EARTH ENVIRONMENTAL & GEOTECHNICAL

PHASE II GEOENVIRONMENTAL SITE INVESTIGATION

WOKINGHAM BOROUGH COUNCIL

RADSTOCK PRIMARY SCHOOL

RADSTOCK LANE

EARLEY

READING

RG6 5UZ

PROJECT REF: R4319

JANUARY 2025

Earth Environmental & Geotechnical (Southern) Ltd
Suite 18
Wyvols Court, Swallowfield
Reading
RG7 1WY

Tel : 01183 734000

Email south@earthenvironmental.co.uk
www.earthenvironmental.co.uk

PHASE II GEOTECHNICAL SITE INVESTIGATION

WOKINGHAM BOROUGH COUNCIL

RADSTOCK PRIMARY SCHOOL

RADSTOCK LANE

EARLEY

READING

RG6 5UZ

PROJECT REF: R4319

JANUARY 2025

Prepared on Behalf of:

Wokingham Borough Council

By:

Earth Environmental & Geotechnical (Southern) Ltd
Suite 18
Wyvols Court, Swallowfield
Reading
RG7 1WY

DISTRIBUTION: 1 Electronic Copy

1 electronic copy Wokingham Borough Council

PHASE II GEOTECHNICAL AND GEOENVIRONMENTAL SITE INVESTIGATION

Radstock Primary School, Radstock Lane, Earley, Reading, RG6 5UZ

Report Reference: R4319/25/GI

Version A.0

Date: 7th January 2025

Prepared for: Wokingham Borough Council

Prepared by: Earth Environmental & Geotechnical (Southern) Ltd
Suite 18
Wyvols Court, Swallowfield
Reading
RG7 1WY

Definition of Version Code:
D. Applied during initial drafting of the report before it has been reviewed.
C. Applied after the report has been reviewed but before it has been approved by the Project Manager.
B. Applied after the Project Manager has approved the report ready for issue to the client.
A. Applied to reports after external/internal review.

The version number starts at “0” and is raised by “1” at each re-type.

Written by: **Ashley Thorne**
Senior Geo-Environmental Consultant

Approved by: **John Grace**
Director

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

1.0 INTRODUCTION

1.1 Background

A Geoenvironmental Site Investigation has been commissioned by Wokingham Borough Council (the Client) to examine ground conditions, retrieve soil samples for contamination / geotechnical testing, provide information to be used in parameters for foundation and drainage design and compile a human health risk assessment for a new classroom, car park and playground at Radstock Primary School, Radstock Lane, Earley, Reading, RG6 5UZ (herein referred to as the 'assessment site').

1.2 Terms of Reference

EEGSL was commissioned by the Client to undertake a Phase I Geo-Environmental Desk Study for the assessment site in accordance with a proposal reference R4319, dated 4th October 2024.

The objectives of this site investigation are as follows:

- *Assessment of ground conditions for design of foundations and infrastructure associated with proposed development.*

- *Assess the presence and likely extent of any potential environmental hazards (soil, groundwater and gas) associated within the areas of the assessment site investigated.*

1.3 Report Scope

This report presents full factual records of the site work carried out, the ground conditions encountered in the exploratory holes and the in-situ and laboratory test results. All information collected has been used to provide an interpretation of the ground conditions together with recommendations to inform on parameters used in foundation design.

1.4 Limitations of the Study

The report is written in the context of an agreed scope of work and budget and should not be used in a different context. New information, improved practices or changes in legislation may require a reinterpretation of the report in whole or in part. EEGSL reserve the right to amend either conclusions or recommendations in light of any further information that may become available. The report is provided for the sole use by the Client and is confidential to them.

Recommendations within this report are also based on exploratory records and examination of samples and, where applicable, laboratory tests. No liability can be accepted for conditions not revealed by the boreholes and trial pits, particularly at intervening locations. Whilst every effort is made to ensure accuracy of data supplied, all opinions expressed as to the spatial distribution of strata between sampling locations is for guidance only and no responsibility is accepted as to its accuracy.

2.0 SITE LOCATION & DESCRIPTION

2.1 Site Location & Description

The assessment site is located at Radstock Primary School, Radstock Lane, Earley, Reading, RG6 5UZ. The assessment site is centred on National Grid Reference SU 74633 70509 (E: 474633, N: 170509) The assessment site and surrounding area are shown in Figure 1.

Figure 1: Site Location Plan

2.2 Published Geology

According to the BGS, the assessment site is underlain by superficial deposits of the Boyn Hill Gravel Member - Sand and Gravel. Beneath the Boyn Hill Gravel Member is bedrock of the London Clay Formation - Clay, Silt and Sand.

2.3 Preliminary Contamination Risk Assessment

Prior to any ground investigations taking place, EEGSL were commissioned by the client to undertake a Phase 1 Geo-Environmental Desk Study (EEGSL Report Reference R4319/24/DTS).

Table 1 below presents the Preliminary Conceptual Model for the assessment site, and a summary of the key findings of the Preliminary Risk Assessment are as follows:

- A review of historical and current day information identified no significant onsite sources of contamination, with the assessment site remaining undeveloped until 2008 when it was developed into a hardstanding playground.

- Some historical and current industrial and commercial uses surrounding the assessment site have been identified, however their potential to impact the assessment site has been dismissed.

- Considering the lack of onsite and offsite sources, the risk to proposed site users was deemed as Very Low.

Given the low-risk rating, it was concluded that during the ground investigation works for foundation and drainage design, a limited number of soil samples should be tested for a general contamination suite. This testing would enable a quantitative risk assessment to be completed and confirm the absence (or present) of any contamination.

The following sections discuss the ground investigation works completed at the assessment site and provide foundation and drainage design information alongside a human health risk assessment.

Table 1 - Preliminary Conceptual Model

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
On-site Sources						
Contamination of the ground beneath site due to historical site uses.	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Low	Very Low Risk	The assessment site remained unchanged between 1872 and 2008, with no development occurring onsite during this time. Since 2008 the site has been used as a playground with hardstanding covering the majority of the site. Given the lack of significant onsite development, it is unlikely that significant contamination exists beneath the site from historical onsite land uses. The risk to current site users has therefore been determined as **VERY LOW**.
		Future Site users	Unlikely	Low	Very Low Risk	As detailed above there are thought to be no significant onsite sources of contamination, therefore the risk to future site users is deemed as **VERY LOW**.
		Construction Workers	Unlikely	Low	Very Low Risk	As detailed above there are thought to be no significant onsite sources of contamination, therefore the risk to construction site users is deemed as **VERY LOW**.
		Adjacent Site users	Unlikely	Low	Very Low Risk	As detailed above, there are thought to be no significant onsite sources of contamination, therefore the risk to adjacent site users is deemed as **VERY LOW.**
	Vertical or horizontal migration of contaminants into the groundwater beneath the assessment site.	Controlled Waters	Unlikely	Low	Very Low Risk	Despite the superficial geology being classed as a Secondary A aquifer, the lack of on-site sources of contamination means the risk to controlled waters is deemed as **VERY LOW**.
Off-site Sources						
Contamination of the ground beneath site due to offsite historical site uses.	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Low	Very Low Risk	A review of historical and current day mapping and environmental data has proven a lack of significant offsite sources present. Given the lack of significant offsite sources, the risk to current site users from offsite sources is deemed as **VERY LOW.**
		Future Site users	Unlikely	Low	Very Low Risk	As detailed above, the risk to future site users from offsite contamination is also considered **VERY LOW.**
		Construction Workers	Unlikely	Low	Very Low Risk	As detailed above, the risk to construction site users from offsite contamination is also considered **VERY LOW**.

3.0 SITE INVESTIGATION

3.1 Exploratory Fieldwork

The fieldwork was carried out by EEGSL from the 19th & 26th of November 2024 and comprised:

- 6 No. window sample boreholes (designated WS01-WS06) sunk to a maximum depth of 5.00m below existing ground level. Window sample boring is carried out with a small, track-mounted rig, which uses a chain driven trip hammer to drive sampling tubes or penetrometers into the ground. These tools are coupled to the anvil of the hammer by solid drill rods. Sampling tubes comprise “windowless samplers”, which are plain sampler tubes in which a continuous disturbed sample is recovered within a semi-rigid plastic liner. To reduce friction within the borehole, sampling tubes of progressively smaller diameter are used as the borehole depth increases. Sampler diameters generally range from between approximately 90mm to 50mm. Exploratory Hole logs are included in Appendix 1.

- 1 No. Machine dug Trial Pit (TP01) was dug to 1.7m below existing ground level and soakaway testing was undertaken in line with BRE 365 Guidance.

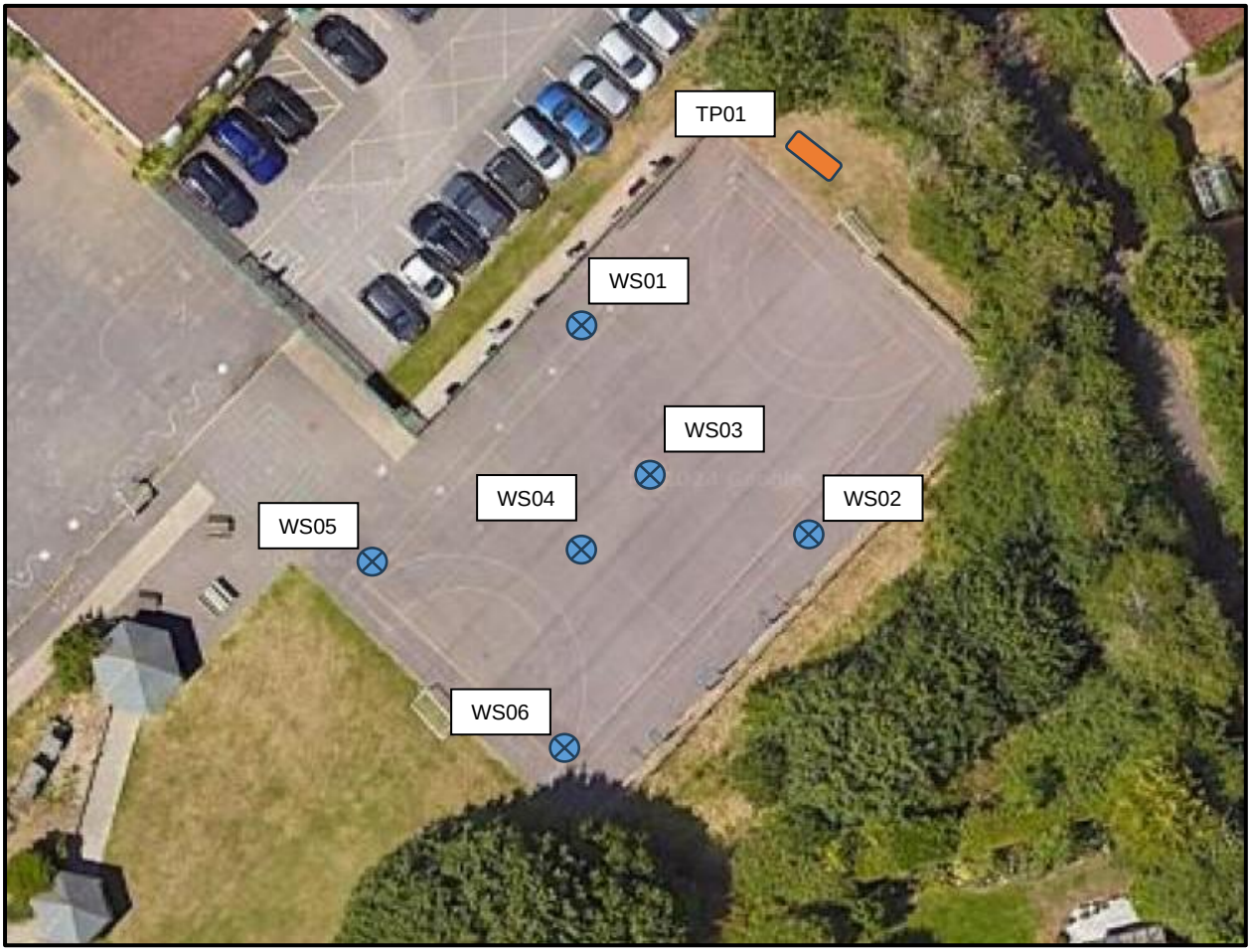
The fieldwork was carried out generally in accordance with BS 5930:2015+A1:2020 Code of Practice for Site Investigations unless otherwise stated.

The exploratory hole locations were determined by EEGSL prior to the site works and considered site logistical constraints present at the time of investigation. The investigation locations completed are shown approximately on the Exploratory Hole Location Plan in Figure 2.

Each exploratory location was scanned using a Cable Avoidance Tool (CAT) in order to locate unrecorded underground services, and the exploratory locations were repositioned if necessary. On completion, all samples recovered from the assessment site were taken to a specialist laboratory for testing.

All site investigation work was supervised full time by a representative of EEGSL. The logging of soils and rocks has been carried out in accordance with BS5930(2015+A1:2020) except where superseded by the soil and rock description methodology in BS EN14688-1(2002), BS EN 14688-2(2004) and BS EN 14689-1(2003).

Figure 2: Exploratory Hole Location Plan



A summary of exploratory holes undertaken during the investigation is presented in Table 2.

Table 2: Summary of Exploratory Holes Undertaken

Hole	Type*	Depth (m)	Date Started	Date Finished	Backfill Details***
WS01	WS	5.00	19/11/2024	19/11/2024	A
WS02	WS	5.00	19/11/2024	19/11/2024	A
WS03	WS	5.00	19/11/2024	19/11/2024	A
WS04	WS	5.00	19/11/2024	19/11/2024	A
WS05	WS	5.00	19/11/2024	19/11/2024	A
WS06	WS	5.00	19/11/2024	19/11/2024	A
TP01	TP	1.70	26/11/2024	26/11/2024	A
*WS = Window Sample Borehole, TP = Trial Pit, **A = Arisings					

3.2 Laboratory Testing Programme

3.2.1 Geotechnical Testing

A programme of laboratory testing was carried out on samples taken from the various strata to assist in classification and determine the engineering properties of the materials underlying the assessment site. The testing was scheduled by EEGSL and carried out by Geo Site & Testing Services Ltd.

The test procedures used were generally in accordance with the methods described in BS1377:1990 and BS EN ISO 17892-1:2014. Details of the specific tests used in each case are given in Table 3 below:

Table 3: Summary of Geotechnical Testing

TEST	STANDARD	No.
Atterburg Limit (one-point method)	BS1377:1990 Part 2, Clause 4.4	6
Moisture Content	BS1377:1990 Part 2 : 3.2	6
Water Soluble Sulphate (SO_4)	BS1377:1990 Part 3, Clause 5	3
pH	BS1377:1990 Part 3, Clause 9	3

The results of the laboratory geotechnical tests are discussed in Section 5 and included in Appendix 3.

3.2.2 Environmental Testing

The environmental chemistry of the ground was investigated by specialist chemical analysis of selected samples, scheduled by EEGSL and carried out by QTSE DETS Ltd.

Chemical analyses were carried out on 6 soil samples and were submitted for the following suite of determinants:

- Asbestos Screen, Arsenic, Barium, Beryllium, Boron, Cadmium, Chromium, Copper, Lead, Mercury, Nickel, Selenium, Vanadium, Zinc, Cyanide, Sulphate (SO4), Sulphide, pH, Soil Organic Matter, Phenol, speciated Petroleum Hydrocarbons (TPH) and speciated Polyaromatic Hydrocarbons (PAH).

The results of the laboratory contamination tests are discussed in Section 6 and included in Appendix 4.

4.0 GROUND CONDITIONS ENCOUNTERED

The following sections describe the ground conditions identified during the investigation and discusses the engineering properties of the soils based on insitu testing results and laboratory analysis.

4.1 Soil Profile Encountered

The sequence of strata encountered beneath the assessment site consisted of:

- Made Ground:
    - MACADAM proven to a maximum depth of 0.20mbgl, observed in WS01-WS06.
    - Coarse compacted GRAVEL (Type 1) proven to a maximum depth of 0.45mbgl, observed in WS01-WS06.
    - Soft brown gravelly sandy CLAY, clayey SAND with gravels of brick and concrete, proven to a maximum depth of 1.50mbgl, observed in WS01, WS03, WS04, WS05 and WS06. Rare fragments of wood were also found present within WS01 and WS05.
- London Clay Formation:
    - Soft becoming firm to stiff brownish grey slightly gravelly CLAY of the London Clay formation was proven to a maximum depth of 5.00mbgl, observed in all exploratory locations.

The generalised ground model can be described as Made Ground proven to an average depth of 1.0mbgl beneath the current hardstanding, and to 0.1mbgl within the soft landscaping beneath TP01. The Made Ground overlies soft becoming firm to stiff brownish grey slightly gravelly CLAY of the London Clay formation proven to a depth of 5.00mbgl.

The depths at which each stratum was encountered in each exploratory hole is provided within the borehole logs presented within Appendix 1.

4.2 Obstructions

During the site investigation, no man-made obstructions were encountered during the drilling process.

4.3 Groundwater

During the site investigation works, groundwater was encountered within WS03 at a depth of 3.1mbgl and a slight seepage was encountered within TP01 at a depth of 1.0mbgl. Groundwater was found absent from all other investigation locations.

This information would suggested that some perched groundwater may be present within the more granular layers of the underlying London Clay formation, however these pockets of perched

groundwater are expected to represent discontinuous pockets are are unlikely to represent a continuous groundwater body.

4.4 Engineering Properties

The following section discusses the engineering properties of the underlying London Clay Formation. The assessment is based on results of insitu and laboratory testing obtained during this investigation. The results of laboratory geotechnical analysis are summarised in Table 4, whilst full details are included within Appendix 3.

Table 4: Summary of Laboratory Geotechnical Test Results

Location	Depth (m)	Stratum	Classification				Chemical	
			Atterberg Limits (%)				pH Value	Water Soluble Sulphate (mg/l)
			Moisture Content	Liquid Limit	Plastic Limit	Plasticity Index		
WS01	1.00	Made Ground	-	-	-	-	7.9	93
WS01	2.00	London Clay	31	59	23	36	-	-
WS02	1.20	London Clay	15	36	17	19	-	-
WS03	3.80-4.00	London Clay	30	75	23	52	-	-
WS04	1.20	London Clay	20	53	18	35	7.8	230
WS04	3.00	London Clay	29	76	22	54	7.9	97
WS06	2.00	London Clay	36	65	25	39	-	-

4.4.1 London Clay Formation (0.10mbgl to 5.00mbgl)

Soft becoming firm to stiff brownish grey slightly gravelly CLAY of the London Clay formation was was found present at depths between 0.10mbgl and 5.00mbgl at the assessment site. During drilling 29 **SPT N** results were obtained at depths between 1.20mbgl and 5.00mbgl. The SPT N values would suggest the London Clay Formation is generally soft at 1.20mbgl becoming firm at 2.00mbgl and firm to stiff from 3.00mbgl to 5.00mbgl.

Atterberg Limit tests were undertaken on six samples of the London Clay. Test results have given values for **liquid limit** ranging from 36-76%, values for **plastic limit** ranging from 17-25%, resulting in values of **plasticity index** ranging from 19-54%. These results suggest the samples tested are predominantly clay of Intermediate to high to very high plasticity. For design purposes, a value of plasticity index = 52% is recommended, based off an upper quartile average.

In accordance with NHBC Chapter 4.2 Building Near Trees(2003) soils can be classified in terms of volume change potential, using the relationship:

$$Ip' = Ip \times \frac{\%\ \text{less than } 425\mu m}{100\%}$$

….where Ip' = modified plasticity index, Ip = plasticity index.

Based on the laboratory test results, the above relationship and Table 1 of NHBC Chapter 4.2, the underlying Clay with Flints Formation are shown to have on average a **Medium to High Volume Change Potential.**

Design values for the London Clay have been derived from SPT N values and correlations by Stroud and Butler. A summary of the values is presented in Table 5.

Table 5: Summary of Derived Design Values

Depth (m)	Stratum	N Value Results		Design Parameters*	
		Range	Average	Shear Strength (kN/m^2)	Coefficient of Volume Compressibility (m^2/MN)
1.20	LC	6-8	7	28.7	0.348
2.00	LC	9-13	10	41.0	0.243
3.00	LC	16-19	19	77.9	0.128
4.00	LC	13-22	18	73.8	0.135
5.00	LC	20-29	24	98.4	0.101

*Based on average N Values and correlations by Stroud and Butler(1975).
LC – London Clay Formation

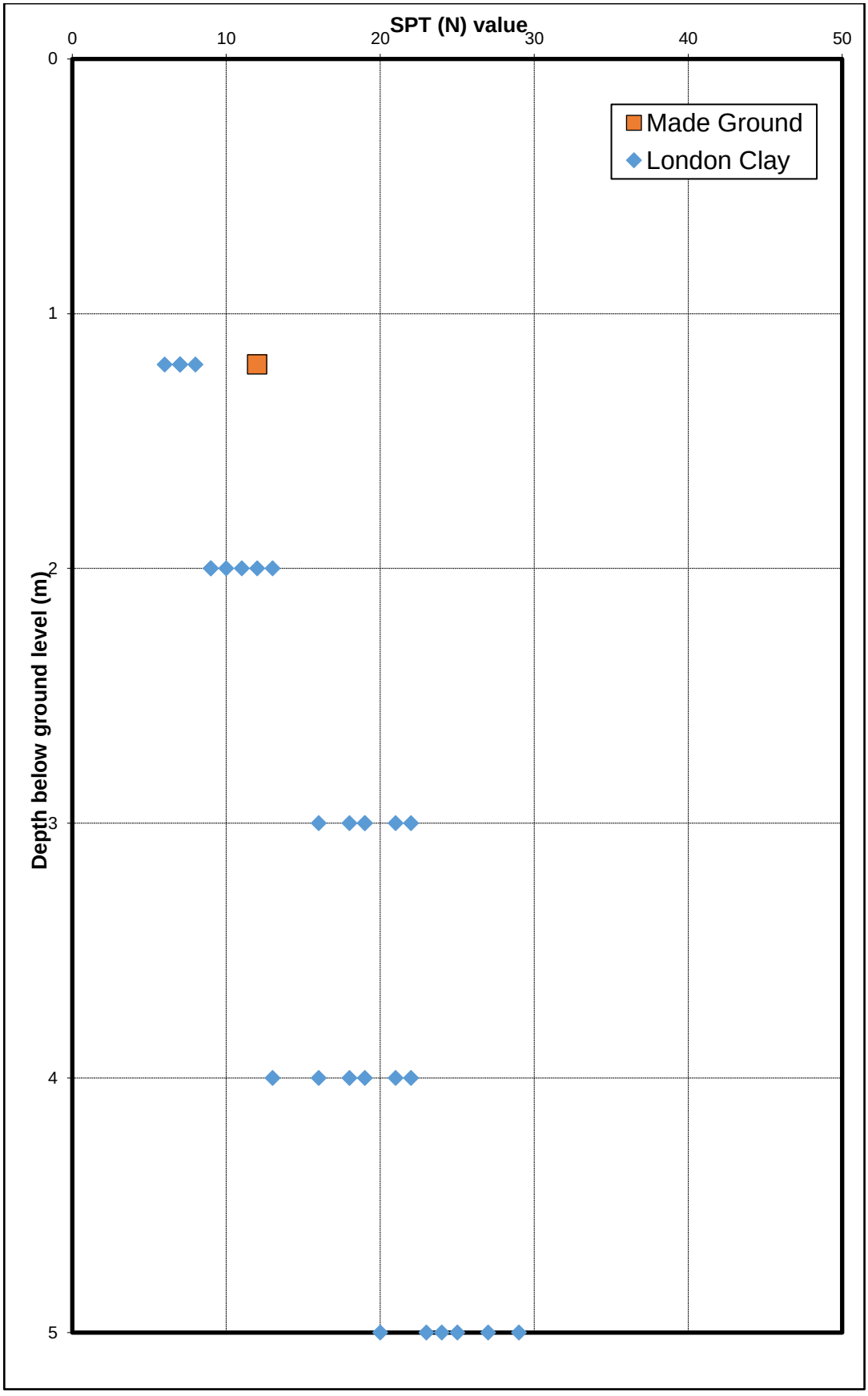
Effective stress strength parameters for the clay material may also be obtained from correlations with plasticity index. For a plasticity index of 32%:

- BS8002 (1994), Table 2 gives $\phi'_{crit} \approx 20^o$
- Gibson (1953), gives $\phi_d = 22.2^o$

Based on all the above, design values of ϕ'crit = 20º and c´ = 0kN/m2 are recommended for the London Clay Formation.

Laboratory tests have given values of **water-soluble sulphate** (SO_4) between 97 mg/l and 230 mg/l and **pH Values** between 7.8 and 7.9.

Figure 3: SPT N Vs Depth Graph



4.5 In Situ Soakaway Testing Results

In-situ Soakaway testing was undertaken at TP01.

Testing was completed in line with BRE 365 Guidance, however testing at TP01 was abandoned after four hours due to the lack of infiltration.

The results of the in-situ soakaway testing are summarised in Table 6 below.

Table 6 – Summary of In Situ Soakaway Test Results

Location	No. of Tests in Pit	Test Depth (m)	Strata	Soil Infiltration Rate (m/s)	Comments
TP01	1	1.70	London Clay	N/A	Soils are essentially impermeable showing no signs of infiltration after four hours. Test abandoned.
	2	-			Unable to complete
	3	-			Unable to complete

The results above suggest infiltration drainage is unlikely to be suitable, and alternative discharge routes should be explored.

5.0 GEOTECHNICAL ASSESSMENT

This section will discuss possible foundation design for the proposed development and considers the ground conditions identified within Section 4 alongside the design values generated form insitu and laboratory analysis.

5.1 Ground Conditions Encountered

The generalised ground model can be described as Made Ground proven to an average depth of 1.0mbgl beneath the current hardstanding, and to 0.1mbgl within the soft landscaping beneath TP01. The Made Ground overlies soft becoming firm to stiff brownish grey slightly gravelly CLAY of the London Clay formation proven to a depth of 5.00mbgl.

5.2 Proposed Development

It is understood that the proposed development includes the construction of a new classroom, car park and playground at Radstock Primary School. Plans showing the proposed development have not be provided to EEGSL at this stage.

5.3 Groundwater

During the site investigation works, groundwater strikes were encountered in two of the seven locations and at depths between 1.0mbgl and 3.1mbgl. The current data suggested that pockets of perched groundwater may be present within granular layers of the underlying London Clay, however a continuous groundwater body is not expected to be present.

5.4 Foundations

For the purposes of this report, the bearing capacity of soils at depths of, 1.00mbgl, 2.00mbgl and 3.00mbgl will be discussed. Foundations should be placed within the underlying London Clay Formation. If any Made Ground, particularly loose or soft materials are encountered at foundation level, this should be either excavated and replaced with suitable granular fill, or the foundation extended to suitable strata.

Table 7 summarises anticipated allowable bearing pressures for shallow strip and pad foundations. The bearing capacities are calculated assuming a factor of safety against bearing capacity failure of 3.

Table 7: Summary of Allowable Bearing Pressures

Foundation Depth	Foundation Stratum	Design Value	Foundation Type	Foundation Width / Size	Allowable Bearing Pressure
1.00m	London Clay	$_{Cu}$ = 28.7kN/m^2	Strip	0.6m	70kPa
				1.0m	65kPa
			Pad	0.75m x 0.75m	80kPa
				1.5m x 1.5m	75kPa
2.00m	London Clay	$_{Cu}$ =41.0kN/m^2	Strip	0.6m	110kPa
				1.0m	105kPa
			Pad	0.75m x 0.75m	130kPa
				1.5m x 1.5m	120kPa
3.00m	London Clay	$_{Cu}$ =77.9kN/m^2	Strip	0.6m	210kPa
				1.0m	210kPa
			Pad	0.75m x 0.75m	250kPa
				1.5m x 1.5m	230kPa

Table 8 gives estimates of anticipated settlements for the above foundations, based on correlations by Burland & Burbidge(1985) and design values discussed in Section 4. Maximum allowable bearing pressures calculated in Table 7 have been used to give a worst-case scenario.

Table 8: Summary of Anticipated Foundation Settlements

Foundation Depth	Foundation Stratum	Foundation Type	Foundation Size	Foundation Loading	Settlement (mm)		
					At Centre	At Corner	Average
1.00m	London Clay	Strip	0.6m	70kPa	-	-	10-15
			1.0m	65kPa	-	-	15-20
		Pad	0.75m x 0.75m	80kPa	20-25	5-10	15-20
			1.5m x 1.5m	75kPa	30-35	5-10	25-30
2.00m	London Clay	Strip	0.6m	110kPa	-	-	15-20
			1.0m	105kPa	-	-	20-25
		Pad	0.75m x 0.75m	130kPa	25-30	5-10	20-25
			1.5m x 1.5m	120kPa	35-40	5-10	25-30
3.00m	London Clay	Strip	0.6m	210kPa	-	-	20-25
			1.0m	210kPa	-	-	25-30
		Pad	0.75m x 0.75m	250kPa	30-35	5-10	25-30
			1.5m x 1.5m	230kPa	50-55	10-15	40-45

Settlements for other bearing pressures may be estimated on a pro-rata basis but bearing pressures should not exceed the allowable net bearing pressure based on ultimate bearing capacity.

All foundation excavations should be inspected by a qualified engineer to prove that the founding strata is suitable and uniform along the length of the foundation, and capable of taking the anticipated structural loadings.

Should the anticipated structural loadings exceed the allowable bearing pressures above, or anticipated settlements are too large for the proposed structure, alternative foundation options such a piling should be considered.

Foundations placed within the underlying London Clay formation should be designed taking into account guidance within NHBC Chapter 4,2. In this instance the underlying London Clay formation has been shown to have a medium to high volume change potential.

5.5 Chemical Attack on Buried Concrete

Made Ground / London Clay

Chemical tests show low levels of water-soluble sulphates and alkaline ground conditions. Based on these conditions, it is recommended that for foundations the Design Sulphate Class, as defined in BRE Special Digest 1 (2005), be taken as DS-1 and the Aggressive Chemical Environment for Concrete (ACEC) site classification be taken as AC-1s. The recommendations of BRE Special Digest 1 should be followed for concrete foundations and ground bearing floor slabs.

5.6 Suitability of Excavated Materials

Acceptability criteria and testing, and methods of compaction/placement will depend on the type of contract and specification used for the construction of the proposed development and it is recommended that earthworks specifications are reviewed by a suitably qualified engineer once these have been prepared by the relevant parties.

In this instance it is recommended that any Made Ground and underlying clay materials are not used as engineered fill and are instead only used for landscaping.

5.7 Temporary Works

Formations will be susceptible to damage both by weather and trafficking, and should be protected immediately on exposure, particularly in areas where construction plant will access the site.

Excavations in the made ground and any soft clays have the potential to be unstable and should be battered back to an angle of 1 in 2, or a system of close sheeting and shoring adopted to ensure stability.

All excavations should be adequately supported where personnel are required to enter.

All natural materials on site should be capable of being excavated using conventional excavating machinery.

6.0 SOIL CONTAMINATION RISK ASSESSMENT

6.1 Tier I Human Health Soil Risk Assessment – Future Site Users

As part of the contamination assessment, the chemical results from 6 soil samples obtained by EEGSL have been screened against accepted compliance criteria, namely:

- Defra C4SL Health Criteria Values, where available; and
- Tier 1 assessment values - based on LQM/CIEH Suitable 4 Use Levels (S4ULs).

As a preliminary screening assessment and considering the proposed receptors (school children), all results have been compared against the Public Open Space (residential) screening criteria). EEGSL believe that this screening criteria best represents the likely pathways and exposure scenarios in this instance.

The comparison of results is summarised in Table 9 and 10 below:

Table 9: Soil Results Comparison with Defra C4SL HCV/LLTC Values

Determinant	C4SL (mg/kg)*	Min. (mg/kg)	Max. (mg/kg)	No. of Samples with Exceedances
	Public Open Space (residential)			
Arsenic	79	5	11	0
Benzo(a)pyrene	10	<0.1	2.39	0
Cadmium	220	<0.2	0.5	0
Chromium VI	21	<2	<2	0
Lead	630	11	426	0
Naphthalene	11000	<0.1	<0.1	0
*Minimal Risk Health Criteria Values				

The comparison within Table 9 has shown no instances of elevated levels of contamination present in excess of the C4SLs for Public Open Space (residential) screening criteria.

For contaminants not covered by the Defra C4SLs, reference is made to the Suitable for Use Levels (S4ULs) derived by The Land Quality Management Ltd & Chartered Institute of Environmental Health and summarised in Table 10. The S4ULs are based on 1% Soil Organic Matter (SOM).

Table 10: Soil Results Comparison with LQM/CIEH S4UL

Determinant	Suitable 4 Use Levels (mg/kg)* Public Open Space (residential)	Min. (mg/kg)	Max. (mg/kg)	No of Exceedances
Metals				
Beryllium	2.2	<0.5	<0.5	0
Boron	210000	<1	<1	0
Chromium III	1500	9	17	0
Copper	12000	7	21	0
Mercury	16	<1	<1	0
Nickel	230	5	17	0
Selenium	1100	<2	<2	0
Vanadium	2000	15	33	0
Zinc	810000	21	84	0
Polycyclic Aromatic Hydrocarbons				
Acenaphthylene	15000	<0.1	<0.1	0
Acenaphthene	15000	<0.1	0.4	0
Fluorene	9900	<0.1	0.48	0
Phenanthrene	3100	<0.1	4.6	0
Anthracene	74000	<0.1	0.97	0
Fluoranthene	3100	<0.1	7.2	0
Pyrene	7400	<0.1	5.2	0
Benz(a)anthracene	29	<0.1	3.19	0
Chrysene	57	<0.1	2.17	0
Benzo(b)fluoranthene	7.1	<0.1	3.19	0
Benzo(k)fluoranthene	190	<0.1	0.98	0
Indeno(1,2,3-cd)pyrene	82	<0.1	1.49	0

Dibenz(a,h)anthracene	0.57	<0.1	0.37	0
Benzo(ghi)perylene	640	<0.1	1.2	0
Speciated TPH				
Aliphatic >C5 - C6	570000	<0.01	<0.01	0
Aliphatic >C6 - C8	600000	<0.05	<0.05	0
Aliphatic >C8 - C10	13000	<2	<2	0
Aliphatic >C10 - C12	13000	<2	<2	0
Aliphatic >C12 - C16	13000	<3	<3	0
Aliphatic >C16 – C21	250000	<3	<3	0
Aromatic >C5 - C7	56000	<0.01	<0.01	0
Aromatic >C7 - C8	56000	<0.05	<0.05	0
Aromatic >C8 - C10	5000	<2	<2	0
Aromatic >C10 - C12	13000	<2	<2	0
Aromatic >C12 - C16	5100	<2	<2	0
Aromatic >C16 - C21	3800	<3	22	0
Aromatic >C21 - C35	3800	<10	18	0
BTEX				
Benzene	72	<2	<2	0
Toluene	56000	<5	<5	0
Ethylbenzene	24000	<2	<2	0
m & p-xylene	41000	<2	<2	0
o-Xylene	41000	<2	<2	0
MTBE	23	<5	<5	0

The comparison within Table 10 has shown no instances of elevated levels of contamination above the relevant Public Open Space (residential) screening criteria.

6.2 Asbestos

Asbestos was encountered within one of the six samples. The sample was located at WS01 at a depth of 0.45mbgl (within the Made Ground materials).

The asbestos present was noted as ‘bundles of Chrysotile fibres’.

6.3 Soil Contamination Assessment

The screening assessments completed in Tables 9 and 10 have shown no exceedances of the relevant soil screening criteria. However, asbestos has been identified within one of the six samples collected. The presence of asbestos within one out of six samples does not indicate significant widespread contamination, however some remedial works will be required if the area surrounding WS01 is to be soft landscaping once development has been completed.

7.0 REVISED CONCEPTUAL SITE MODEL

Table 11 below presents the Revised Conceptual Model which considers whether an actual risk is present to the identified receptors taking into account the results of the recent ground investigation work.

Table 11: Conceptual site Model

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
On-site Sources						
Contamination of the ground beneath site due to historical site uses.	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Moderate	Low Risk	Ground investigation works have proven the presence of Made Ground materials beneath the assessment but a general lack of contamination. One sample collected from WS01 has shown the presence of asbestos, however this is not considered to represent significant widespread contamination across the site and this area is currently covered by permanent hardstanding. Given the lack of viable pathways for current site users to come into contact with the asbestos around WS01, the risk to current site users has been determined as **LOW**.
		Future Site users	Low Likelihood	Moderate	Moderate to Low Risk	As detailed above one sample taken from WS01 has tested positive for asbestos. Currently the proposed layout of the development is unknown, however if the area surrounding WS01 becomes soft landscaping, the risk to future site users would be increased. Given the above it is currently considered that a **LOW TO MODERATE** risk to future site users is present.
		Construction Workers	Low Likelihood	Moderate	Moderate to Low Risk	As detailed above one sample has tested positive for asbestos, therefore a potential **LOW TO MODERATE RISK** to construction site workers has been identified. It should be noted that this risk is only associated with the area surrounding WS01, with the rest of the site deemed as low risk.
		Adjacent Site users	Unlikely	Low	Very Low Risk	Despite the asbestos being identified within WS01, it is considered unlikely that significant migration of asbestos contamination has/will occur, therefore the risk to adjacent site users is deemed as **VERY LOW.**
	Vertical or horizontal migration of contaminants into the groundwater beneath the assessment site.	Controlled Waters	Unlikely	Low	Very Low Risk	Ground investigation works have proven the underlying geology to consist of the London Clay formation, with no continuous groundwater body present within the top 5m. Given the lack of surface water bodies and the lack of significant groundwater, the risk to controlled waters is deemed as **VERY LOW**.
Off-site Sources						
Contamination of the ground beneath site	Dermal contact, ingestion and inhalation of soils dust	Current Site Users	Unlikely	Low	Very Low Risk	The presence of asbestos within WS01 is likely due to small amounts of asbestos being present within the Made Ground on site, and it unlikely to be attributed with an offsite source. Given

Source	Pathway	Receptor	Probability	Consequence	Risk	Comment
due to offsite historical site uses.						the lack of any other significant contamination at the assessment site, the risk to current site users from offsite sources is deemed as **VERY LOW.**
		Future Site users	Unlikely	Low	Very Low Risk	As detailed above, the risk to future site users from offsite contamination is also considered **VERY LOW.**
		Construction Workers	Unlikely	Low	Very Low Risk	As detailed above, the risk to construction site users from offsite contamination is also considered **VERY LOW**.

8.0 CONCLUSIONS AND RECOMMENDATIONS

EEGSL were commissioned by the client to undertake ground investigation works at the assessment site to help inform on parameters used in foundation and drainage design as well as undertake a Human Health Risk Assessment for a proposed new new classroom, car park and playground at Radstock Primary School, Radstock Lane, Earley, Reading.

The following section provides a summary of the conclusions and recommendations based on the findings of the investigation works undertaken and laboratory testing results.

8.1 Ground conditions

The generalised ground model can be described as Made Ground proven to an average depth of 1.0mbgl beneath the current hardstanding, and to 0.1mbgl within the soft landscaping beneath TP01. The Made Ground overlies soft becoming firm to stiff brownish grey slightly gravelly CLAY of the London Clay formation proven to a depth of 5.00mbgl.

Assessment of the ground conditions in terms of the soils bearing capacities and predicted settlements has been undertaken and predicted values provided for shallow foundations.

Chemical assessment of the underlying soils has proven that they do not represent particularly aggressive ground conditions and therefore it is recommended that for concrete foundations the Design Sulphate Class, as defined in BRE Special Digest 1 (2005), be taken as DS-1, and the Aggressive Chemical Environment for Concrete (ACEC) site classification be taken as AC-1.

8.2 Contamination

As discussed in Section 6 and 7 of this report, chemical testing of soils has been undertaken, and the results of which are provided within Appendix 4.

During the site investigation six soil samples were collected and analysed for a general contamination suite.

Screening of the results against currently accepted screening criteria has proven a general lack of significant contamination present, except for asbestos contamination present within the Made Ground surrounding WS01.

The presence of asbestos within one out of six samples does not indicate significant widespread contamination, however some remedial works will be required if the area surrounding WS01 is to be turned into an area of soft landscaping once developed.

Remedial works could comprise the placement of a clean capping layer within the area surrounding WS01, however the exact requirements would need to be discussed with the councils contaminated land team prior to works being completed.

Using the results of the soil analysis, a revised conceptual site model has been developed for the assessment site (see Section 7). The revised conceptual model indicates a Low to Very Low risk for all receptors except for future site users and construction site workers for whom a low to moderate risk has been assumed.

8.3 Site Personnel

As with all development sites, personnel working on the site during the construction period should be encouraged to maintain a high standard of personal hygiene and on-site washing facilities should be made available. The risk of asbestos contamination within shallow made ground materials should be noted within the sites health and safety file, and additional PPE and RPE may be required during groundworks within the area surrounding WS01.

8.4 Other Matters

Due diligence is required during the construction period, and should any evidence of unknown contamination be found, appropriate investigation and assessment should be taken. The significance of any contamination not discovered by this investigation is outside the scope of this report.

APPENDIX 1

EXPLORATORY LOGS

Window Sample Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474629.00 N170499.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS01	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.20			MADE GROUND: MACADAM
					0.30			MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.
		0.45	ES					
					0.60			MADE GROUND: Brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick and concrete. Rare fragments of wood. Rare cobbles of angular concrete/paving slab.
		0.70	ES					
		1.00	D					MADE GROUND: Soft grey gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse fine to coarse flint and brick. Sand is fine to coarse.
		1.20	SPT	N=6 (1,1/1,1,2,2)	1.20			Soft grey slightly gravelly CLAY. Gravel is subangular to subrounded fine to coarse flint. Organic odour. (LONDON CLAY FORMATION)
		2.00	D					
		2.00	SPT	N=9 (2,2/2,2,2,3)				*....becomes firm at 2mbgl.*
					2.20			Firm brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium flint. (LONDON CLAY FORMATION)
		3.00	D					
		3.00	SPT	N=19 (2,2/4,4,5,6)				*....becomes stiff at 3mbgl.*
		4.00	D					
		4.00	SPT	N=13 (2,2/3,3,3,4)				
		5.00	D		5.00			End of Borehole at 5.000m
		5.00	SPT	N=20 (3,3/4,4,6,6)				

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was not encountered. 4. Hole backfilled with arisings.

Window Sample Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474620.00 N170508.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS02	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			MADE GROUND: MACADAM
					0.30			MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.
		0.40	ES					Soft grey gravelly sandy CLAY. Sand is fine to coarse. (LONDON CLAY FORMATION)
		0.70	ES					
					1.00			Soft brown slightly gravelly CLAY. Gravel is subangular to subrounded fine to medium flint. (LONDON CLAY FORMATION)
		1.20	D					
		1.20	SPT	N=7 (1,2/2,1,2,2)				
		2.00	D					*....becomes firm at 2mbgl.*
		2.00	SPT	N=12 (2,2/3,2,3,4)				*....becomes brown mottled grey at 2.3mbgl.*
		3.00	D					*....becomes stiff at 3mbgl.*
		3.00	SPT	N=16 (3,3/3,4,4,5)				
		4.00	SPT	N=16 (2,3/4,3,4,5)				
		4.50	D					
		5.00	SPT	N=24 (4,5/6,6,6,6)	5.00			End of Borehole at 5.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was not encountered. 4. Hole backfilled with arisings.

Window Sample Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474629.00 N170508.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS03	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			MADE GROUND: MACADAM
		0.30 - 0.50	ES		0.25			MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse.
								MADE GROUND: Soft brown gravelly sandy CLAY. Gravel is angular to subrounded fine to coarse brick, quartzite and flint. Sand is fine to coarse.
		1.00 - 1.20	ES					
		1.20 - 1.40	ES		1.20			
		1.20	SPT	N=7 (1,1/2,1,2,2)				Soft brownish grey CLAY. (LONDON CLAY FORMATION)
		2.00	SPT	N=11 (2,2/2,3,3,3)				*....becomes firm at 2mbgl.*
	▼	3.00	SPT	N=18 (3,4/4,4,5,5)	3.00			Stiff grey mottled orange CLAY. (LONDON CLAY FORMATION)
		4.00	SPT	N=18 (3,3/4,4,5,5)				*....becomes grey at 4mbgl.*
		5.00	SPT	N=23 (4,5/5,5,6,7)	5.00			End of Borehole at 5.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was encountered at 3.1mbgl.
4. Hole backfilled with arisings.

Window Sample Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474635.00 N170514.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS04	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15			MADE GROUND: MACADAM	
		0.30	ES					MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse. Rare cobbles of angular brick.	
					0.45			MADE GROUND: Soft brown gravelly sandy CLAY. Gravel is angular to subangular of concrete, brick and flint.	
		0.70	ES						
					1.00			Soft brownish grey slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint. (LONDON CLAY FORMATION)	1
		1.20 1.20	D SPT	N=7 (2,2/2,1,2,2)					
		2.00 2.00	D SPT	N=9 (2,2/2,2,2,3)				*....becomes firm at 2mbgl.*	2
		3.00 3.00	D SPT	N=16 (3,3/3,3,5,5)				*.....becomes stiff at 3mbgl.*	3
		4.00	SPT	N=21 (4,4/4,5,5,7)					4
		5.00 5.00	D SPT	N=27 (5,5/6,6,7,8)	5.00			End of Borehole at 5.000m	5
									6

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was not encountered. 4. Hole backfilled with arisings.

Window Sample Log

EARTH ENVIRONMENTAL & GEOTECHNICAL

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474631.00 N170523.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS05	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description	
		Depth (m)	Type	Results					
					0.15			MADE GROUND: MACADAM	
		0.30	ES					MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse. Rare cobbles of angular brick.	
					0.45			MADE GROUND: Soft brown CLAY. Rare timber fragments.	
		1.00	ES		1.00			Firm brownish grey slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint. (LONDON CLAY FORMATION)	1
		1.20 1.20	D SPT	N=8 (1,2/2,2,2,2)					
		2.00 2.00	D SPT	N=10 (2,2/2,3,2,3)					2
		3.00 3.00	D SPT	N=17 (3,3/4,4,4,5)				*....becomes stiff at 3mbgl.*	3
		4.00	SPT	N=19 (4,5/5,4,5,5)					4
		4.50	D						
		5.00	SPT	N=25 (5,6/6,6,6,7)	5.00			End of Borehole at 5.000m	5
									6

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was not encountered. 4. Hole backfilled with arisings.

EARTH ENVIRONMENTAL & GEOTECHNICAL

Window Sample Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 19/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474644.00 N170514.00
Project No. : R4319	Crew Name: DA	Drilling Equipment: Dart Competitor

Borehole Number	Hole Type	Level	Logged By	Scale	Page Number
WS06	WS		AT	1:30	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.15			MADE GROUND: MACADAM
		0.30	ES		0.25 0.35			MADE GROUND: Pinkish grey sandy angular to subangular fine to coarse GRAVEL of limestone. Sand is fine to coarse. Rare cobbles of angular brick.
								MADE GROUND: Brown sandy angular to subangular fine to medium GRAVEL of brick, flint and concrete. Sand is fine to coarse.
								MADE GROUND: Brown gravelly slightly clayey fine to coarse SAND. Gravel is angular to subangular fine to coarse flint, brick and concrete.
		1.20	SPT	N=12 (1,2/3,2,3,4)				
					1.50			Medium dense brown sandy angular to subangular fine to coarse GRAVEL of flint. Sand is fine to coarse. (LONDON CLAY FORMATION)
		1.60	ES		1.70			Firm brownish grey slightly gravelly CLAY. Gravel is angular to subrounded fine to medium flint. (LONDON CLAY FORMATION)
		2.00	D					
		2.00	SPT	N=13 (2,2/3,3,3,4)				
		3.00	D					*....becomes stiff at 3mbgl.*
		3.00	SPT	N=18 (3,4/4,4,5,5)				
		4.00	D					
		4.00	SPT	N=22 (4,4/5,5,6,6)				
		5.00	SPT	N=29 (5,6/6,7,8,8)	5.00			End of Borehole at 5.000m

Hole Diameter		Casing Diameter		Chiselling				Inclination and Orientation			
Depth Base (m)	Diameter (mm)	Depth Base (m)	Diameter (mm)	Depth Top	Depth Base	Duration	Tool	Depth Top	Depth Base	Inclination	Orientation

Remarks

1. Hole location scanned with CAT. 2. Borehole terminated at the target depth of 5mbgl. 3. Groundwater was not encountered. 4. Hole backfilled with arisings.

Trial Pit Log

Project Name: Radstock C of E School	Client: Thames Valley Surveying Ltd	Date: 26/11/2024
Location: Radstock Lane, Earley, Reading, RG6 5UZ	Contractor: PM Sampling	Co-ords: E474646.00 N170532.00
Project No. : R4319	Crew Name: PN	Equipment: Hitachi 3tonne

Location Number	Location Type	Level	Logged By	Scale	Page Number
TP01	TP		FL	1:10	Sheet 1 of 1

Well	Water Strikes	Sample and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			Grass over TOPSOIL: Soft dark brown slightly gravelly slightly sandy clay with frequent rootlets. Gravel is angular to subrounded fine to medium of flint and china. Sand is fine to coarse.
								Soft to firm dark brown slightly gravelly sandy CLAY with infrequent rootlets. Gravel is angular to subrounded fine to medium of flint. Sand is fine to coarse. (LONDON CLAY FORMATION)
	▼				0.70			Firm grey mottled orange slightly gravelly slightly sandy CLAY. Gravel is angular to subrounded fine to medium of flint. Sand is fine to coarse. (LONDON CLAY FORMATION)
					1.70			End of Borehole at 1.700m

1

2

Dimensions		Trench Support and Comment			Pumping Data		
Pit Length	Pit Width	Pit Stability	Shoring Used	Remarks	Date	Rate	Remarks
2.70	0.50						

Remarks

Trial Pit location was scanned using a Cable Avoidance Tool (CAT) prior to excavation. Excavation was monitored by an EEGSL engineer throughout. Hole was excavated to 1.70mbgl. Groundwater seepage was encountered at 1.00mbgl. Hole was backfilled with arisings immediately on completion of in-situ soakaway testing.

APPENDIX 2

LABORATORY TEST RESULTS (GEOTECHNICAL)

Laboratory Report

UKAS TESTING 2788

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES A PHENNA GROUP COMPANY

Contract Number: 75985

Client Ref: **R4319**
Client PO: **R4319/AT/20/11/2024**

Date Received: **22-11-2024**
Date Completed: **12-12-2024**
Report Date: **12-12-2024**

Client: **Earth Environmental & Geotechnical**

Contract Title: **Radstock School**
For the attention of: **Ashley Thorne**

This report has been checked and approved by:

Brendan Evans
Office Administrator

Description	Qty
Moisture Content BS 1377:1990 - Part 2 : 3.2 - * UKAS	6
1 Point Liquid & Plastic Limit BS 1377:1990 - Part 2 : 4.4 & 5.3 - * UKAS	6
Water Soluble Sulphate 2:1 extract Sub-contracted Test	3
pH value of soil Sub-contracted Test	3

Notes: **Observations and Interpretations are outside the UKAS Accreditation**
*** - denotes test included in laboratory scope of accreditation**
 # - denotes test carried out by approved contractor
@ - denotes non accredited tests

This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This test report/certificate shall not be reproduced except in full, without the approval of GEO Site & Testing Services Ltd. Any opinions or interpretations stated - within this report/certificate are excluded from the laboratories UKAS accreditation.

Approved Signatories:
Brendan Evans (Office Administrator) - Darren Bourne (Quality Senior Technician) - Paul Evans (Director)
Richard John (Quality/Technical Manager) - Shaun Jones (Laboratory manager) - Shaun Thomas (Site Manager)
Wayne Honey (HR & HSE Manager)

GEO Site & Testing Services Ltd
Unit 3-4 Heol Aur, Dafen Ind Est, Llanelli, Carmarthenshire SA14 8QN
Tel: 01554 784 040 Fax: 01554 784 040 info@gstl.co.uk https://gstl.co.uk

GSTL
GEOTECHNICAL SITE & TESTING LABORATORIES

NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX
(BS 1377:1990 - Part 2 : 4.4 & 5.3)

Contract Number	75985
Project Name	Radstock School
Date Tested	03/12/2024

DESCRIPTIONS

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Descriptions
WS01		D	2.00	-		Brown silty CLAY
WS02		D	1.20	-		Brown fine to medium gravelly sandy silty CLAY
WS03		D	3.80	-	4.00	Brown silty CLAY
WS04		D	1.20	-		Brown fine to medium gravelly silty CLAY
WS04		D	3.00	-		Brown silty CLAY
WS06		D	2.00	-		Brown silty CLAY
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		
				-		

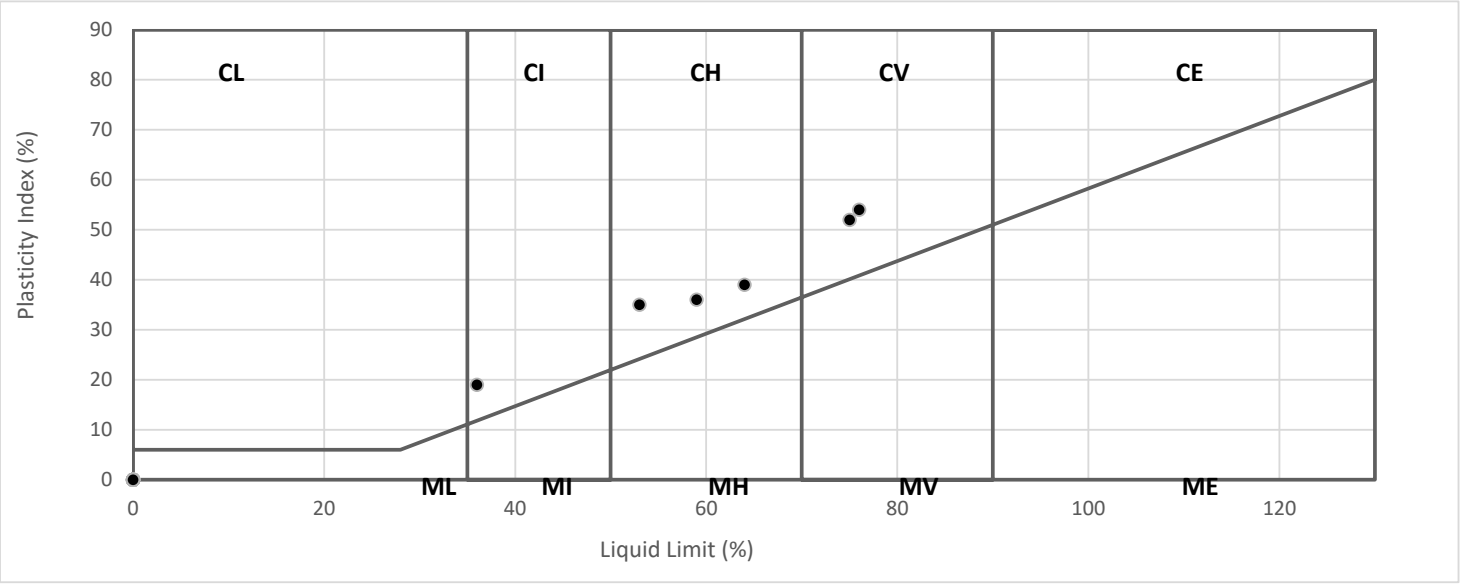
Operator
Clayton Jenkins

GSTL GEOTECHNICAL SITE & TESTING LABORATORIES	NATURAL MOISTURE, LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX (BS 1377:1990 - Part 2 : 4.4 & 5.3)	
Contract Number	75985	
Project Name	Radstock School	
Date Tested	03/12/2024	

Sample/Hole Reference	Sample Number	Sample Type	Depth (m)			Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity index %	Passing 0.425mm %	Remarks
WS01		D	2.00	-		31	59	23	36	100	CH High Plasticity
WS02		D	1.20	-		15	36	17	19	84	CI Intermediate Plasticity
WS03		D	3.80	-	4.00	30	75	23	52	100	CV Very High Plasticity
WS04		D	1.20	-		20	53	18	35	84	CH High Plasticity
WS04		D	3.00	-		29	76	22	54	100	CV Very High Plasticity
WS06		D	2.00	-		36	64	25	39	100	CH High Plasticity
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							
				-							

Symbols: NP : Non Plastic # : Liquid Limit and Plastic Limit Wet Sieved

PLASTICITY CHART FOR CASAGRANDE CLASSIFICATION
BS 5930:2015+A1:2020



Operator
Clayton Jenkins

4161

CONSTRUCTION TESTING SOLUTIONS
A PHENNA GROUP COMPANY

7 - 11 Harding Street
Leicester
LE1 4DH

GSTL
Unit 3-4 Heol Aur
Dafen Ind Estate
Dafen
SA14 8QN

Analytical Test Report: E24/01315/GSL - 24-53103

Your Project Reference:	**Radstock School R4319**		
Your Order Number:	75985	Samples Received / Instructed:	26/11/2024 / 26/11/2024
Report Issue Number:	1	Sample Tested:	26/11 to 05/12/2024
Samples Analysed:	3 sample(s)	Report issued:	05/12/2024

Signed [redacted]

James Gane
Analytical Services Manager
CTS Group

Notes:

General

This report shall not be reproduce except in full

Please refer to Methodologies page for details pertaining to the analytical methods undertaken.

Samples will be retained for 14 days after issue of this report with the exception of the asbestos test portion which is held for 6 months unless otherwise requested.

Moisture Content was determined in accordance with CTS method statement MS - CL - Sample Prep, oven dried at <30˚C.

Moisture Content is reported as a percentage of the dry mass of soil, this calculation is in accordance with BS1377, Part 2, 1990, Clause 3.2

Where specification limits are included these are for guidance only. Where a measured value has been highlighted this is not implying acceptance or failure and certainty of measurement values have not been taken into account.

Uncertainty of measurement values are available on request.

Samples were supplied by customer, results apply to the samples as received.

Deviating Samples

On receipt samples are compared against our sample holding and handling protocols, where any deviations have been noted these are reported on our deviating sample page (if present)

Accreditation Key

UKAS = UKAS Accreditation, MCERTS = MCERTS Accreditation, u = Unaccredited, subUKAS - Subcontracted to a laboratory UKAS accredited for this test, subMCERTS - Subcontracted to a laboratory MCERTS accredited for this test

MCERTS Accreditation only covers the SAND, CLAY and LOAM matrices

UKAS accreditation on waters only covers the Ground water and Surface water matrices

Date of Issue: 05.12.2024

Issued by: J. Gane

Issue No: 4

Rev No: 20

4161

CONSTRUCTION TESTING SOLUTIONS
A PHENNA GROUP COMPANY

7 - 11 Harding Street
Leicester
LE1 4DH

E24/01315/GSL - 24-53103

Project Reference - Radstock School R4319

Analytical Test Results - Chemical Analysis

Lab Reference			422665	422666	422667
Client Sample ID			-	-	-
Client Sample Location			WS01	WS04	WS04
Client Sample Type			D	D	D
Client Sample Number			-	-	-
Depth - Top (m)			1.00	1.20	3.00
Depth - Bottom (m)			1.00	1.20	3.00
Date of Sampling			-	-	-
Time of Sampling			-	-	-
Sample Matrix			Clay	Clay	Clay
Determinant	**Units**	**Accreditation**			
Water soluble sulphate (as SO_4)	(mg/l)	u	93	230	97
pH Value	pH Units	MCERTS	7.9	7.8	7.9

CONSTRUCTION TESTING SOLUTIONS
A PHENNA GROUP COMPANY

7 - 11 Harding Street
Leicester
LE1 4DH

E24/01315/GSL - 24-53103

Project Reference - Radstock School R4319

Sample Descriptions

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Description	Moisture Content (%)	Stone Content (%)	Passing 2mm test sieve (%)
422665	-	WS01	D	-	Dark brown slightly gravelly slightly sandy silty clay	-	-	100
422666	-	WS04	D	-	Brown slightly sandy silty clay with rare brick fragments	-	-	100
422667	-	WS04	D	-	Brown slightly sandy silty clay	-	-	100

CONSTRUCTION TESTING SOLUTIONS
A PHENNA GROUP COMPANY

7 - 11 Harding Street
Leicester
LE1 4DH

E24/01315/GSL - 24-53103

Project Reference - Radstock School R4319

Sample Comments

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Comments
422665	-	WS01	D	-	
422666	-	WS04	D	-	
422667	-	WS04	D	-	

4161

7 - 11 Harding Street
Leicester
LE1 4DH

E24/01315/GSL - 24-53103

Project Reference - Radstock School R4319

Analysis Methodologies

Test Code	Test Name / Reference	Sample condition for analysis	Sample Preperation	Test Details
ANIONSS	MS - CL - Anions by Aquakem (2:1Extract)	Oven dried	Passing 2mm test sieve	Determination of Anions (inc Sulphate, chloride etc.) in soils by Aquakem. Analysis is based on a 2:1 water to soil extraction ratio
PHS	MS - CL - pH in Soils	As received	Passing 10mm test sieve	Determination of pH in soils using a pH probe (using a 1:3 soil to water extraction)
SAMPLEPREP	MS - CL - Sample Preparation	-	-	Preparation of samples (including determination of moisture content) to allow for subsequent analysis

4161

CONSTRUCTION TESTING SOLUTIONS
A PHENNA GROUP COMPANY

7 - 11 Harding Street
Leicester
LE1 4DH

E24/01315/GSL - 24-53103

Project Reference - Radstock School R4319

Sample Deviations

Deviations are listed below against each sample and associated test method, where deviation(s) are noted it means data may not be representative of the sample at the time of sampling and it is possible that results provided may be compromised.

Observations on receipt

A - No date of sampling provided
W - No time of sampling provided for water sample
C - Received in inappropriate container
H - Contains headspace
T - Temperature on receipt exceeds storage temperature
R - Sample(s) received with less than 96 hours for testing to commence/complete, any result formally classed as deviating will be marked with an X against the applicable test (i.e. RX)

Observations whilst in laboratory

X - Exceeds sampling to extraction or analysis timescales

Lab Reference	Client Sample ID	Client Sample Location	Client Sample Type	Client Sample Number	Test	Deviations
422665	-	WS01	D	-		A
422666	-	WS04	D	-		A
422667	-	WS04	D	-		A

APPENDIX 3

LABORATORY TEST RESULTS (CONTAMINATION)

John Grace
Earth Environmental & Geotechnical (Southern Ltd)
200 Brook Drive
Green Park
Reading
Berkshire
RG2 6UB

Normec DETS Limited
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-14011

Site Reference:	Radstock School
Project / Job Ref:	R4319
Order No:	R4319/AT/19/11/24
Sample Receipt Date:	21/11/2024
Sample Scheduled Date:	21/11/2024
Report Issue Number:	1
Reporting Date:	27/11/2024

Authorised by:

[redacted]

Dave Ashworth
Technical Manager

Dates of laboratory activities for each tested analyte are available upon request.

Opinions and interpretations are outside the laboratory's scope of ISO 17025 accreditation. This certificate is issued in accordance with the accreditation requirements of the United Kingdom Accreditation Service. The results reported herein relate only to the material supplied to the laboratory. This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24	19/11/24	19/11/24	19/11/24	19/11/24
Earth Environmental & Geotechnical (Southern Ltd)	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Radstock School	**~TP / BH No**	WS01	WS02	WS03	WS04	WS05
~Project / Job Ref: R4319	**~Additional Refs**	MG	CLAY	MG	MG	MG
~Order No: R4319/AT/19/11/24	**~Depth (m)**	0.45	0.70	1.00 - 1.20	0.30	0.30
Reporting Date: 27/11/2024	**DETS Sample No**	751587	751588	751589	751590	751591

Determinand	**Unit**	**RL**	**Accreditation**				(n)	
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Detected	Not Detected	Not Detected	Not Detected	Not Detected
Sample Matrix (S)	Material Type	N/a	NONE	Bundles of Chrysotile fibres				
Asbestos Type (S)	PLM Result	N/a	**ISO17025**	Chrysotile				
pH	pH Units	N/a	**MCERTS**	7.0	7.2	7.7	8.3	7.6
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	1545	242	254	3170	469
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.15	0.02	0.03	0.32	0.05
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	79	35	35	582	99
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.08	0.04	0.03	0.58	0.10
Sulphide	mg/kg	< 5	NONE	< 5	< 5	< 5	< 5	< 5
Organic Matter (SOM)	%	< 0.1	**MCERTS**	2.9	1.4	1.2	5.3	2
Arsenic (As)	mg/kg	< 2	**MCERTS**	10	6	5	11	7
Barium (Ba)	mg/kg	< 2.5	**MCERTS**	121	41	41	344	137
Beryllium (Be)	mg/kg	< 0.5	**MCERTS**	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	0.2	< 0.2	< 0.2	0.5	< 0.2
Chromium (Cr)	mg/kg	< 2	**MCERTS**	14	17	11	9	15
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	**MCERTS**	22	12	7	8	10
Lead (Pb)	mg/kg	< 3	**MCERTS**	63	20	11	426	29
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	**MCERTS**	17	10	5	6	7
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2	< 2	< 2	< 2	< 2
Vanadium (V)	mg/kg	< 1	**MCERTS**	26	33	21	15	28
Zinc (Zn)	mg/kg	< 3	**MCERTS**	84	36	21	53	40
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24				
Earth Environmental & Geotechnical (Southern Ltd)	**~Time Sampled**	None Supplied				
~Site Reference: Radstock School	**~TP / BH No**	WS06				
~Project / Job Ref: R4319	**~Additional Refs**	SAND				
~Order No: R4319/AT/19/11/24	**~Depth (m)**	1.60				
Reporting Date: 27/11/2024	**DETS Sample No**	751592				

Determinand	**Unit**	**RL**	**Accreditation**	(n)				
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected				
Sample Matrix (S)	Material Type	N/a	NONE					
Asbestos Type (S)	PLM Result	N/a	**ISO17025**					
pH	pH Units	N/a	**MCERTS**	8.0				
Total Cyanide	mg/kg	< 1	NONE	< 1				
Complex Cyanide	mg/kg	< 1	NONE	< 1				
Free Cyanide	mg/kg	< 1	NONE	< 1				
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	576				
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.06				
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	**MCERTS**	98				
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	**MCERTS**	0.10				
Sulphide	mg/kg	< 5	NONE	< 5				
Organic Matter (SOM)	%	< 0.1	**MCERTS**	1.8				
Arsenic (As)	mg/kg	< 2	**MCERTS**	10				
Barium (Ba)	mg/kg	< 2.5	**MCERTS**	114				
Beryllium (Be)	mg/kg	< 0.5	**MCERTS**	< 0.5				
W/S Boron	mg/kg	< 1	NONE	< 1				
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2				
Chromium (Cr)	mg/kg	< 2	**MCERTS**	13				
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2				
Copper (Cu)	mg/kg	< 4	**MCERTS**	8				
Lead (Pb)	mg/kg	< 3	**MCERTS**	18				
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1				
Nickel (Ni)	mg/kg	< 3	**MCERTS**	6				
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2				
Vanadium (V)	mg/kg	< 1	**MCERTS**	29				
Zinc (Zn)	mg/kg	< 3	**MCERTS**	35				
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2				

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24	19/11/24	19/11/24	19/11/24	19/11/24
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Radstock School	**~TP / BH No**	WS01	WS02	WS03	WS04	WS05
~Project / Job Ref: R4319	**~Additional Refs**	MG	CLAY	MG	MG	MG
~Order No: R4319/AT/19/11/24	**~Depth (m)**	0.45	0.70	1.00 - 1.20	0.30	0.30
Reporting Date: 27/11/2024	**DETS Sample No**	751587	751588	751589	751590	751591

Determinand	Unit	RL	Accreditation				(n)	
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	0.40	< 0.1	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	0.48	0.14	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	0.26	4.60	1.87	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.97	0.31	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	0.69	7.20	1.89	< 0.1	0.45
Pyrene	mg/kg	< 0.1	MCERTS	0.60	5.20	1.44	< 0.1	0.41
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.44	2.83	0.48	< 0.1	0.27
Chrysene	mg/kg	< 0.1	MCERTS	0.49	2.71	0.43	< 0.1	0.29
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.71	3.19	0.29	< 0.1	0.36
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.25	0.98	0.12	< 0.1	0.15
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.58	2.39	0.20	< 0.1	0.29
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.44	1.49	< 0.1	< 0.1	0.20
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.37	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.40	1.20	< 0.1	< 0.1	0.21
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	4.9	34	7.2	< 1.6	2.6

~Sample details provided by customer and can affect the validity of results
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24				
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied				
~Site Reference: Radstock School	**~TP / BH No**	WS06				
~Project / Job Ref: R4319	**~Additional Refs**	SAND				
~Order No: R4319/AT/19/11/24	**~Depth (m)**	1.60				
Reporting Date: 27/11/2024	**DETS Sample No**	751592				

Determinand	Unit	RL	Accreditation	(n)			
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6			

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24	19/11/24	19/11/24	19/11/24	19/11/24
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Radstock School	**~TP / BH No**	WS01	WS02	WS03	WS04	WS05
~Project / Job Ref: R4319	**~Additional Refs**	MG	CLAY	MG	MG	MG
~Order No: R4319/AT/19/11/24	**~Depth (m)**	0.45	0.70	1.00 - 1.20	0.30	0.30
Reporting Date: 27/11/2024	**DETS Sample No**	751587	751588	751589	751590	751591

Determinand	Unit	RL	Accreditation				(n)	
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	< 3
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	MCERTS	< 10	< 10	< 10	21	< 10
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21	< 21	< 21	21	< 21
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	MCERTS	< 3	22	7	< 3	< 3
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	MCERTS	< 10	18	< 10	< 10	< 10
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	40	< 21	< 21	< 21
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42	< 42	< 42	< 42	< 42

~Sample details provided by customer and can affect the validity of results
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - TPH CWG Banded						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24				
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied				
~Site Reference: Radstock School	**~TP / BH No**	WS06				
~Project / Job Ref: R4319	**~Additional Refs**	SAND				
~Order No: R4319/AT/19/11/24	**~Depth (m)**	1.60				
Reporting Date: 27/11/2024	**DETS Sample No**	751592				

Determinand	**Unit**	**RL**	**Accreditation**	(n)				
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01				
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05				
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	**MCERTS**	< 2				
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	**MCERTS**	< 3				
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	**MCERTS**	< 10				
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	< 21				
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01				
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05				
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	**MCERTS**	< 2				
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	**MCERTS**	< 3				
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	**MCERTS**	< 10				
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21				
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Total	mg/kg	< 42	NONE	< 42				

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24	19/11/24	19/11/24	19/11/24	19/11/24
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
~Site Reference: Radstock School	**~TP / BH No**	WS01	WS02	WS03	WS04	WS05
~Project / Job Ref: R4319	**~Additional Refs**	MG	CLAY	MG	MG	MG
~Order No: R4319/AT/19/11/24	**~Depth (m)**	0.45	0.70	1.00 - 1.20	0.30	0.30
Reporting Date: 27/11/2024	**DETS Sample No**	751587	751588	751589	751590	751591

Determinand	Unit	RL	Accreditation				(n)	
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	2	< 2
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5	< 5	< 5	< 5	< 5

~Sample details provided by customer and can affect the validity of results
(n) Please note we are only MCERTS accredited (UK soils only) for sand, loam and clay and any other matrix is outside our scope of accreditation

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - BTEX / MTBE						
DETS Report No: 24-14011	**~Date Sampled**	19/11/24				
Earth Environmental & Geotechnical (Souther	**~Time Sampled**	None Supplied				
~Site Reference: Radstock School	**~TP / BH No**	WS06				
~Project / Job Ref: R4319	**~Additional Refs**	SAND				
~Order No: R4319/AT/19/11/24	**~Depth (m)**	1.60				
Reporting Date: 27/11/2024	**DETS Sample No**	751592				

Determinand	Unit	RL	Accreditation	(n)				
Benzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
Toluene : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				
Ethylbenzene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
p & m-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
o-xylene : HS_1D_MS	ug/kg	< 2	MCERTS	< 2				
MTBE : HS_1D_MS	ug/kg	< 5	MCERTS	< 5				

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate - Sample Descriptions
DETS Report No: 24-14011
Earth Environmental & Geotechnical (Southern Ltd)
~Site Reference: Radstock School
~Project / Job Ref: R4319
~Order No: R4319/AT/19/11/24
Reporting Date: 27/11/2024

DETS Sample No	~TP / BH No	~Additional Refs	~Depth (m)	Moisture Content (%)	Sample Matrix Description
751587	WS01	MG	0.45	12.1	Brown sandy clay with stones and brick
751588	WS02	CLAY	0.70	12.7	Brown sandy clay
751589	WS03	MG	1.00 - 1.20	11.8	Brown sandy clay
751590	WS04	MG	0.30	5.1	Brown sandy gravel with stones
751591	WS05	MG	0.30	15	Brown sandy clay with stones
751592	WS06	SAND	1.60	11.4	Brown clayey gravel with stones

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S
~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-14011

Earth Environmental & Geotechnical (Southern Ltd)

~Site Reference: Radstock School

~Project / Job Ref: R4319

~Order No: R4319/AT/19/11/24

Reporting Date: 27/11/2024

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	Fraction Organic Carbon (FOC)	Determination of TOC by combustion analyser.	E027
Soil	D	Organic Matter (SOM)	Determination of TOC by combustion analyser.	E027
Soil	D	TOC (Total Organic Carbon)	Determination of TOC by combustion analyser.	E027
Soil	AR	Exchangeable Ammonium	Determination of ammonium by discrete analyser.	E029
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received

~Sample details provided by customer and can affect the validity of results

Normec DETS Limited
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

List of HWOL Acronyms and Operators
DETS Report No: 24-14011
Earth Environmental & Geotechnical (Southern Ltd)
~Site Reference: Radstock School
~Project / Job Ref: R4319
~Order No: R4319/AT/19/11/24
Reporting Date: 27/11/2024

Acronym	Description
HS	Headspace analysis
EH	Extractable Hydrocarbons - i.e. everything extracted by the solvent
CU	Clean-up - e.g. by florisil, silica gel
1D	GC - Single coil gas chromatography
2D	GC-GC - Double coil gas chromatography
Total	Aliphatics & Aromatics
AL	Aliphatics only
AR	Aromatics only
#1	EH_2D_Total but with humics mathematically subtracted
#2	EH_2D_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +)
+	Operator to indicate cumulative eg. EH+HS_Total or EH_CU+HS_Total
~	Sample details provided by customer and can affect the validity of results

Benzene - HS_1D_MS
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS

APPENDIX 4

SUMMARY OF IN SITU SOAKAWAY TEST RESULTS

Earth Environmental & Geotechnical Ltd

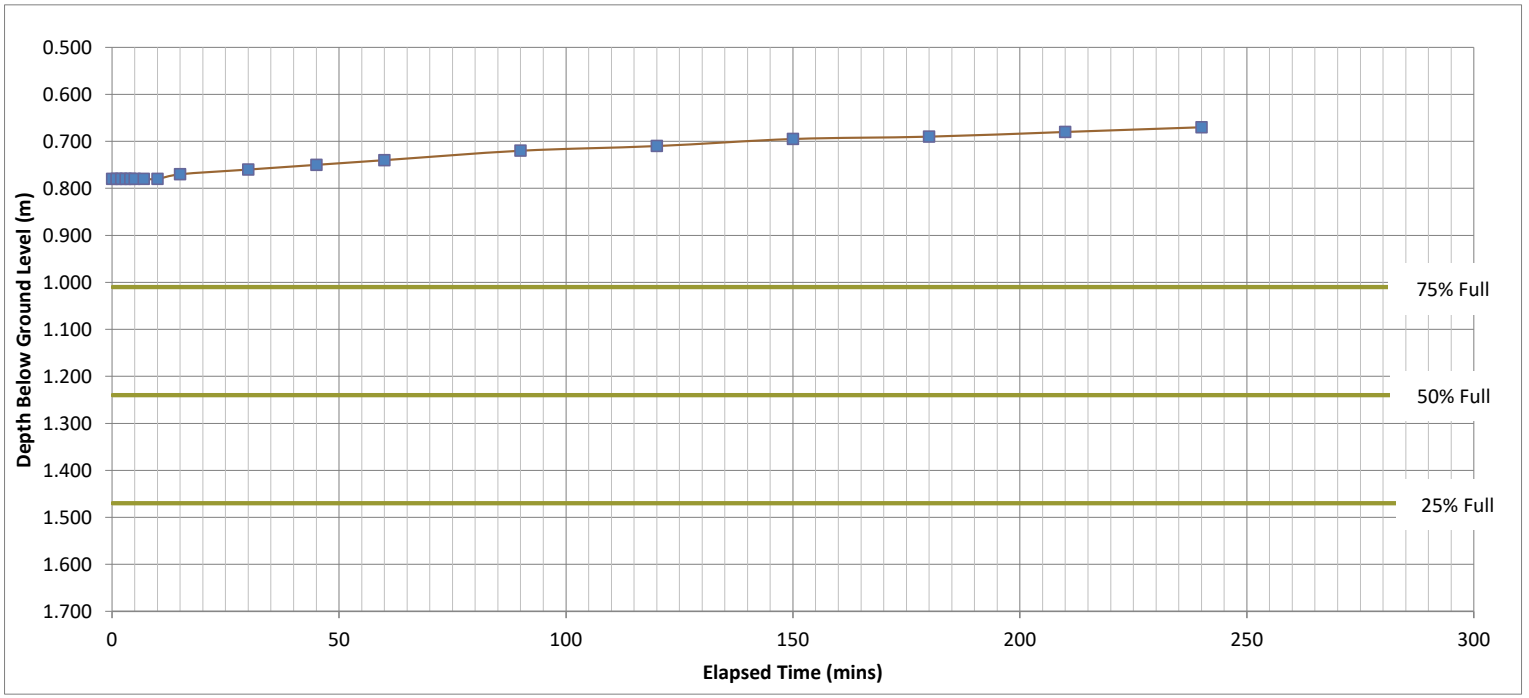
Tel / Fax: 01183 734000
Web: www.earthenvironmental.co.uk
Email: south@earthenvironmental.co.uk

SOAKAWAY TEST

(To: BRE 365 2016)

Job No:	R4319
Site:	Radstock School, Reading
Client:	Radstock School

Location Reference:	TP01	Test 1
Date	26/11/2024	
Geology in test section	sl gravelly sl sandy CLAY	
Depth to Base of Hole	1.70	m
Effective Depth	0.92	m
Hole Width	0.50	m
Hole Length	2.70	m
Depth to water at start of test below ground level	0.78	m
Depth to water at end of test below ground level	-	m
Effective storage depth to 75% full	0.69	m
(Depth below GL)	1.01	m
Effective storage depth to 50% full	0.46	m
(Depth below GL)	1.24	m
Effective storage depth to 25% full	0.23	m
(Depth below GL)	1.47	m
Height to 50% depth	0.46	m3
Effective Storage Volume V*p75-25*	1.24	m3
Time tp25 at which water is 75% of effective depth (minutes)	-	mins
Time tp25 at which water is 25% of effective depth (minutes)	-	mins
Time for water level to fall between Vp75 -25	-	mins
Time for water level to fall between Vp75 -25	-	secs
Internal surface area of hole up to 50% depth including base	6.79	m2
Soil Infiltration Rate, f	-	m/s



Time Elapsed (mins:sec)	Depth of Water below GL (m)
0.00	0.780
1.00	0.780
2.00	0.780
3.00	0.780
4.00	0.780
5.00	0.780
7.00	0.780
10.00	0.780
15.00	0.770
30.00	0.760
45.00	0.750
60.00	0.740
90.00	0.720
120.00	0.710
150.00	0.695
180.00	0.690
210.00	0.680
240.00	0.670

Measured Data

APPENDIX 5

REPORT LIMITATIONS

REPORT LIMITATIONS

This contract was completed by Earth Environmental & Geotechnical Ltd on the basis of a defined programme and scope of works and terms and conditions agreed with the client. This report was compiled with all reasonable skill, and care, bearing in mind the project objectives, the agreed scope of works, the prevailing site conditions, the budget and staff resources allocated to the project.

Other than that, expressly contained in the above paragraph, Earth Environmental & Geotechnical Ltd provides no other representation or warranty whether express or implied, is made in relation to the services. Unless otherwise agreed this report has been prepared exclusively for the use and reliance of the client in accordance with generally accepted consulting practices and for the intended purposes as stated in the agreement under which this work was completed. This report may not be relied upon, or transferred to, by any other party without the written agreement of a Director of Earth Environmental & Geotechnical Ltd.

If a third party relies on this report, it does so wholly at its own and sole risk and Earth Environmental & Geotechnical Ltd disclaims any liability to such parties.

It is Earth Environmental & Geotechnical Ltd understanding that this report is to be used for the purpose described in the introduction to the report. That purpose was an important factor in determining the scope and level of the services. Should the purpose for which the report is used, or the proposed use of the site change, this report will no longer be valid and any further use of, or reliance upon the report in those circumstances by the client without Earth Environmental & Geotechnical Ltd review and advice shall be at the client's sole and own risk.

The report was written in 2025 and should be read in light of any subsequent changes in legislation, statutory requirements and industry best practices. Ground conditions can also change over time and further investigations or assessment should be made if there is any significant delay in acting on the findings of this report. The passage of time may result in changes in site conditions, regulatory or other legal provisions, technology or economic conditions which could render the report inaccurate or unreliable. The information and conclusions contained in this report should not be relied upon in the future without the written advice of Earth Environmental & Geotechnical Ltd. In the absence of such written advice of Earth Environmental & Geotechnical Ltd, reliance on the report in the future shall be at the client's own and sole risk. Should Earth Environmental & Geotechnical Ltd be requested to review the report in the future, Earth Environmental & Geotechnical Ltd shall be entitled to additional payment at the then existing rate or such other terms as may be agreed between Earth Environmental & Geotechnical Ltd and the client.

The observations and conclusions described in this report are based solely upon the services that were provided pursuant to the agreement between the client and Earth Environmental & Geotechnical Ltd. Earth Environmental & Geotechnical Ltd has not performed any observations, investigations, studies or testing not specifically set out or mentioned within this report.

Earth Environmental & Geotechnical Ltd is not liable for the existence of any condition, the discovery of which would require performance of services not otherwise contained in the services. For the avoidance of doubt, unless otherwise expressly referred to in the introduction to this report, Earth Environmental & Geotechnical Ltd did not seek to evaluate the presence on or off the site of electromagnetic fields, lead paint, radon gas or other radioactive materials.

The services are based upon Earth Environmental & Geotechnical Ltd observations of existing physical conditions at the site gained from a walkover survey of the site together with Earth Environmental & Geotechnical Ltd interpretation of information including documentation, obtained from third parties and from the client on the history and usage of the site. The findings and recommendations contained in this report are based in part upon information provided by third parties, and whilst Earth Environmental & Geotechnical Ltd have no reason to doubt the accuracy and that it has been provided in full from those it was requested from, the items relied on have not been verified.

No responsibility can be accepted for errors within third party items presented in this report. Further Earth Environmental & Geotechnical Ltd was not authorised and did not attempt to independently verify the accuracy or completeness of information, documentation or materials received from the client or third parties, including laboratories and information services, during the performance of the services. Earth Environmental & Geotechnical Ltd is not liable for any inaccurate information, misrepresentation of data or conclusions, the discovery of which inaccuracies required the doing of any act including the gathering of any information which was not reasonably available to Earth Environmental & Geotechnical Ltd and including the doing of any independent investigation of the information provided to Earth Environmental & Geotechnical Ltd save as otherwise provided in the terms of the contract between the client and Earth Environmental & Geotechnical Ltd.

Where field investigations have been carried out these have been restricted to a level of detail required to achieve the stated objectives of the work. Ground conditions can also be variable and as investigation excavations only allow examination of the ground at discrete locations. The potential exists for ground conditions to be encountered which are different to those considered in this report. The extent of the limited area depends on the soil and groundwater conditions, together with the position of any current structures and underground facilities and natural and other activities on site. In addition, chemical analysis was carried out for a limited number of parameters [as stipulated in the contract between the client and Earth Environmental & Geotechnical Ltd] based on an understanding of the available operational and historical information, and it should not be inferred that other chemical species are not present.

The groundwater conditions entered on the exploratory hole records are those observed at the time of investigation. The normal speed of investigation usually does not permit the recording of an equilibrium water level for any one water strike. Moreover, groundwater levels are subject to seasonal variation or changes in local drainage conditions and higher groundwater levels may occur at other times of the year than were recorded during this investigation.

Any site drawing(s) provided in this report is (are) not meant to be an accurate base plan but is (are) used to present the general relative locations of features on, and surrounding, the site.