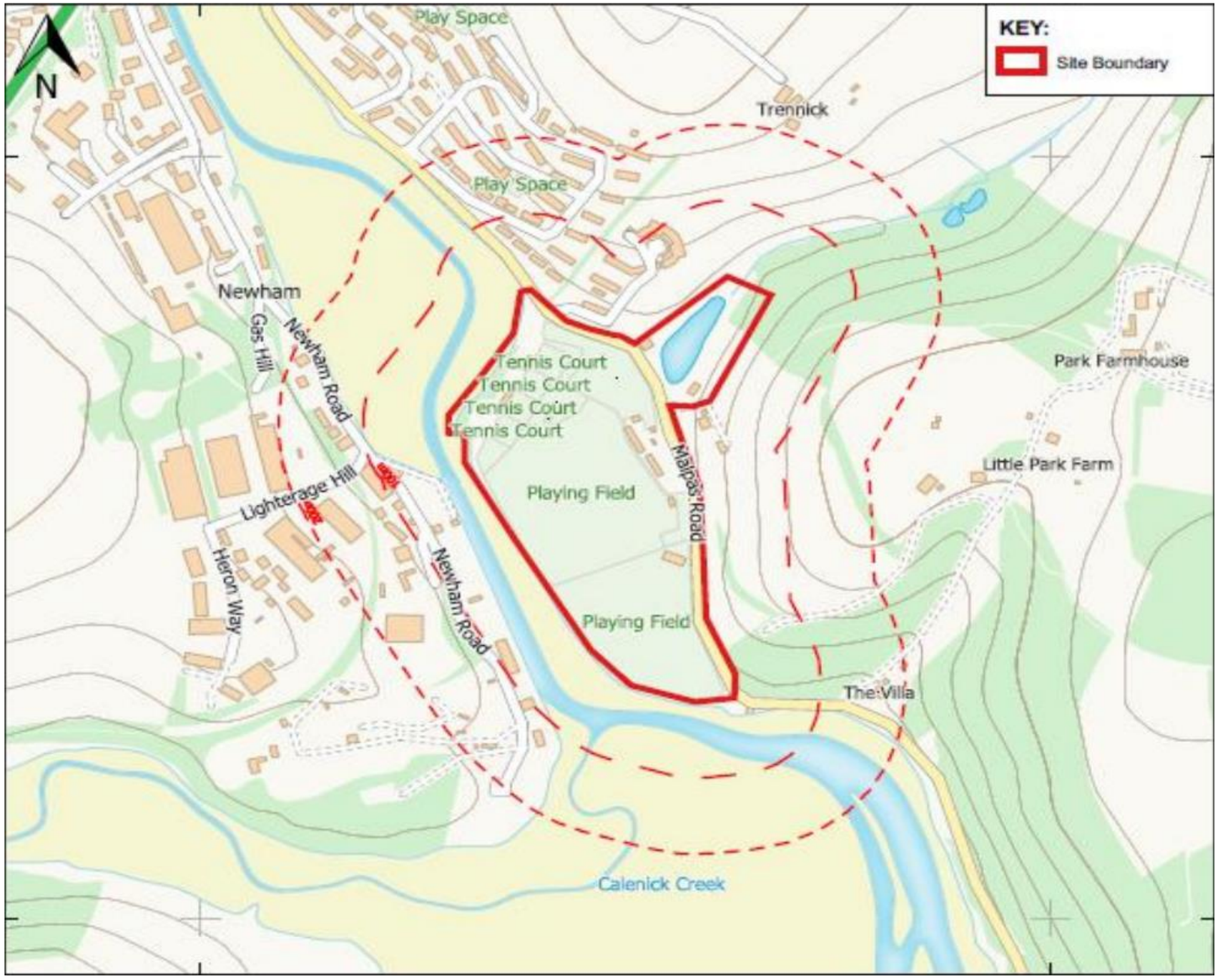
Project: **Boscawen Park, Malpas Road, Truro, Cornwall, TR1 1SG**

Client: **Ward Williams Associates**

Report Title: **Ground Investigation**

Date: **21/02/2024** Ref: **21757** Figure: **2.1**

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES



N

Legend:

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

Title:

Current Site Layout

Project:

Boscawen Park, Malpas Road, Truro, Cornwall, TR1 1SG

21757

Client:

Ward Williams Associates

Date:	21/02/2024
Scale:	NTS
Drawn by:	WSP
Revision:	A
Figure:	2.2

N

Legend:

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

Title:

Proposed Site Layout

Project:

Boscawen Park, Malpas Road, Truro, Cornwall, TR1 1SG

21757

Client:

Ward Williams Associates

Date:	21/02/2024
Scale:	NTS
Drawn by:	Mei Loci
Revision:	A
Figure:	2.3

N

Legend:

Windowless Sample Borehole

Trial Pit + Soakaway

Trial Pit

DCP (CBR Test)

WHEAL JANE CONSULTANCY
GEOTECHNICAL, ENVIRONMENTAL & MINING SERVICES

Title:

Exploratory Hole Location Plan

Project:

Boscawen Park, Malpas Road, Truro, Cornwall, TR1 1SG

21757

Client:

Ward Williams Associates

Date:	13/12/2023
Scale:	NTS
Drawn by:	TG
Revision:	A
Figure:	3.1

APPENDIX A

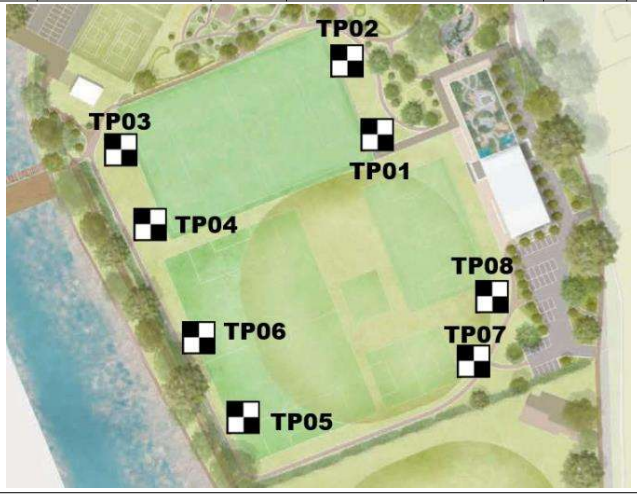
Exploratory Hole Logs

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP01

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20-0.80	BS		Water strike(1) at 0.75m.		(0.10) 0.10	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
					(0.70)	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite		▽1
					0.80	MADE GROUND. Black, clayey, sandy, cobbly, fine to coarse, angular to sub-angular GRAVEL of mudstone and anthropogenic components including terracotta and glass. Cobbles angular to sub-rounded, of mudstone and granite. Sand is fine to coarse.		
					(0.40)			
					1.20	Abandoned at 1.20m		



Remarks

Backfilled with arisings upon completion.
Sidewalls moderately stable, with some spalling.
Hole abandoned on advice of UXO specialist.
Groundwater encountered at 0.75 m.

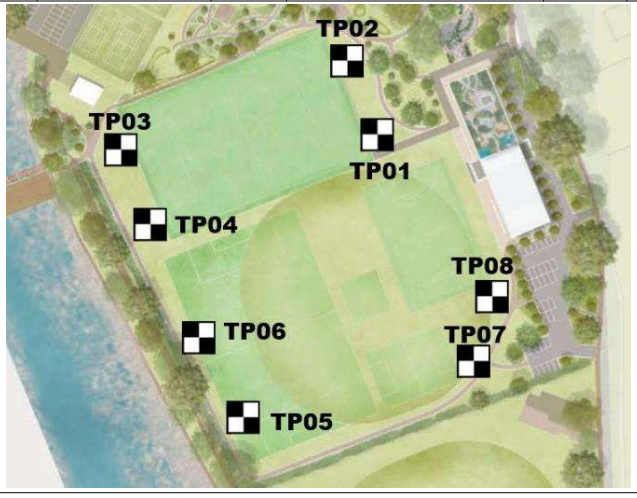
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP01

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP02

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.20-0.80	BS				0.20			
					(0.70)	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
0.60	ES							
					0.90			
0.90-1.20	BS					MADE GROUND. Black, clayey, sandy, cobbly, fine to coarse, angular to sub-angular GRAVEL of mudstone and anthropogenic components including terracotta, cloth, and glass. Cobbles angular to sub-rounded, of mudstone and granite. Sand is fine to coarse. Notable oil staining, and scent of hydrocarbons.		
1.00	ES		Water strike(1) at 1.00m.		(0.30)			▽1
					1.20			
						Abandoned at 1.20m		



Remarks

Significant visual and olfactory signs of contamination.
Backfilled with arisings upon completion.
Sidewalls moderately stable, with some spalling.
Hole abandoned on advice of UXO specialist.
Groundwater encountered at 1.00 m.

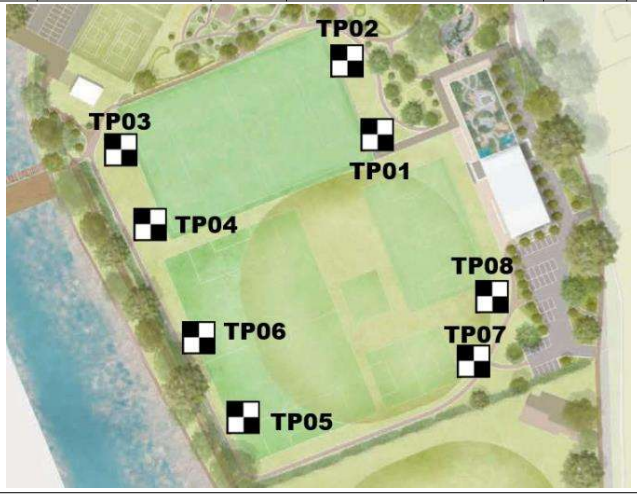
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP02

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP03

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	ES				(0.20) 0.20	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.20-0.80	BS				(1.00) 1.20	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
0.80	ES							
1.20-1.50	BS		Water strike(1) at 1.30m.		(0.30) 1.50	Very soft, grey to black, slightly silty organic CLAY. Preserved roots and tree branches. Rich in organic material.		▽1
1.40	ES					Complete at 1.50m		



Remarks

Backfilled with arisings upon completion.
Sidewalls were stable, with some minor spalling.
Hole complete at natural ground.
Groundwater encountered at 1.30 m.

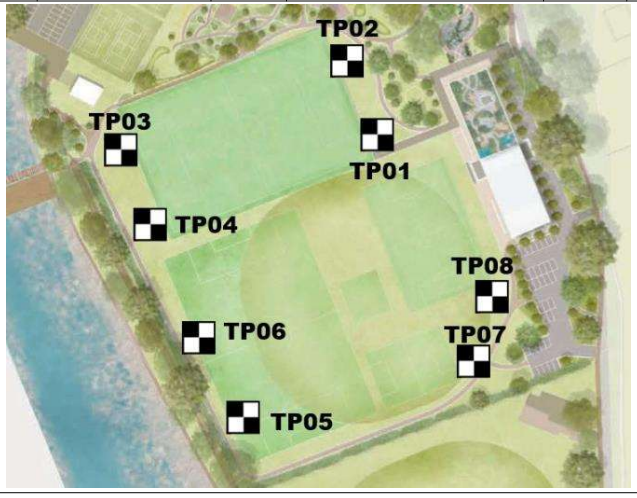
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP03

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.30-0.50	BS				0.30 (0.20)	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
0.60	ES				0.50 (0.20)	MADE GROUND. Tarmac.		
0.90	ES		Water strike(1) at 0.90m.		0.70 (0.30)	MADE GROUND. Brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of granite and ballast. Occasional boulders and cobbles of granite.		▽1
					1.00	Abandoned at 1.00m		



Remarks

Backfilled with arisings upon completion.
Sidewalls were unstable, with significant spalling of the deeper strata.
Hole abandoned on advice of UXO specialist, groundwater incursion, and poor sidewall stability.
Groundwater encountered at 0.90 m.

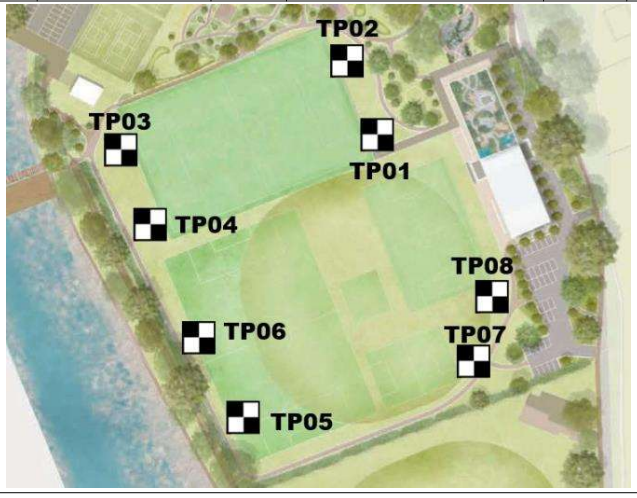
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP04

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP05

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.30	ES				0.30	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
					(1.50)			
1.20	ES		Water strike(1) at 1.50m.					▽1
					1.80	MADE GROUND. Black clayey, sandy, angular to sub-angular., fine to coarse GRAVEL of anthropogenic fill materials, including glass bottles, ceramics, and metal. Landfill waste.		
2.00	ES				(1.00)			
					2.80	Abandoned at 2.80m		



Remarks

Backfilled with arisings upon completion.
Sidewalls were unstable, with significant spalling of the deeper strata.
Hole abandoned due to groundwater incursion, and poor sidewall stability.
Groundwater encountered at 1.50 m.
Significant visual and olfactory signs of contamination.

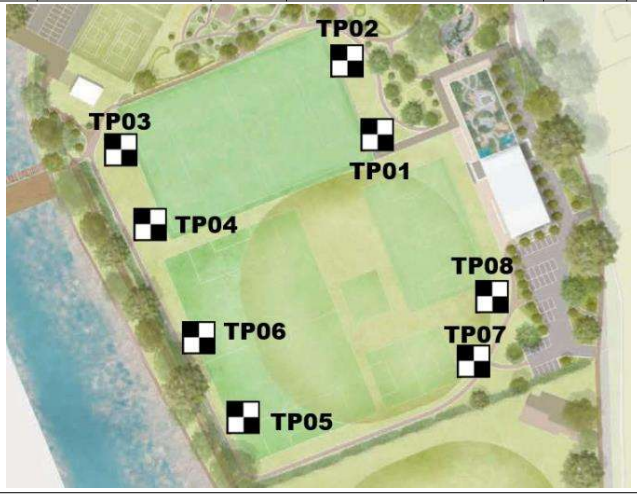
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP05

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP06

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	ES				(0.40) 0.40	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.70	ES				(0.50) 0.90	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
1.30	ES		Water strike(1) at 1.10m.		(0.60) 1.50	MADE GROUND. Black clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of anthropogenic fill materials, including glass bottles, ceramics, and metal. Landfill waste.		▽1
						Abandoned at 1.50m		



Remarks

Backfilled with arisings upon completion.
Sidewalls were unstable, with significant spalling of the deeper strata.
Hole abandoned due to groundwater incursion, and poor sidewall stability.
Groundwater encountered at 1.1 m.
Significant visual and olfactory signs of contamination.

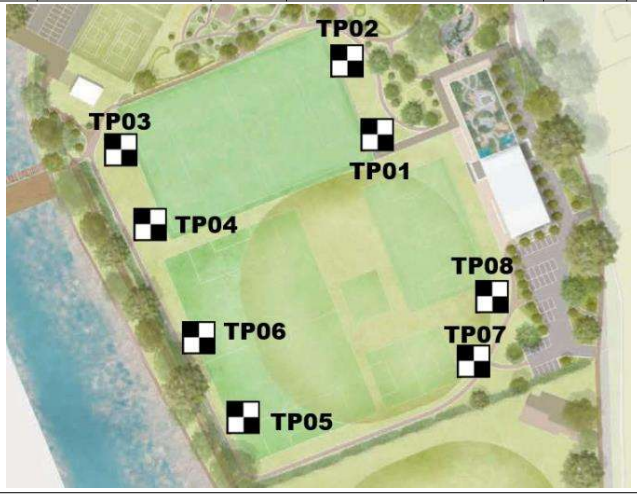
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP05

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP07

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	ES				(0.15) 0.15	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.40	ES		Water strike(1) at 0.40m.		(0.45) 0.60	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		▽1
0.70	ES				(0.30) 0.90	MADE GROUND. Tarmac.		
1.40	ES				(0.50) 1.40	MADE GROUND. Black clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of anthropogenic fill materials, including glass bottles, ceramics, and metal. Landfill waste.		
						Abandoned at 1.40m		



Remarks

Significant visual and olfactory signs of contamination.
Groundwater encountered at 0.40 m.
Hole abandoned due to groundwater incursion, and poor sidewall stability.
Sidewalls were unstable, with significant spalling of the deeper strata.
Backfilled with arisings upon completion.

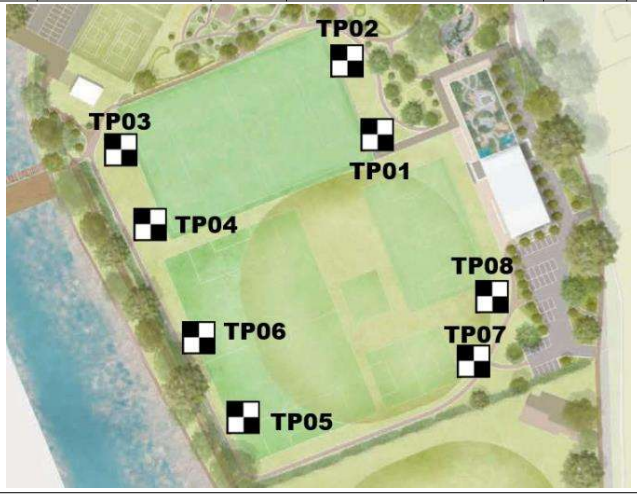
Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP07

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	TP08

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Machine excavated trial pit			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	ES				(0.20) 0.20	MADE GROUND. Grass over medium brown, very clayey, sandy, gravelly TOPSOIL Gravel is angular to sub-rounded, fine to coarse, of mudstone and granite. Sand is fine to coarse. Common rootlets.		
0.40	ES				(0.70)	MADE GROUND. Light brown, very clayey, sandy, fine to coarse, angular to sub-rounded GRAVEL of mudstone, granite, and anthropogenic components including bricks and ballast. Sand is fine to coarse. Occasional cobbles of mudstone and granite.		
0.70	ES				0.90	MADE GROUND. Black clayey, sandy, angular to sub-angular, fine to coarse GRAVEL of anthropogenic fill materials, including brick, concrete blocks, terracotta, and glass. Landfill waste.		
			Water strike(1) at 1.30m.		(0.60)			▽1
1.40	ES				1.50	Abandoned at 1.50m		



Remarks

Significant visual and olfactory signs of contamination.
Groundwater encountered at 1.30 m.
Hole abandoned due to groundwater incursion, and poor sidewall stability.
Sidewalls were unstable, with significant spalling of the deeper strata.
Backfilled with arisings upon completion.

Scale (approx)	Logged By	Figure No.
1:20	TG	21757.TP08

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	WS01

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND. Grass over medium brown, very clayey, slightly sandy TOPSOIL. Sand is fine to coarse.		
0.20-1.00	BS				0.20	MADE GROUND. Firm, light brown, sandy, very gravelly, CLAY. Gravel is fine to coarse, sub-angular to sub-rounded, of mudstone and anthropogenic brick. Sand is fine to coarse.		
0.50	BS		Water strike(1) at 0.50m.		(0.80)			▽1
1.00-1.45	SPT N=4		1,1/1,1,1,1		1.00			
					(0.20)	MADE GROUND. Black, clayey, sandy, cobbly, fine to coarse, angular to sub-angular GRAVEL of mudstone and anthropogenic components including terracotta and glass. Cobbles angular to sub-rounded, of mudstone and granite. Sand is fine to coarse.		
					1.20	No recovery.		
					(0.70)			
					1.90	Soft, dark brown, sandy CLAY. Sand is fine to coarse. Organic rich.		
					(1.10)			
2.95	ES				3.00	Complete at 3.00m		

Remarks
Backfilled with arisings upon completion.
Hole abandoned due to collapse.
Groundwater encountered at 0.50 m.

Scale (approx)	Logged By
1:20	SLW

Figure No. 21757.WS01

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS02**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND. Grass over medium brown, very clayey, slightly sandy TOPSOIL. Sand is fine to coarse.		
0.20-0.90	BS				0.20	MADE GROUND. Firm, light brown, very clayey, sandy, fine to coarse, sub-angular to sub-rounded GRAVEL of mudstone and anthropogenic components. Sand is fine to coarse.		
			Water strike(1) at 0.50m.		(0.80)			▽1
1.00-1.45	SPT N=11		11,10/5,2,2,2		1.00	Complete at 1.00m		

Remarks
Groundwater encountered at 0.50 m.
Refusal on Made Ground horizon.
Backfilled with arisings upon completion.

Scale (approx)	Logged By
1:20	SLW

Figure No. 21757.WS01

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS03**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND. Grass over medium brown, very clayey, slightly sandy TOPSOIL. Sand is fine to coarse.		
0.20-1.50	BS				0.20	MADE GROUND. Firm, light brown, very clayey, sandy, fine to coarse, sub-angular to sub-rounded GRAVEL of mudstone and anthropogenic components. Sand is fine to coarse.		
			Water strike(1) at 0.50m.					▽1
					(1.30)			
1.00-1.42	SPT 1*/118 N=2		1,0/1,0,1,0					
					1.50	Poor recovery, continuous collapse between 2.00 - 3.00 mBGL.		
2.00-2.45	SPT N=2		1,0/1,0,1,0					
					(1.50)			
2.90	ES				3.00	Complete at 4.00m		

Remarks
Groundwater encountered at 0.50 m.
Hole advanced with continuous SPT between 2.00 - 4.00 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	SLW

Figure No. 21757.WS03

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	WS04

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	MADE GROUND. Grass over medium brown, very clayey, slightly sandy TOPSOIL. Sand is fine to coarse.		
0.20-1.00	BS				0.20	MADE GROUND. Firm, light brown, very clayey, sandy, fine to coarse, sub-angular to sub-rounded GRAVEL of mudstone and anthropogenic components. Sand is fine to coarse.		
			Water strike(1) at 0.40m.		(0.80)			▽1
1.00-1.45	SPT N=6		1,1/1,1,2,2		1.00	Poor recovery.		
2.00-2.45	SPT N=2		1,0/1,0,1,0		(2.00)			
2.30-2.75	SPT N=0		0,0/0,0,0,0					
2.50	ES							
3.00-3.45	SPT N=0		0,0/0,0,0,0		3.00	Complete at 3.00m		

Remarks
Groundwater encountered at 0.40 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	SLW

Figure No. 21757.WS04

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	WS05

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 30/11/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	ES				(0.30)	MADE GROUND. Grass over medium brown, very clayey, slightly sandy TOPSOIL. Sand is fine to coarse.		
0.30-0.70	BS		Water strike(1) at 0.40m.		0.30	MADE GROUND. Firm, light brown, very clayey, sandy, fine to coarse, sub-angular to sub-rounded GRAVEL of mudstone and anthropogenic components. Sand is fine to coarse.		▽1
0.50	BS				(0.40)			
0.80	ES				0.70 (0.30)	MADE GROUND. Dark grey, sandy, fine to coarse, angular to sub-angular GRAVEL of granite and anthropogenic brick. Appears to be disused compacted sub-base.		
1.00-1.45	SPT N=15		6,6/6,3,3,3		1.00	MADE GROUND. Black, very clayey, sandy, fine to coarse, sub-angular to sub-rounded GRAVEL of mudstone, plastics, and glass. Landfill Waste		
1.50-1.95	SPT N=2		1,0/1,0,1,0		(1.00)			
1.90	ES							
2.00-2.45	SPT N=2		1,0/1,0,1,0		2.00	Complete at 2.00m		

Remarks
Hole complete at UXO-safe depth.
Backfilled with arisings upon completion.
Groundwater encountered at 0.40 m.

Scale (approx)	Logged By
1:20	SLW

Figure No. 21757.WS05

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS06**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30-1.20	BS				(1.20)	MADE GROUND. Mid-brown, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
0.50	ES				1.20			
			Water strike(1) at 1.40m.		(1.00)	MADE GROUND. Mid brownish-grey, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		▽1
2.20-2.65	SPT N=4		1,1/1,1,1,1		2.20			
2.90	ES				(1.00)	MADE GROUND. Greyish beige very clayey, sandy, angular to subangular fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
3.20-3.65	SPT N=4		1,1/1,1,1,1		3.20	Complete at 3.20m		

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.40 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth, and due to hole collapse.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS06

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS07**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND. Mid-brown, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
0.30	ES							
0.60	ES				(1.20)			
					1.20	MADE GROUND. Mid brownish-grey, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
1.50-3.20	BS		Water strike(1) at 1.50m.					▽1
					(1.00)			
2.20-2.65	SPT N=4		1,1/1,1,1,1		2.20	MADE GROUND. Greyish beige very clayey, sandy, angular to subangular fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
					(1.00)			
3.20-3.65	SPT N=14		6,5/5,4,4,1		3.20	MADE GROUND. Mid grey, very clayey, sandy, angular to subangular fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
					(1.00)			

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.50 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS07

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS07**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
4.20-4.65	SPT N=8		4,4/4,1,1,1,2		4.20	Complete at 4.20m		

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.50 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS07

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS08**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND. Mid-brown, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
0.15	ES							
0.40	ES				(1.20)			
					1.20	MADE GROUND. Greyish beige very clayey, sandy, angular to subangular fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
			Water strike(1) at 1.30m.					▽1
2.00-3.00	BS							
2.20-2.65	SPT N=7		1,3/2,1,2,2		(2.00)			
2.90	ES							
3.20-3.65	SPT N=7		4,4/3,2,2		3.20	Complete at 3.20m		

Remarks
Hole complete at UXO-safe depth, and due to hole collapse.
Backfilled with arisings upon completion.
Groundwater encountered at 1.30 m.
Hand excavated to 1.2 m due to risk of services.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS08

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS09**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						MADE GROUND. Mid-brown, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
0.30	ES				(1.20)			
0.70	ES							
1.00-2.00	BS				1.20			
						MADE GROUND. Mid brownish-grey, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
			Water strike(1) at 1.50m.					▽1
2.20-2.65	SPT N=3		2,2/1,1,1,0		(2.00)			
3.20-3.65	SPT N=5		1/1,1,1,2		3.20			
						MADE GROUND. Greyish beige very clayey, sandy, angular to subangular fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
3.80	BS				(1.00)			
3.80	ES							

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.50 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS09

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS09**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 2/2

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					4.20	Complete at 4.20m		

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.50 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth.

Scale (approx)	Logged By
1:20	MV

Figure No. 21757.WS09

Wheal Jane Consultancy
Environment & mining services

Site	Number
Boscawen Park, Truro	**WS10**

Excavation Method	Dimensions	Ground Level (mOD)	Client	Job Number
Windowless sample borehole until SPT N=50, hole collapse and/or UXO-safe depth reached.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	ES				(1.20)	MADE GROUND. Mid-brown, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		
0.60	ES				1.20			
1.50-3.00	BS		Water strike(1) at 1.40m.		(2.00)	MADE GROUND. Mid brownish-grey, very clayey, sandy, angular to subangular, fine to coarse GRAVEL of imported fill material. Sand is fine to coarse.		▽1
2.20-2.65	SPT N=19		1,2/2,2,7,8					
2.90	ES				3.20	Complete at 3.20m		

Remarks
Hand excavated to 1.2 m due to risk of services.
Groundwater encountered at 1.40 m.
Backfilled with arisings upon completion.
Hole complete at UXO-safe depth, and due to hole collapse.

Scale (approx)	Logged By
1:20	MV

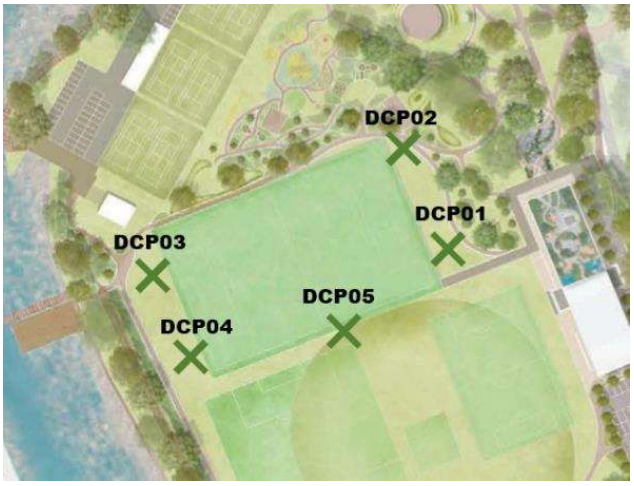
Figure No. 21757.WS10

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	DCP01

Machine : Dynamic Cone Penetrometer Method :	Excavation Method	Ground Level (mOD)	Client WWA	Job Number 21757
	Location Boscawen Park	Dates 01/12/2023	Engineer WJC	Sheet 1/1

Depth (m)	Sample / Tests	Layer CBR % Value	CBR Value Per Blow (1 10 100 1000)	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
		5.9						
		17						
		48						
						Complete at 0.95m		



Remarks

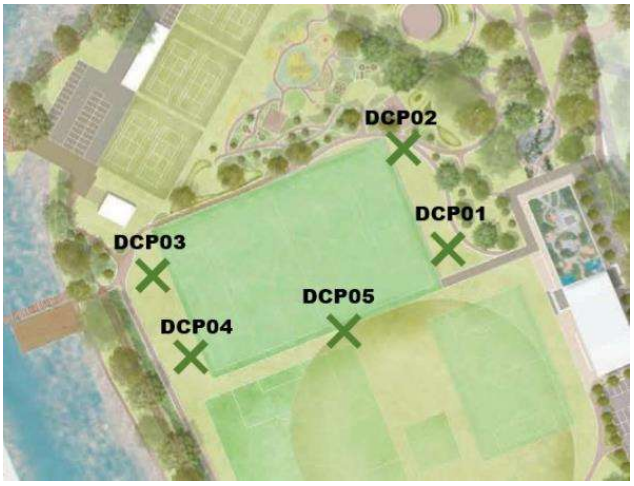
Scale (approx)	Logged By	Figure No.
1:10		21757.DCP01

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	DCP02

Machine : Dynamic Cone Penetrometer Method :	Excavation Method	Ground Level (mOD)	Client	Job Number
			WWA	21757
	Location Boscawen Park	Dates 01/12/2023	Engineer WJC	Sheet 1/1

Depth (m)	Sample / Tests	Layer CBR % Value	CBR Value Per Blow (1 – 10 – 100)	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
		12						
		22						
		16						
						Complete at 0.96m		



Remarks

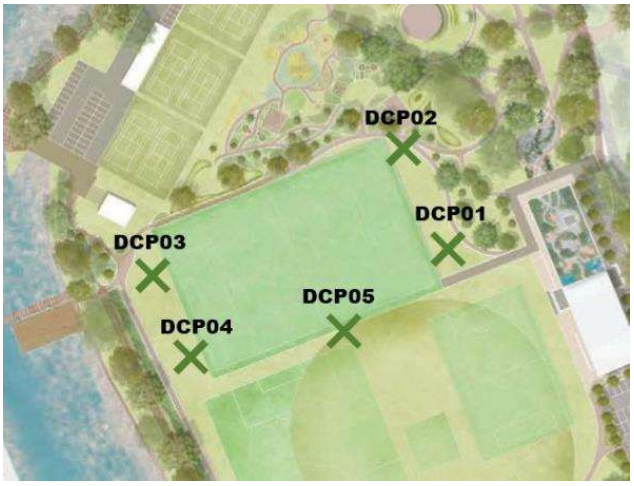
Scale (approx)	Logged By	Figure No.
1:10		21757.DCP02

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	DCP03

Machine : Dynamic Cone Penetrometer Method :	Excavation Method	Ground Level (mOD)	Client WWA	Job Number 21757
	Location Boscawen Park	Dates 01/12/2023	Engineer WJC	Sheet 1/1

Depth (m)	Sample / Tests	Layer CBR % Value	CBR Value Per Blow (1 – 10 – 100)	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
		7.1						
		9.8						
		5.5						
						Complete at 0.96m		



Remarks

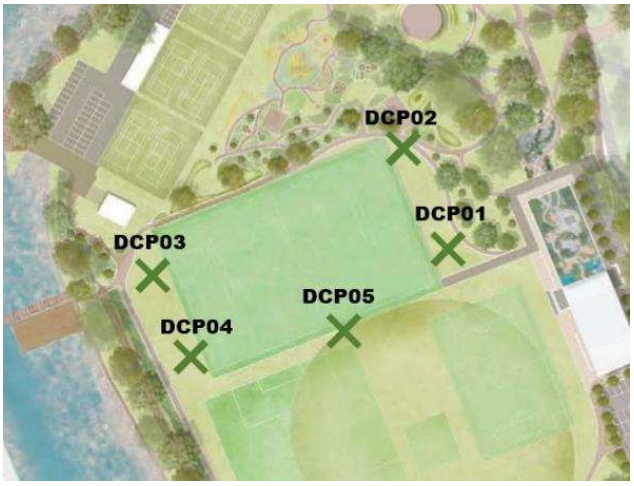
Scale (approx)	Logged By	Figure No.
1:10		21757.DCP02

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	DCP04

DCP Details	Excavation Method	Ground Level (mOD)	Client	Job Number
Complete at refusal.			WWA	21757
	Location Boscawen Park	**Dates** 01/12/2023	**Engineer** WJC	**Sheet** 1/1

Depth (m)	Sample / Tests	Layer CBR % Value	CBR Value Per Blow (1 10 100 1000)	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
		20						
		12						
		115						
						Complete at 0.81m		



Remarks

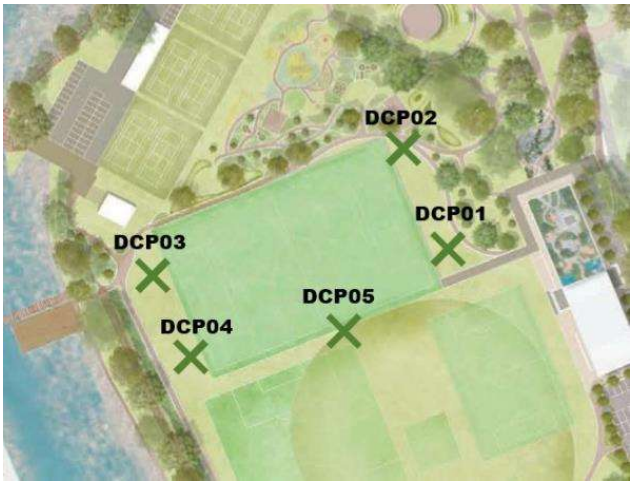
Scale (approx)	Logged By	Figure No.
1:10		21757.DCP04

Wheal Jane Consultancy
Environment & mining services

Site	Trial Pit Number
Boscawen Park, Truro	DCP05

Machine : Dynamic Cone Penetrometer Method :	Excavation Method	Ground Level (mOD)	Client WWA	Job Number 21757
	Location Boscawen Park	Dates 01/12/2023	Engineer WJC	Sheet 1/1

Depth (m)	Sample / Tests	Layer CBR % Value	CBR Value Per Blow (1 10 100 1000)	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
		9.3						
		7.3						
		152						
						Complete at 0.96m		



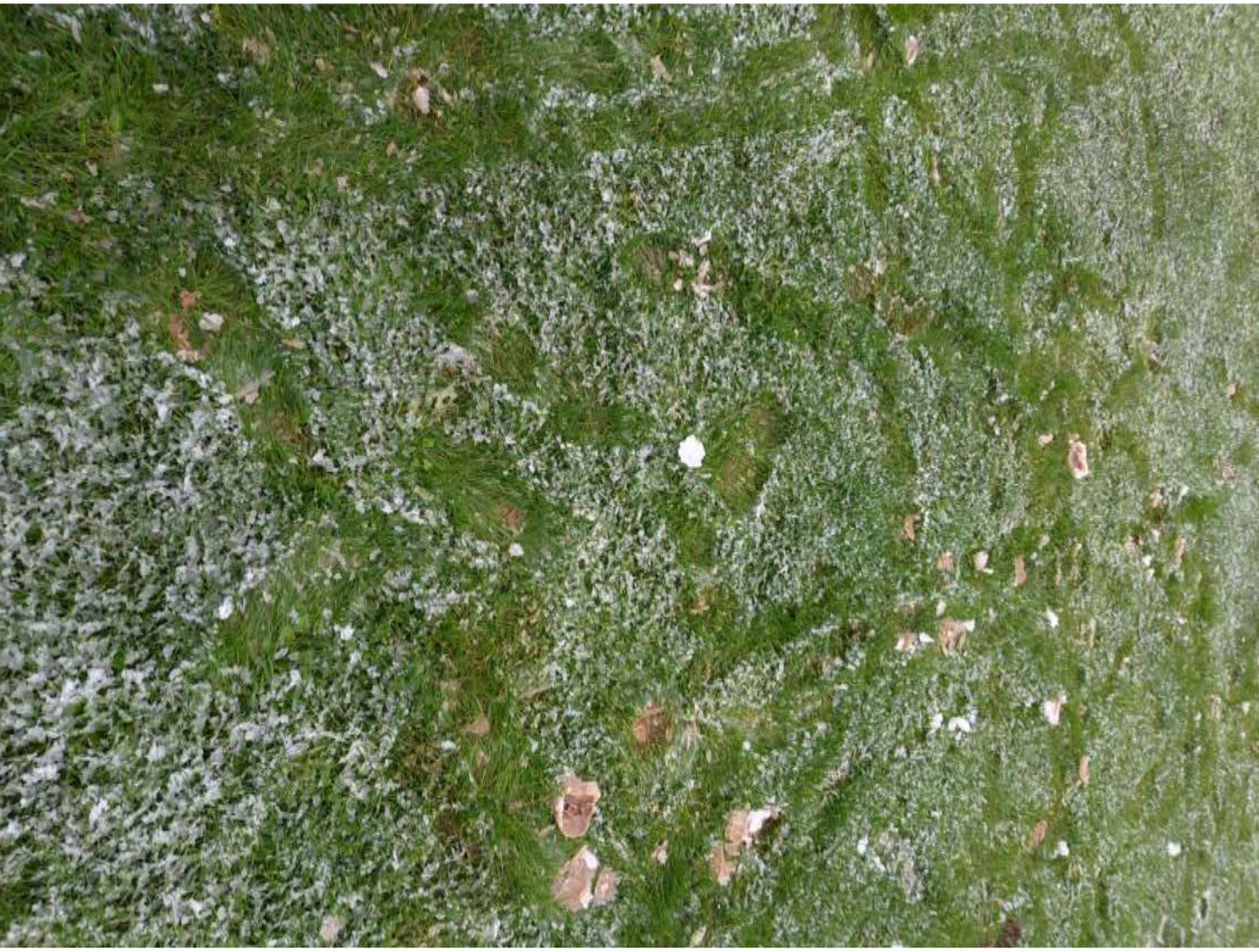
Remarks

Scale (approx)	Logged By	Figure No.
1:10		21757.DCP05

APPENDIX B

Trial Pit Photographs

Trial Pit:	TP01



Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP01

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP01

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP01

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP01

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP01

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP02

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP02

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP02

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP02

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP03

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP03

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP03

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP03

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP03

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP04

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP05

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP06

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP07

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

Trial Pit:	TP08

Site Name: Boscawen park	Job Number: 21757
Phase 2 Ground Investigation	Exploratory Hole Photographs
Client: Ward Williams Associates	Date: 21.02.2024

APPENDIX C

Chemical Laboratory Results

Thomas Gibson
Wheal Jane Services
Old Mine Offices
Wheal Jane
Baldhu
Truro
Cornwall
TR3 6EE

t: 01872 560200
f: 01872 560826
e: consultancy@wheal-jane.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 23-74437

Project / Site name:	Boscawen Park	**Samples received on:**	11/12/2023
Your job number:	21757	**Samples instructed on/ Analysis started on:**	13/12/2023
Your order number:	21757	**Analysis completed by:**	02/01/2024
Report Issue Number:	1	**Report issued on:**	02/01/2024
Samples Analysed:	16 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Reporting Specialist
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: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
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	12	15	22	36	18
Total mass of sample received	kg	0.001	NONE	0.9	0.7	1	0.7	0.8
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	N/A	IZJ	N/A	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	6.1	-	7.1	-
Total Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	3	-
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	< 1.0	-
Thiocyanate as SCN	mg/kg	5	NONE	-	< 5.0	-	< 5.0	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	1500	-	2600	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	490	-	1700	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.244	-	0.866	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	244	-	866	-
Sulphide	mg/kg	1	MCERTS	-	8.6	-	110	-
Organic Matter (automated)	%	0.1	MCERTS	-	2.7	5.4	6.7	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	0.1	-	0.3	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.12	-
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.09	-
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.17	-
Phenanthrene	mg/kg	0.05	MCERTS	-	0.12	-	0.58	-
Anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.31	-
Fluoranthene	mg/kg	0.05	MCERTS	-	0.17	-	1.6	-
Pyrene	mg/kg	0.05	MCERTS	-	0.15	-	1.3	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	0.08	-	0.76	-
Chrysene	mg/kg	0.05	MCERTS	-	0.12	-	0.78	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	0.14	-	0.9	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.06	-	0.3	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	0.07	-	0.62	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.46	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.11	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	< 0.05	-	0.51	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	1.01	-	8.89	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
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	35	1800	-	350	770
Boron (water soluble)	mg/kg	0.2	MCERTS	0.5	1.4	-	8.9	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	-	< 1.8	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	23	32	-	25	26
Copper (aqua regia extractable)	mg/kg	1	MCERTS	45	1100	-	630	580
Lead (aqua regia extractable)	mg/kg	1	MCERTS	39	260	-	420	190
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	0.4	-	1.1	1.1
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	31	34	-	28	38
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	100	390	-	1200	250
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	-
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	< 5.0	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	< 5.0	-
Petroleum Hydrocarbons								
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	< 0.020	-	< 0.020	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	< 0.020	-	< 0.020	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.05	NONE	-	< 0.050	-	< 0.050	-
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	-	< 2.0	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	< 8.0	-	< 8.0	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	150	-	9.8	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	160	-	12	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	< 0.010	-	< 0.010	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	< 0.010	-	< 0.010	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.05	NONE	-	< 0.050	-	< 0.050	-
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	-	< 2.0	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	< 10	-	< 10	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	43	-	16	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	46	-	26	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	5	NONE	-	-	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	-	-
1,1-dichloroethene	µg/kg	5	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	-	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
1,1-dichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Chloroform	µg/kg	5	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,2-dichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Carbontetrachloride	µg/kg	5	NONE	-	-	-	-	-
1,2-dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	-	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	-	-	-	-
Styrene	µg/kg	5	ISO 17025	-	-	-	-	-
Bromoform	µg/kg	5	NONE	-	-	-	-	-
o-xylene	µg/kg	5	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
Bromobenzene	µg/kg	5	NONE	-	-	-	-	-
N-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	5	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908352	2908353	2908354	2908355	2908356
Sample Reference				TP02	TP02	TP03	TP03	TP04
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.00	0.10	1.40	0.60
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
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	-
Moisture Content	%	0.01	NONE	25	49	-	17	-
Total mass of sample received	kg	0.001	NONE	0.7	0.8	-	0.7	-
Asbestos in Soil	Type	N/A	ISO 17025	-	-	Not-detected	-	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	N/A	N/A	IZJ	N/A	IZJ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	7.7	-	-	-
Total Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	-	-
Free Cyanide	mg/kg	1	MCERTS	-	< 1.0	-	-	-
Thiocyanate as SCN	mg/kg	5	NONE	-	< 5.0	-	-	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-	5000	-	-	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	3200	-	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	1.6	-	-	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	1600	-	-	-
Sulphide	mg/kg	1	MCERTS	-	2200	-	-	-
Organic Matter (automated)	%	0.1	MCERTS	-	14	-	-	-

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	2.3	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.31	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	0.48	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	0.73	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	1.6	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	0.4	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	2	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	1.8	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.5	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	1.5	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	2.2	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	1.1	-	-	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.7	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	1.2	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.21	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	1.1	-	-	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	20	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
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	120	130	-	150	-
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	9.6	-	1.1	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	-	< 0.2	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	-	-	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	19	36	-	16	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	140	860	-	76	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	630	1100	-	69	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	1	2.5	-	< 0.3	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	28	86	-	25	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	350	1800	-	150	-
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	-
Petroleum Hydrocarbons								
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-	-	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	< 0.020	-	-	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	< 0.020	-	-	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.05	NONE	-	< 0.050	-	-	-
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	-	22	-	-	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	110	-	-	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	140	-	-	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	< 0.010	-	-	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	< 0.010	-	-	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.05	NONE	-	< 0.050	-	-	-
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	-	4.6	-	-	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	25	-	-	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	92	-	-	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	120	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chloroethane	µg/kg	5	NONE	-	< 5.0	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	< 5.0	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1-dichloroethene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	< 5.0	-	-	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	< 5.0	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chloroform	µg/kg	5	NONE	-	< 5.0	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2-dichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Benzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Carbontetrachloride	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2-dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Trichloroethene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Toluene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Styrene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromoform	µg/kg	5	NONE	-	< 5.0	-	-	-
o-xylene	µg/kg	5	MCERTS	-	< 5.0	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Bromobenzene	µg/kg	5	NONE	-	< 5.0	-	-	-
N-Propylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-
Hexachlorobutadiene	µg/kg	5	NONE	-	< 5.0	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	< 5.0	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
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	-	-	-
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	ISO 17025	-	< 0.05	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	0.6	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	< 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	-	2.3	-	-	-
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	NONE	-	< 0.1	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	< 0.2	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	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	NONE	-	< 0.1	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.31	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	0.48	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	0.6	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	< 0.2	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	0.73	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	< 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	-	1.6	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	0.4	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	< 0.3	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	< 0.2	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	< 0.3	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	2	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	1.8	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	< 0.3	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.5	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	1.5	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	2.2	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	1.1	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908357	2908358	2908359	2908360	2908361
Sample Reference				TP05	TP05	TP06	TP06	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.30	2.00	0.20	0.70	0.40
Date Sampled				30/11/2023	30/11/2023	30/11/2023	30/11/2023	30/11/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.7	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	1.2	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.21	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	1.1	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
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	13	28	34	29	23
Total mass of sample received	kg	0.001	NONE	0.7	0.8	0.7	0.5	0.7
Asbestos in Soil	Type	N/A	ISO 17025	-	Not-detected	-	-	-
Asbestos Analyst ID	N/A	N/A	N/A	N/A	SSZ	N/A	N/A	N/A

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-	5.6	6.6	-	7.5
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	-	790	1800	-	1400
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-	56	780	-	980
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-	0.0278	0.389	-	0.488
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-	27.8	389	-	488
Sulphide	mg/kg	1	MCERTS	-	4.3	160	-	90
Organic Matter (automated)	%	0.1	MCERTS	-	8.1	7.3	-	5.5

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-	0.08	0.14	-	0.54
Acenaphthylene	mg/kg	0.05	MCERTS	-	0.08	0.08	-	0.28
Acenaphthene	mg/kg	0.05	MCERTS	-	< 0.05	< 0.05	-	0.08
Fluorene	mg/kg	0.05	MCERTS	-	< 0.05	0.11	-	0.25
Phenanthrene	mg/kg	0.05	MCERTS	-	0.68	0.89	-	3.9
Anthracene	mg/kg	0.05	MCERTS	-	0.15	0.32	-	0.53
Fluoranthene	mg/kg	0.05	MCERTS	-	2.5	1.8	-	5.6
Pyrene	mg/kg	0.05	MCERTS	-	2.3	1.6	-	4.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	1.3	1.1	-	1.9
Chrysene	mg/kg	0.05	MCERTS	-	1.4	1.2	-	2.4
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	1.6	1.2	-	2.4
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	0.82	0.62	-	1.2
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	1.4	1	-	1.9
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	0.73	0.54	-	1.1
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	0.19	0.18	-	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	0.75	0.51	-	1.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-	13.9	11.3	-	27.5

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
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	230	38	160	160	190
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	1.4	4.7	3.3	0.7
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-	< 1.8	< 1.8	-	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	26	17	21	25	25
Copper (aqua regia extractable)	mg/kg	1	MCERTS	160	46	260	280	220
Lead (aqua regia extractable)	mg/kg	1	MCERTS	210	120	320	290	1900
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	0.6	< 0.3	0.6	0.6	6.9
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	41	22	25	24	40
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	340	130	1200	620	890
Monoaromatics & Oxygenates								
Benzene	µg/kg	5	MCERTS	-	-	< 5.0	-	< 5.0
Toluene	µg/kg	5	MCERTS	-	-	< 5.0	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	-	-	< 5.0	-	< 5.0
p & m-xylene	µg/kg	5	MCERTS	-	-	< 5.0	-	< 5.0
o-xylene	µg/kg	5	MCERTS	-	-	< 5.0	-	< 5.0
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	< 5.0	-	< 5.0
Petroleum Hydrocarbons								
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-	17	-	-	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	-	< 0.020	-	< 0.020
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-	-	< 0.020	-	< 0.020
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.05	NONE	-	-	< 0.050	-	< 0.050
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	-	< 2.0
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	< 8.0	-	< 8.0
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-	-	< 8.0	-	9.1
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-	-	< 10	-	12
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	-	< 0.010	-	< 0.010
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-	-	< 0.010	-	< 0.010
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.05	NONE	-	-	< 0.050	-	< 0.050
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	-	2.6
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	< 10	-	10
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-	-	19	-	< 10
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-	-	26	-	23

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
VOCs								
Chloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Chloroethane	µg/kg	5	NONE	-	-	-	-	-
Bromomethane	µg/kg	5	ISO 17025	-	-	-	-	-
Vinyl Chloride	µg/kg	5	NONE	-	-	-	-	-
Trichlorofluoromethane	µg/kg	5	NONE	-	-	-	-	-
1,1-dichloroethene	µg/kg	5	NONE	-	-	-	-	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-	-	-	-	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-	-	-	-	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-	-	-	-	-
1,1-dichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Chloroform	µg/kg	5	NONE	-	-	-	-	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,2-dichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-	-	-	-	-
Benzene	µg/kg	5	MCERTS	-	-	-	-	-
Carbontetrachloride	µg/kg	5	NONE	-	-	-	-	-
1,2-dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Trichloroethene	µg/kg	5	ISO 17025	-	-	-	-	-
Dibromomethane	µg/kg	5	ISO 17025	-	-	-	-	-
Bromodichloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-	-	-	-	-
Toluene	µg/kg	5	MCERTS	-	-	-	-	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
Dibromochloromethane	µg/kg	5	ISO 17025	-	-	-	-	-
Tetrachloroethene	µg/kg	5	NONE	-	-	-	-	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-	-	-	-	-
Chlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
Ethylbenzene	µg/kg	5	MCERTS	-	-	-	-	-
p & m-xylene	µg/kg	5	MCERTS	-	-	-	-	-
Styrene	µg/kg	5	ISO 17025	-	-	-	-	-
Bromoform	µg/kg	5	NONE	-	-	-	-	-
o-xylene	µg/kg	5	MCERTS	-	-	-	-	-
Isopropylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-	-	-	-	-
Bromobenzene	µg/kg	5	NONE	-	-	-	-	-
N-Propylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-	-	-	-	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Tert-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Sec-Butylbenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
P-Isopropyltoluene	µg/kg	5	ISO 17025	-	-	-	-	-
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Butylbenzene	µg/kg	5	NONE	-	-	-	-	-
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-	-	-	-	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-
Hexachlorobutadiene	µg/kg	5	NONE	-	-	-	-	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
SVOCs								
Aniline	mg/kg	0.1	NONE	-	-	-	-	-
Phenol	mg/kg	0.2	ISO 17025	-	-	-	-	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-	-	-	-	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-	-	-	-	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-	-	-	-	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-	-	-	-	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-	-	-	-	-
2-Methylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-	-	-	-	-
Nitrobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Methylphenol	mg/kg	0.2	NONE	-	-	-	-	-
Isophorone	mg/kg	0.2	MCERTS	-	-	-	-	-
2-Nitrophenol	mg/kg	0.3	NONE	-	-	-	-	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-	-	-	-	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-	-	-	-	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Naphthalene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-	-	-	-	-
4-Chloroaniline	mg/kg	0.1	NONE	-	-	-	-	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-	-	-	-	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-	-	-	-	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-	-	-	-	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-	-	-	-	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-	-	-	-	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-	-	-	-	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-	-	-	-	-
Acenaphthylene	mg/kg	0.05	MCERTS	-	-	-	-	-
Acenaphthene	mg/kg	0.05	MCERTS	-	-	-	-	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-	-	-	-	-
Dibenzofuran	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-	-	-	-	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-	-	-	-	-
4-Nitroaniline	mg/kg	0.2	NONE	-	-	-	-	-
Fluorene	mg/kg	0.05	MCERTS	-	-	-	-	-
Azobenzene	mg/kg	0.3	NONE	-	-	-	-	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-	-	-	-	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-	-	-	-	-
Phenanthrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Carbazole	mg/kg	0.3	MCERTS	-	-	-	-	-
Dibutyl phthalate	mg/kg	0.2	NONE	-	-	-	-	-
Anthraquinone	mg/kg	0.3	NONE	-	-	-	-	-
Fluoranthene	mg/kg	0.05	MCERTS	-	-	-	-	-
Pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-	-	-	-	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Chrysene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-	-	-	-	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908362	2908363	2908364	2908365	2908366
Sample Reference				TP07	TP08	WS05	WS06	WS08
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.70	0.10	0.10	2.90	0.40
Date Sampled				01/12/2023	01/12/2023	30/11/2023	30/11/2023	01/12/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-	-	-	-	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-	-	-	-	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-	-	-	-	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	-
Moisture Content	%	0.01	NONE	-
Total mass of sample received	kg	0.001	NONE	-

Asbestos in Soil	Type	N/A	ISO 17025	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	SSZ

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	-
Total Cyanide	mg/kg	1	MCERTS	-
Free Cyanide	mg/kg	1	MCERTS	-
Thiocyanate as SCN	mg/kg	5	NONE	-
Total Sulphate as SO4	mg/kg	50	MCERTS	-
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	-
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	-
Sulphide	mg/kg	1	MCERTS	-
Organic Matter (automated)	%	0.1	MCERTS	-

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	-

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
Fluorene	mg/kg	0.05	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	-
Boron (water soluble)	mg/kg	0.2	MCERTS	-
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	-
Chromium (hexavalent)	mg/kg	1.8	MCERTS	-
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	-
Copper (aqua regia extractable)	mg/kg	1	MCERTS	-
Lead (aqua regia extractable)	mg/kg	1	MCERTS	-
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	-
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	-
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	-
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	-
Monoaromatics & Oxygenates				
Benzene	µg/kg	5	MCERTS	-
Toluene	µg/kg	5	MCERTS	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-xylene	µg/kg	5	MCERTS	-
o-xylene	µg/kg	5	MCERTS	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-
Petroleum Hydrocarbons				
TPH C10 - C40 $_{EH\_CU\_1D\_TOTAL}$	mg/kg	10	MCERTS	-
TPH-CWG - Aliphatic >EC5 - EC6 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-
TPH-CWG - Aliphatic >EC6 - EC8 $_{HS\_1D\_AL}$	mg/kg	0.02	NONE	-
TPH-CWG - Aliphatic >EC8 - EC10 $_{HS\_1D\_AL}$	mg/kg	0.05	NONE	-
TPH-CWG - Aliphatic >EC10 - EC12 $_{EH\_CU\_1D\_AL}$	mg/kg	1	MCERTS	-
TPH-CWG - Aliphatic >EC12 - EC16 $_{EH\_CU\_1D\_AL}$	mg/kg	2	MCERTS	-
TPH-CWG - Aliphatic >EC16 - EC21 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic >EC21 - EC35 $_{EH\_CU\_1D\_AL}$	mg/kg	8	MCERTS	-
TPH-CWG - Aliphatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AL}$	mg/kg	10	NONE	-
TPH-CWG - Aromatic >EC5 - EC7 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-
TPH-CWG - Aromatic >EC7 - EC8 $_{HS\_1D\_AR}$	mg/kg	0.01	NONE	-
TPH-CWG - Aromatic >EC8 - EC10 $_{HS\_1D\_AR}$	mg/kg	0.05	NONE	-
TPH-CWG - Aromatic >EC10 - EC12 $_{EH\_CU\_1D\_AR}$	mg/kg	1	MCERTS	-
TPH-CWG - Aromatic >EC12 - EC16 $_{EH\_CU\_1D\_AR}$	mg/kg	2	MCERTS	-
TPH-CWG - Aromatic >EC16 - EC21 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic >EC21 - EC35 $_{EH\_CU\_1D\_AR}$	mg/kg	10	MCERTS	-
TPH-CWG - Aromatic (EC5 - EC35) $_{EH\_CU+HS\_1D\_AR}$	mg/kg	10	NONE	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
VOCs				
Chloromethane	µg/kg	5	ISO 17025	-
Chloroethane	µg/kg	5	NONE	-
Bromomethane	µg/kg	5	ISO 17025	-
Vinyl Chloride	µg/kg	5	NONE	-
Trichlorofluoromethane	µg/kg	5	NONE	-
1,1-dichloroethene	µg/kg	5	NONE	-
1,1,2-Trichloro 1,2,2-Trifluoroethane	µg/kg	5	NONE	-
Trans 1,2-dichloroethylene	µg/kg	5	NONE	-
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	NONE	-
1,1-dichloroethane	µg/kg	5	ISO 17025	-
2,2-Dichloropropane	µg/kg	5	ISO 17025	-
Chloroform	µg/kg	5	NONE	-
1,1,1-Trichloroethane	µg/kg	5	ISO 17025	-
1,2-dichloroethane	µg/kg	5	ISO 17025	-
1,1-Dichloropropene	µg/kg	5	ISO 17025	-
Cis-1,2-dichloroethene	µg/kg	5	ISO 17025	-
Benzene	µg/kg	5	MCERTS	-
Carbontetrachloride	µg/kg	5	NONE	-
1,2-dichloropropane	µg/kg	5	ISO 17025	-
Trichloroethene	µg/kg	5	ISO 17025	-
Dibromomethane	µg/kg	5	ISO 17025	-
Bromodichloromethane	µg/kg	5	ISO 17025	-
Cis-1,3-dichloropropene	µg/kg	5	ISO 17025	-
Trans-1,3-dichloropropene	µg/kg	5	ISO 17025	-
Toluene	µg/kg	5	MCERTS	-
1,1,2-Trichloroethane	µg/kg	5	ISO 17025	-
1,3-Dichloropropane	µg/kg	5	ISO 17025	-
Dibromochloromethane	µg/kg	5	ISO 17025	-
Tetrachloroethene	µg/kg	5	NONE	-
1,2-Dibromoethane	µg/kg	5	ISO 17025	-
Chlorobenzene	µg/kg	5	ISO 17025	-
1,1,1,2-Tetrachloroethane	µg/kg	5	ISO 17025	-
Ethylbenzene	µg/kg	5	MCERTS	-
p & m-xylene	µg/kg	5	MCERTS	-
Styrene	µg/kg	5	ISO 17025	-
Bromoform	µg/kg	5	NONE	-
o-xylene	µg/kg	5	MCERTS	-
Isopropylbenzene	µg/kg	5	ISO 17025	-
1,1,2,2-Tetrachloroethane	µg/kg	5	ISO 17025	-
Bromobenzene	µg/kg	5	NONE	-
N-Propylbenzene	µg/kg	5	ISO 17025	-
2-Chlorotoluene	µg/kg	5	ISO 17025	-
4-Chlorotoluene	µg/kg	5	ISO 17025	-
1,3,5-Trimethylbenzene	µg/kg	5	ISO 17025	-
Tert-Butylbenzene	µg/kg	5	ISO 17025	-
1,2,4-Trimethylbenzene	µg/kg	5	ISO 17025	-
Sec-Butylbenzene	µg/kg	5	ISO 17025	-
1,3-dichlorobenzene	µg/kg	5	ISO 17025	-
P-Isopropyltoluene	µg/kg	5	ISO 17025	-
1,4-dichlorobenzene	µg/kg	5	ISO 17025	-
1,2-dichlorobenzene	µg/kg	5	ISO 17025	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Butylbenzene	µg/kg	5	NONE	-
1,2-Dibromo-3-chloropropane	µg/kg	5	ISO 17025	-
1,2,4-Trichlorobenzene	µg/kg	5	ISO 17025	-
Hexachlorobutadiene	µg/kg	5	NONE	-
1,2,3-Trichlorobenzene	µg/kg	5	ISO 17025	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
SVOCs				
Aniline	mg/kg	0.1	NONE	-
Phenol	mg/kg	0.2	ISO 17025	-
2-Chlorophenol	mg/kg	0.1	MCERTS	-
Bis(2-chloroethyl)ether	mg/kg	0.2	MCERTS	-
1,3-Dichlorobenzene	mg/kg	0.2	MCERTS	-
1,2-Dichlorobenzene	mg/kg	0.1	MCERTS	-
1,4-Dichlorobenzene	mg/kg	0.2	MCERTS	-
Bis(2-chloroisopropyl)ether	mg/kg	0.1	MCERTS	-
2-Methylphenol	mg/kg	0.3	MCERTS	-
Hexachloroethane	mg/kg	0.05	ISO 17025	-
Nitrobenzene	mg/kg	0.3	MCERTS	-
4-Methylphenol	mg/kg	0.2	NONE	-
Isophorone	mg/kg	0.2	MCERTS	-
2-Nitrophenol	mg/kg	0.3	NONE	-
2,4-Dimethylphenol	mg/kg	0.3	MCERTS	-
Bis(2-chloroethoxy)methane	mg/kg	0.3	MCERTS	-
1,2,4-Trichlorobenzene	mg/kg	0.3	MCERTS	-
Naphthalene	mg/kg	0.05	MCERTS	-
2,4-Dichlorophenol	mg/kg	0.3	MCERTS	-
4-Chloroaniline	mg/kg	0.1	NONE	-
Hexachlorobutadiene	mg/kg	0.1	MCERTS	-
4-Chloro-3-methylphenol	mg/kg	0.1	NONE	-
2,4,6-Trichlorophenol	mg/kg	0.1	NONE	-
2,4,5-Trichlorophenol	mg/kg	0.2	NONE	-
2-Methylnaphthalene	mg/kg	0.1	NONE	-
2-Chloronaphthalene	mg/kg	0.1	MCERTS	-
Dimethylphthalate	mg/kg	0.1	MCERTS	-
2,6-Dinitrotoluene	mg/kg	0.1	NONE	-
Acenaphthylene	mg/kg	0.05	MCERTS	-
Acenaphthene	mg/kg	0.05	MCERTS	-
2,4-Dinitrotoluene	mg/kg	0.2	NONE	-
Dibenzofuran	mg/kg	0.2	MCERTS	-
4-Chlorophenyl phenyl ether	mg/kg	0.3	MCERTS	-
Diethyl phthalate	mg/kg	0.2	MCERTS	-
4-Nitroaniline	mg/kg	0.2	NONE	-
Fluorene	mg/kg	0.05	MCERTS	-
Azobenzene	mg/kg	0.3	NONE	-
Bromophenyl phenyl ether	mg/kg	0.2	MCERTS	-
Hexachlorobenzene	mg/kg	0.3	MCERTS	-
Phenanthrene	mg/kg	0.05	MCERTS	-
Anthracene	mg/kg	0.05	MCERTS	-
Carbazole	mg/kg	0.3	MCERTS	-
Dibutyl phthalate	mg/kg	0.2	NONE	-
Anthraquinone	mg/kg	0.3	NONE	-
Fluoranthene	mg/kg	0.05	MCERTS	-
Pyrene	mg/kg	0.05	MCERTS	-
Butyl benzyl phthalate	mg/kg	0.3	NONE	-
Benzo(a)anthracene	mg/kg	0.05	MCERTS	-
Chrysene	mg/kg	0.05	MCERTS	-
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	-
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	-

Analytical Report Number: 23-74437
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2908367
Sample Reference				WS10
Sample Number				None Supplied
Depth (m)				0.20
Date Sampled				01/12/2023
Time Taken				None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	-
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	-
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	-
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	-

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 23-74437
Project / Site name: Boscawen Park

* 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 *
2908352	TP02	None Supplied	0.6	Light brown clay and sand with gravel.
2908353	TP02	None Supplied	1	Brown clay and sand with gravel.
2908354	TP03	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2908355	TP03	None Supplied	1.4	Brown clay and sand with gravel.
2908356	TP04	None Supplied	0.6	Brown sand with gravel.
2908357	TP05	None Supplied	0.3	Brown sand with gravel.
2908358	TP05	None Supplied	2	Brown clay and sand with gravel.
2908360	TP06	None Supplied	0.7	Light brown clay and sand with gravel.
2908362	TP07	None Supplied	0.7	Brown clay and sand with gravel.
2908363	TP08	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2908364	WS05	None Supplied	0.1	Brown loam and clay with gravel and vegetation.
2908365	WS06	None Supplied	2.9	Brown clay and sand with gravel.
2908366	WS08	None Supplied	0.4	Brown sand with gravel.

Analytical Report Number : 23-74437
Project / Site name: Boscawen Park

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
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
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
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion 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
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. Refer to CoA for analyte specific accreditation.	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.Refer to CoA for analyte specific accreditation.	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

Analytical Report Number : 23-74437
Project / Site name: Boscawen Park

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. Individual components MCERTS accredited	In-house method based on USEPA8260. Refer to CoA for analyte specific accreditation	L073B-PL	W	MCERTS
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID. Refer to CoA for band specific accreditation.	In-house method with silica gel split/clean up.	L088/76-PL	D	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
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	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 or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

Acronym	Descriptions
HS	Headspace Analysis
MS	Mass spectrometry
FID	Flame Ionisation Detector
GC	Gas Chromatography
EH	Extractable Hydrocarbons (i.e. everything extracted by the solvent(s))
CU	Clean-up - e.g. by Florisil®, silica gel
1D	GC - Single coil/column gas chromatography
2D	GC-GC - Double coil/column gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics
AR	Aromatics
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - understore to separate acronyms (exception for +)
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total

Sample Deviation Report

Analytical Report Number : 23-74437

Project / Site name: Boscawen Park

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.

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
TP02	None Supplied	S	2908353	c	Free cyanide in soil	L080-PL	c
TP02	None Supplied	S	2908353	c	Sulphide in soil	L010-PL	c
TP02	None Supplied	S	2908353	c	Total cyanide in soil	L080-PL	c
TP03	None Supplied	S	2908355	c	Free cyanide in soil	L080-PL	c
TP03	None Supplied	S	2908355	c	Sulphide in soil	L010-PL	c
TP03	None Supplied	S	2908355	c	Total cyanide in soil	L080-PL	c
TP05	None Supplied	S	2908358	c	Free cyanide in soil	L080-PL	c
TP05	None Supplied	S	2908358	c	Sulphide in soil	L010-PL	c
TP05	None Supplied	S	2908358	c	Total cyanide in soil	L080-PL	c
TP08	None Supplied	S	2908363	c	Free cyanide in soil	L080-PL	c
TP08	None Supplied	S	2908363	c	Sulphide in soil	L010-PL	c
TP08	None Supplied	S	2908363	c	Total cyanide in soil	L080-PL	c
WS05	None Supplied	S	2908364	c	Free cyanide in soil	L080-PL	c
WS05	None Supplied	S	2908364	c	Sulphide in soil	L010-PL	c
WS05	None Supplied	S	2908364	c	Total cyanide in soil	L080-PL	c
WS08	None Supplied	S	2908366	c	Free cyanide in soil	L080-PL	c
WS08	None Supplied	S	2908366	c	Sulphide in soil	L010-PL	c
WS08	None Supplied	S	2908366	c	Total cyanide in soil	L080-PL	c

Thomas Gibson
Wheal Jane Services
Old Mine Offices
Wheal Jane
Baldhu
Truro
Cornwall
TR3 6EE

t: 01872 560200
f: 01872 560826
e: consultancy@wheal-jane.co.uk

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-78126

Project / Site name:	Boscawen Park	**Samples received on:**	13/12/2023
Your job number:	21757	**Samples instructed on/ Analysis started on:**	15/01/2024
Your order number:	21757	**Analysis completed by:**	05/02/2024
Report Issue Number:	1	**Report issued on:**	05/02/2024
Samples Analysed:	4 soil samples		

Signed:

Joanna Wawrzeczko
Senior Reporting Specialist
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: 24-78126
Project / Site name: Boscawen Park
Your Order No: 21757

Lab Sample Number				2927658	2927659	2927660	2927661
Sample Reference				TP02	TP03	TP05	TP07
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.60	1.40	0.30	0.70
Date Sampled				30/11/2023	30/11/2023	30/11/2023	01/12/2023
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**				
Stone Content	%	0.1	NONE	25	24	29	21
Moisture Content	%	0.01	NONE	12	36	25	13
Total mass of sample received	kg	0.001	NONE	0.9	0.7	0.7	0.7
Heavy Metals / Metalloids							
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	32	260	130	200
PBET Results (Bioaccessibile Fraction)							
Arsenic (Stomach)	%	0.5	NONE	0.5	0.5	< 0.5	< 0.5
Arsenic (Intestine 1)	%	0.5	NONE	< 0.5	1.6	1.7	0.5
Arsenic (Intestine 2)	%	0.5	NONE	1.2	1.7	1.6	< 0.5
Bioaccessible Fraction %	Maximum % BAF			**1.2 % (I2)**	**1.7 % (I2)**	**1.7 % (I1)**	**0.5 % (I1)**

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 24-78126
Project / Site name: Boscawen Park

* 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 *
2927658	TP02	None Supplied	0.6	Light brown clay and sand with gravel.
2927659	TP03	None Supplied	1.4	Brown clay and sand with gravel.
2927660	TP05	None Supplied	0.3	Brown sand with gravel.
2927661	TP07	None Supplied	0.7	Brown clay and sand with gravel.

Analytical Report Number : 24-78126
Project / Site name: Boscawen Park

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
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
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
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
PBET	In House Method	In house method based on Ruby et.al.		D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' 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.

APPENDIX D

CLEA Statistical Analysis

CLEA Software Version 1.071

Report generated 08-Feb-24

Report title Boscawen Park

Created by

Environment Agency

RESULTS

Environment Agency

		Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?		Top Two applied?	Apply Top 2 Approach to Produce Group					
		oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal		Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	Arsenic (C4SL adult)	6.35E+02	1.25E+03	NR	1.00	0.51	NR	NR	No	No	No	Yes	No	No	No	No	Yes
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

Environment Agency

	Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?		Top Two applied?	Apply Top 2 Approach to Produce Group					
	oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal		Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

Environment Agency

		Soil Distribution				Media Concentrations													
		Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
		%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
1	Arsenic (C4SL adult)	99.9	0.1	0.0	100.0	6.35E+02	NR	3.18E+02	7.63E-06	4.32E-06	0.00E+00	0.00E+00	0.00E+00	NA	NA	NA	NA	NA	NA
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

Environment Agency

	Soil Distribution				Media Concentrations													
	Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
	%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		

Environment Agency

		Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
		Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
1	Arsenic (C4SL adult)	2.86E-04	0.00E+00	1.42E-05	1.94E-06	0.00E+00	0.00E+00	0.00E+00	95.28	0.00	4.72	0.00	0.00	0.00	0.00	0.00
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Environment Agency

	Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															

Environment Agency

			Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})	Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
1	Arsenic (C4SL adult)	ID	0.3	ID	0.0038	NR	NR	NR	NR	NR	NR	NR	0.03	0.5	1	1	1
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

Environment Agency

	Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})		Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

Environment Agency

		Soil-to-water partition coefficient ($cm^3 g^{-1}$)	Vapour pressure (Pa)	Water solubility ($mg L^{-1}$)	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
1	Arsenic (C4SL adult)	5.00E+02	NR	1.25E+06	0.00043 fw	0.0004 fw	0.00023 fw	0.00033 fw	0.0002 fw	0.0011 fw
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Environment Agency

	Soil-to-water partition coefficient ($cm^3\ g^{-1}$)	Vapour pressure (Pa)	Water solubility ($mg\ L^{-1}$)	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

CLEA Software Version 1.071

Report generated 08-Feb-24

Report title Boscawen Park

Created by

Environment Agency

RESULTS

Environment Agency

		Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?		Top Two applied?	Apply Top 2 Approach to Produce Group					
		oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal		Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
1	Arsenic (C4SL child)	3.71E+03	1.91E+04	NR	1.00	0.19	NR	NR	No	No	Yes	Yes	No	No	No	No	Yes
2	Arsenic (C4SL adult)	3.71E+03	8.36E+03	NR	1.00	0.44	NR	NR	No	No	Yes	Yes	No	No	No	No	Yes
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

Environment Agency

	Assessment Criterion (mg kg^{-1})			Ratio of ADE to HCV			Saturation Limit (mg kg^{-1})	50% rule?		Top Two applied?	Apply Top 2 Approach to Produce Group					
	oral	inhalation	combined	oral	inhalation	combined		Oral	Inhal		Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

Environment Agency

		Soil Distribution				Media Concentrations													
		Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
		%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
1	Arsenic (C4SL child)	99.9	0.1	0.0	100.0	3.71E+03	NR	NA	3.16E-05	1.35E-05	NA	0.00E+00	0.00E+00	NA	NA	NA	NA	NA	NA
2	Arsenic (C4SL adult)	99.9	0.1	0.0	100.0	3.71E+03	NR	NA	3.16E-05	1.35E-05	NA	0.00E+00	0.00E+00	NA	NA	NA	NA	NA	NA
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			
11																			
12																			
13																			
14																			
15																			
16																			
17																			
18																			
19																			
20																			

Environment Agency

	Soil Distribution				Media Concentrations													
	Sorbed	Dissolved	Vapour	Total	Soil	Soil gas	Indoor Dust	Outdoor dust at 0.8m	Outdoor dust at 1.6m	Indoor Vapour	Outdoor vapour at 0.8m	Outdoor vapour at 1.6m	Green vegetables	Root vegetables	Tuber vegetables	Herbaceous fruit	Shrub fruit	Tree fruit
	%	%	%	%	mg kg^{-1}	mg m^{-3}	mg kg^{-1}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg m^{-3}	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW	mg kg^{-1} FW
21																		
22																		
23																		
24																		
25																		
26																		
27																		
28																		
29																		
30																		

Environment Agency

		Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
		Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
1	Arsenic (C4SL child)	1.09E-04	0.00E+00	1.91E-04	1.69E-06	0.00E+00	0.00E+00	0.00E+00	36.43	0.00	63.57	0.00	0.00	0.00	0.00	0.00
2	Arsenic (C4SL adult)	1.09E-04	0.00E+00	1.91E-04	1.69E-06	0.00E+00	0.00E+00	0.00E+00	36.43	0.00	63.57	0.00	0.00	0.00	0.00	0.00
3																
4																
5																
6																
7																
8																
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

Environment Agency

	Average Daily Exposure (mg kg^{-1} bw day^{-1})							Distribution by Pathway (%)							
	Direct soil ingestion	Consumption of homegrown produce and attached soil	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour	Background (oral)	Background (inhalation)	Direct soil ingestion	Consumption of homegrown produce	Dermal contact with soil and dust	Inhalation of dust	Inhalation of vapour (indoor)	Inhalation of vapour (outdoor)	Background (oral)	Background (inhalation)
21															
22															
23															
24															
25															
26															
27															
28															
29															
30															

Environment Agency

			Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})	Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
1	Arsenic (C4SL child)	ID	0.3	ID	0.0087	NR	NR	NR	NR	NR	NR	NR	0.03	0.5	1	**0.017**	1
2	Arsenic (C4SL adult)	ID	0.3	ID	0.0038	NR	NR	NR	NR	NR	NR	NR	0.03	0.5	1	**0.017**	1
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	
11																	
12																	
13																	
14																	
15																	
16																	
17																	
18																	
19																	
20																	

Environment Agency

	Oral Health Criteria Value (µg kg^{-1} BW day^{-1})		Inhalation Health Criteria Value (µg kg^{-1} BW day^{-1})		Oral Mean Daily Intake (µg day^{-1})	Inhalation Mean Daily Intake (µg day^{-1})	Air-water partition coefficient (K_{aw}) (cm^3 cm^{-3})	Coefficient of Diffusion in Air (m^2 s^{-1})	Coefficient of Diffusion in Water (m^2 s^{-1})	log K_{oc} (cm^3 g^{-1})	log K_{ow} (dimensionless)	Dermal Absorption Fraction (dimensionless)	Soil-to-dust transport factor (g g^{-1} DW)	Sub-surface soil to indoor air correction factor (dimensionless)	Relative bioavailability via soil ingestion (unitless)	Relative bioavailability via dust inhalation (unitless)
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																

Environment Agency

		Soil-to-water partition coefficient ($cm^3 g^{-1}$)	Vapour pressure (Pa)	Water solubility ($mg L^{-1}$)	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
1	Arsenic (C4SL child)	5.00E+02	NR	1.25E+06	0.00043 fw	0.0004 fw	0.00023 fw	0.00033 fw	0.0002 fw	0.0011 fw
2	Arsenic (C4SL adult)	5.00E+02	NR	1.25E+06	0.00043 fw	0.0004 fw	0.00023 fw	0.00033 fw	0.0002 fw	0.0011 fw
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										

Environment Agency

	Soil-to-water partition coefficient ($cm^3 g^{-1}$)	Vapour pressure (Pa)	Water solubility ($mg L^{-1}$)	Soil-to-plant concentration factor for green vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for root vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tuber vegetables (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for herbaceous fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for shrub fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)	Soil-to-plant concentration factor for tree fruit (mg g^{-1} plant DW or FW basis over mg g^{-1} DW soil)
21									
22									
23									
24									
25									
26									
27									
28									
29									
30									

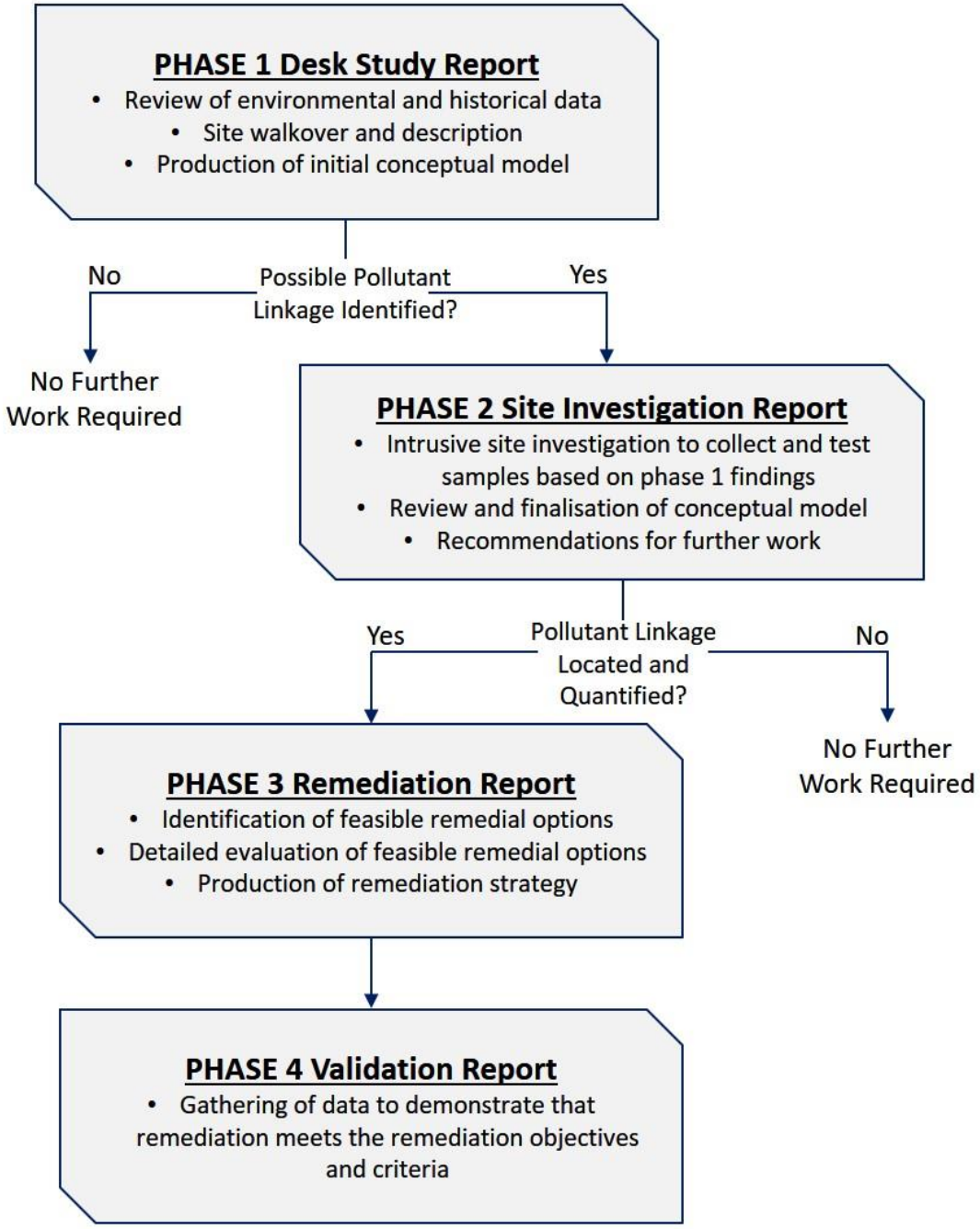
APPENDIX E

3G pitch Ground Investigation Specifications

2.1	Framework Ground Investigation (Hand Pits)	Provide a Geotechnical Survey to determine subsoil conditions which includes hand pits to confirm soil profile, permeability tests, laboratory analysis of soil, CBR ratings etc in sufficient detail and location to allow design of pitch base, or provide recommendations for further works where ground conditions are deemed unsuitable, task to include: · Ground investigation by trial pitting to include 5No. hand pits to target depth of 1.2m depth bgl and TRL-DCP testing (assumed 5) to inform insitu CBR (assumes no surfacing and reinstatement with arisings only) · Indicative infiltration testing in one or two hand pit positions · Laboratory testing to include 2No. PSD or Plasticity index and 2No. BRE SD1 Suite for concrete classification · Reporting to provide overview of readily available desk study information, factual findings from ground investigation and interpretation to provide floodlight foundation bearing capacity, infiltration potential, CBR for design and/or advice on abnormal ground conditions with recommendations for further investigations.
2.2	Framework Ground Investigation (Driven Tube Sampling)	Investigation to be provided where pre-site review indicates that the hand dug trial pit investigation will be unlikely to provide sufficient information to allow design to proceed. Includes preliminary UXO assessment for investigation works only. Provide a Geotechnical Survey to determine subsoil conditions which includes driven tubes to confirm soil profile, permeability tests, laboratory analysis of soil, CBR ratings etc in sufficient detail and location to allow design of pitch base, or provide recommendations for further works where ground conditions are deemed unsuitable, task to include: · Ground investigation by driven tube sampling to include 5No. driven tubes to excavate to depths up to 5m and Dynamic Probe test to assess soil consistency to depths up to 10m and TRL-DCP testing (assumed 5) to inform insitu CBR (assumes no surfacing and reinstatement with arisings only) · Indicative infiltration testing in one or two driven tube pit positions · To account for variability in the soil profile with depth we have allowed an overall budget for laboratory testing, this will generally equate to 3 no. classification tests to assist in pitch/foundation design, and 3 no. sulphate testing for concrete classification · Reporting to provide overview of readily available desk study information, factual findings from ground investigation and interpretation to provide floodlight foundation bearing capacity, infiltration potential, CBR for design and/or advice on abnormal ground conditions with recommendations for further investigations.

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




Wheal Jane
Consultancy
Geotechnical, environmental
& mining services