



Phase II Geo-Environmental Assessment

Site: Land at Lower Road, Breachwood Green, SG4 8NS

Prepared for: Mr Geoff Long

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Land at Lower Road, Breachwood Green, SG4 8NS

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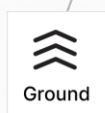
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LAND AT LOWER ROAD, BREACHWOOD GREEN, SG4 8NS

NON-TECHNICAL CLIENT SUMMARY

This report presents the findings of a Phase II Intrusive Investigation undertaken to determine ground conditions, establish if there are any environmental risks associated with the site and its development, and provide a geotechnical appraisal. Pertinent findings and conclusions may be summarised as follows:

- This investigation follows on from a Phase I Desk Study recently completed for the site by EPS, which identified potential risks from contamination mainly relating to the possibility of contaminated made ground beneath the site given the presence of former structures.
- Intrusive investigations involved the formation of five boreholes and two trial pits across the site to maximum depths of 4.0m and 1.7m respectively, with soil samples collected for laboratory analysis. Ground conditions encountered were generally found to comprise a limited thickness of topsoil underlain by superficial deposits of the Clay-with-Flints Formation. Lewes Nodular Chalk Formation is then encountered at variable depths ranging from around 1.7m in the north of the site, to in excess of 4.0m in the south and west.
- Results of environmental laboratory analysis on shallow soil samples, and subsequent risk assessment have identified no unacceptable risks to future site users from ground contamination to be present, and therefore no further assessment or remedial measures are considered necessary.

ENGINEERING SUMMARY

- The ground conditions are considered suitable for the use of conventional spread foundations bearing on the underlying Clay-with-Flints Formation present at formation depths. At a depth of 1.0m a nett allowable bearing capacity of 120kN/m² is considered appropriate.
- Clay soils have been found to be of high plasticity and therefore suspended ground floor slabs are recommended.
- A design CBR value of 4% is considered appropriate for the natural shallow soils.
- The results of infiltration testing indicate 'practically impermeable' drainage conditions for the superficial cohesive soil. Whilst the deeper chalk may be suitable for infiltration drainage systems, there is a risk of chalk dissolution at the site that must also be taken in to account in design.

The above points represent a simplified summary of the findings of this assessment and **must not** form the basis for key decisions for the proposed development. A thorough review of the details is contained within the following report, or alternatively get in touch and we'll talk you through it.

LIMITATIONS

This report has been prepared for the client(s) listed on the report title page. Environmental Protection Strategies (EPS) accepts no liability or responsibility for use of, or reliance upon, this report and / or the information contained within it by third parties.

If third parties have been contracted / consulted during compilation of this report, the validity of any data they may have supplied, and which are included in the report, have been assessed as far as possible by EPS however, EPS cannot guarantee the validity of these data.

No part of this report, or references to it, may be included in published documents of any kind without approval from EPS.

This report and its contents, together with any supporting correspondence or other documentation, remain the property of Environmental Protection Strategies Ltd until paid for in full.

Where ground investigations have been conducted, these have been limited to the level of detail required for the site in order to achieve the objectives of the investigation.

The report has been written, reviewed and authorised by the persons listed on page ii. It has also undergone EPS' quality management inspection. Should you require any further assistance regarding the information provided within the report, please do not hesitate to contact us.

The National Planning Policy Framework requires a competent person to prepare site investigation information, which is defined as a person with a recognised relevant qualification, sufficient experience in dealing with the type(s) of pollution or land instability, and membership of a relevant professional organisation. EPS considers that it fulfils these criteria and would welcome any request for staff CVs or case studies to demonstrate it.

As stated within DEFRA's Contaminated Land Statutory Guidance, with any complex risk assessment it is possible that different suitably qualified people may reach slightly different conclusions when interpreting the same information. EPS recognises this and considers the conclusions presented within this report to be robust and appropriate but input from the Local Authority and their judgement in line with this guidance would still be welcomed.

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1 INTRODUCTION

In July 2026, Environmental Protection Strategies Ltd (EPS) was commissioned by Pentangle Design on behalf of Mr Geoff Long to complete a Phase II Geo-Environmental Assessment Report for Land at Lower Road, Breachwood Green, SG4 8NS ('the site'); see Figure 1. Selected Site photographs are included as Appendix A.

The work was commissioned in order to fulfil planning requirements relating to land contamination (Condition 7 part (b) under North Hertfordshire District Council extant planning consent ref: 22/02871/FP) for a proposed development understood to comprise the construction of 6No new residential properties with associated soft landscaping, parking space and an access road. The properties will comprise a combination of semi-detached, and detached with standalone garages. A copy of the proposed development plan is included as Appendix B.

This report also follows on from, and intends to address, recommendations made in EPS' recently completed Phase I Geo-Environmental Desk Study for the site, which included a Conceptual Site Model (CSM) developed in order to illustrate the potential risks the site may pose to human and environmental receptors both currently and in future. This report presents a brief summary of the previous Phase I Desk Study followed by the findings, conclusions and recommendations of the current Phase II Intrusive Investigation undertaken as instructed.

1.1 Objectives

The objectives of this investigation were as follows:

- a) Evaluate the potential contaminant linkages identified in the previous CSM by means of investigating shallow soils beneath the site.
- b) Determine the potential risks posed by the site and make recommendations for further work that may be required, to ensure safe development in accordance with the Environment Agency's Land Contamination: Risk Management guidance (LC:RM) and the National Planning Policy Framework.
- c) Collect information on ground conditions and strength in order to make appropriate recommendations for geotechnical design.
- d) Assess the permeability of shallow soils through completion of soakaway testing to determine the feasibility of infiltration drainage for the proposed development.

1.2 Scope of Work

To perform an exploratory assessment of the site in accordance with the principles and requirements of DEFRA's 'Contaminated Land Statutory Guidance' (2012), BS10175: 2016 – 'Investigation of Potentially Contaminated Sites', BS 5930:2015+A1:2020 – 'Code of practice for ground investigations', and BS EN 1997 – 1, 2 & 3: 2024 – 'Geotechnical Design', the following tasks were undertaken:

Intrusive Investigation:

- Health and safety briefing / site supervision.
- Formation of two mechanically excavated trial pits to a maximum depth of 1.7m below ground level (bgl), to facilitate infiltration testing.
- Drilling of five windowless sample boreholes to a depth of 4.0m bgl using a track-mounted percussive rig.
- In-situ testing of underlying soils to assist with geotechnical design.
- Continual logging of ground conditions including inspection of samples for visual and olfactory contamination, and laboratory analysis of selected representative soil samples.

Reporting:

- Data collection
- Interpretation of data including completion of Generic Quantitative Risk Assessment

The findings and conclusions of these investigations are presented in the following sections.

1.3 Limitations and Constraints

The purpose of this report is to present the findings of a soil sampling investigation conducted at the location(s) specified. When examining the data collected from the investigations made during the assessment, Environmental Protection Strategies Ltd (EPS) makes the following statements:

No investigation method is capable of completely identifying all ground conditions that might be present in the soil or groundwater under a site. Where outlined in our report, we have examined the ground beneath a site by constructing a number of boreholes and / or trial pits to recover soil and / or groundwater samples. The locations of these excavations and sampling points are considered representative of the condition of the whole site subsurface however, ground conditions are naturally variable, and it may be possible that the conditions encountered may differ to those found during the investigation.

No visible evidence of Japanese Knotweed was identified during the site walkover. However, this plant can be difficult to identify in the early stages of growth and therefore it is not always possible to identify its' presence at certain times of the year. For this reason, EPS cannot confirm that Japanese Knotweed rhizomes do not exist and it is recommended that if it is suspected that this species, or other similarly invasive plants are present at the site, a specialist contractor should be commissioned to make a detailed assessment.

This report does not include specific investigation for the presence of Potential Asbestos Containing Material (PACM). Specialist contractors should be commissioned to make detailed assessments and recommendations if these materials are suspected.

The investigation was carried out to assess the significance of contamination resulting from the use of the site as identified in this report. Unless EPS has otherwise indicated, no assessment of potential impact of any other previous uses has been made.

2 SITE CHARACTERISATION & PREVIOUS REPORTS

The following section provides a summary of the information collected as part of the previous Phase I Geo-Environmental Desk Study issued by EPS. For full background and reference, it is recommended that the following document is reviewed in conjunction with this report.

- EPS (2026), *Phase I Geo-Environmental Desk Study – Land at Lower Road, Breachwood Green, SG4 8NS* (EPS Report Ref: UK26.7955, Issue 1 dated 14th August 2026)

2.1 Site & Location Description

Detail	Description
Location	The site lies on the north side of Lower Road at the northeast edge of the village of Breachwood Green, approximately 1.8km northeast of London Luton Airport.
National Grid Reference	515470, 222190
Topographic Elevation	Levels lie between approximately 139.3m and 143.8m above Ordnance Datum (AOD), sloping down from south to north.
Description of Site	The site comprises a sub-rectangular parcel of land covering approximately 0.38ha. A site walkover survey was conducted prior to EPS' site investigations on 27th July 2026 at which time the land was found to comprise an undeveloped field, divided in two by a wire fence running southwest-northeast through the site. The site is accessed via a locked gate leading north from Lower Road, where there is a small area of hardcore surfacing forming a rudimentary driveway / parking space. The site is somewhat overgrown with frequent patches of waist-high grasses and weeds. A small concrete slab was noted in the southeast corner of the site, understood to be associated with a former shed which has been removed, while signs of surface water drainage were also present. A manhole cover associated with a foul sewer was noted in the north of the site. The western site boundary was defined by a wooden fence and hedgerows separating the land from the adjacent property, with a second gate present in the northwest corner of the site leading from the property's rear garden forming a public right of way. The remaining site boundaries were generally defined by mature trees up to 30-40m tall, of various species.

2.2 Geo-Environmental Setting

Geology	Geological mapping shows the site to be underlain by superficial deposits of the Clay-with-Flints Formation, followed by bedrock of the Lewes Nodular Chalk Formation. A moderate risk of chalk dissolution was attributed to the site.
Hydrogeology	Groundwater vulnerability maps for the area show the underlying bedrock geology to be classified as a Principal Aquifer while the superficial deposits are classified as Unproductive Strata. The site also lies within a Source Protection Zone (SPZ 2 – Outer Protection Zone) for local groundwater abstraction. Only one groundwater abstraction license is reported within a 1km radius, located around 820m to the southeast for general farming and domestic purposes at a private property
Hydrology	The nearest surface water feature appears to comprise a series of drainage ditches located around 230m east of the site, adjacent to a nearby sewage works. No other watercourses are present within a 1km radius. No surface water abstractions are present within a 1km radius.
Landfill & Waste	The Envirocheck report does not indicate the presence of any current or historic landfills, or other waste management facilities, within 1km of the site. However, a number of areas of other potentially infilled land are recorded to be present, located around 480m, 510m and 545m west of the site respectively. These appear to refer disused clay pits on the far side of Breachwood Green, which were reportedly infilled during the 1960s-1970s.
Summary of Site History	A review of historic Ordnance Survey maps was also carried out as part of the Phase I Desk Study. The available mapping suggests that the site has remained undeveloped since at least the 1880s. However according to the Client, the land was previously used at times for dog agility training and for keeping horses, and a small shed was previously present in the southeast corner of the site. Historic satellite imagery from Google Earth covering the period since 2000 does show evidence of these former land uses. Dog training reportedly took place in the front section of the site (southeast of the

Summary of Site History Cont.	wire fence), and apparatus associated with this activity can be seen on images dating from 2000 to 2022. A small white marquee or similar is also shown at the eastern end of the site between 2017 and 2022, however the date the shed was removed is not known. Lastly, a small area in the southwest corner was cleared for vehicle parking at the time the site was active. The rear of the site (northwest of the wire fence) is where horses were previously kept, although the dates that this took place are also not known.
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2.3 Phase I Conclusions & Recommendations

A Conceptual Site Model was developed as part of the Phase I report, taking into account the potential sources at the site and in the surrounding area to identify the plausible contaminant linkages that are either already active or have the potential to become active through any future development or change of the land use.

The potential risks identified were limited to the possible presence of some contaminated made ground in one isolated area, as a result of previous site uses and the presence of former structures (albeit minor). It was considered possible that future site residents (and construction workers) could be exposed to these soils should they be uncovered during and after the proposed works, particularly in proposed landscaped areas.

In the context of potentially unacceptable or acceptable risks as outlined within the Environment Agency's *Land Contamination: Risk Management* guidance, the contaminant linkages which pose potentially unacceptable risks and warrant further assessment to determine the most appropriate action are as follows:

- Human health risks associated with interaction between future residents and potentially contaminated shallow soils, especially within domestic garden areas.
- Potential exposure of site workers to contaminated soils during the proposed redevelopment.

It was therefore recommended that the identified plausible contaminant linkages should be further investigated by means of obtaining representative shallow soil samples, particularly from areas of the site that coincide with proposed soft landscaping / gardens.

The following sections detail the findings and conclusions of the Phase II intrusive investigation carried out by EPS in order to determine the ground conditions and the presence of soil contamination.

3 SUMMARY OF INTRUSIVE INVESTIGATIONS

Intrusive ground investigations were undertaken on 27th & 28th July 2026 in accordance with EPS standard operating procedures, copies of which will be made available on request. A summary of all site activities is presented in the following sections:

3.1 Exploratory Hole Locations

Exploratory hole locations were selected through consideration of the potential contaminant linkages identified through the Phase I Desk Study, the proposed development layout and the locations of below ground utilities, as well as general operational / health & safety concerns. The overall objective was to provide an appropriate lateral and vertical coverage of the soils underlying the site in order to offer information relating to their quality and nature, as well as to provide information for geotechnical design.

A total of five windowless sample boreholes (WS1 – WS5) and two mechanically excavated trial pits (TP1 & TP2) were formed across the site using a track-mounted percussive drilling rig and 3-tonne tracked excavator respectively, to maximum depths of 4.0m and 1.7m bgl. Further rationale for the various exploratory locations is provided in the table below:

Location	Rationale
WS1 – WS5	Assess the general quality and nature of underlying soils across the development site, in areas broadly aligning with locations of proposed dwellings in order to assist with geotechnical design.
TP1 – TP2	Assess the permeability of shallow soils at the site to assist with drainage design for the proposed development, while also obtaining additional soil quality information from proposed soft landscaped areas. In particular, TP1 allowed assessment of soil quality in the area where minor structures had formerly been present according to the Client.
CBR1 – CBR6	Obtain in-situ shallow soil strength data along the route of the proposed access road.

An exploratory hole location plan is presented as Figure 2.

3.2 In-Situ Testing & Soil Sampling

Each borehole was logged for ground conditions encountered and inspected for any physical evidence of contamination, such as soil staining, odour and the presence of separate phase liquids on a precautionary basis. Representative soil samples were then recovered from each location at regular intervals for laboratory analysis. Borehole and trial pit logs are presented in Appendix C.

The strength of the soils encountered was assessed by carrying out standard or cone penetration tests (SPT / CPT) at regular intervals concurrently with the borehole drilling, using an automatic trip hammer. The number of blows required to advance a standard split spoon, (or solid 60° nose cone for the CPT test) over the final 300mm of a 450mm total drive was recorded and is shown on the borehole records as the penetration resistance (“N” value).

The undrained shear strength of cohesive soils encountered was also measured where possible by carrying out hand shear vane tests in the materials recovered from the 1m sample liners. The ‘peak’ undrained shear strengths are recorded in kPa on the borehole logs, shown as ‘HVP’.

In addition, a Dynamic Cone Penetrometer (DCP) was used to estimate in-situ CBR value for up to 900mm depth of subgrade in six locations across the site (CBR1 – CBR6) broadly corresponding with the route of the proposed access road. This unit consists of two shafts that are connected around the midpoint, and one of these is used to drive an anvil with a pointed tip by sliding a weight along the upper portion of the shaft. The strength of the underlying soil is determined through measuring the penetration of the lower shaft (in mm per blow), which is then used to calculate an equivalent CBR value.

Infiltration tests were attempted at both TP1 & TP2 in general accordance with BRE365, in order to provide an assessment of shallow soil permeability in the proposed development area, and the feasibility of the use of soakaways or other similar methods of surface water disposal.

Upon completion of all of the above, all locations were fully backfilled with compacted soil arisings and levelled / made safe at the surface. The trial pits were slightly surcharged above ground level to allow for some settlement of the clay soils encountered.

3.3 Laboratory Testing

Samples obtained for analysis for identified contaminants of concern were submitted to Element Materials Technology, who hold appropriate UKAS / MCERT accreditation for the required testing. Samples were transported in laboratory supplied containers and delivered to the laboratory by approved courier.

Geotechnical testing was undertaken by Soil Property Testing, Huntingdon, a UKAS accredited laboratory. Copies of chain of custody documentation are held by EPS and will be made available on request.

An environmental laboratory testing schedule is included as Table 1, and a geotechnical laboratory testing schedule is included as Table 2.

4 FINDINGS OF THE INVESTIGATION

This section of the report provides a summary of the findings of the various aspects of the ground investigation.

4.1 Ground Conditions

A total of five window sample boreholes and two trial pits were formed at the site, and the ground conditions encountered from surface level have been interpreted to comprise:

- Topsoil/Made Ground
- Clay-with-Flints Formation
- Lewes Nodular Chalk Formation

Site specific borehole and trial pit logs are included as Appendix C and give descriptions and depths of strata encountered. A summary of the general strata encountered across the site is provided in the table below, with more detailed description given in the following subsections.

Geological Strata	Maximum Depth to Base of Strata (m bgl)	Strata Thickness (m)
Topsoil/Made Ground	0.34	0.20 to 0.34
Clay-with-Flints Formation	>4.00	>1.16 to >3.75 (only proven in WS1, WS2, WS5)
Lewes Nodular Chalk Formation	>4.00	>0.80 to >2.32 (not proven)

4.1.1 Topsoil/Made Ground

A layer of topsoil was initially encountered from the surface in all locations, generally described as light brown, slightly desiccated clay loam containing rootlets as well as rare gravels of fine to medium flint, chert and limestone fragments. This extended to a maximum depth of 0.34m.

The exception to this was TP1 in the southeast corner of the site, where a limited amount of made ground was noted beneath the surface. This was described as a light brown slightly sandy, gravelly clay, containing gravels of fine to coarse flint, chert and limestone as well as occasional brick and glass fragments. This also extended to around 0.34m.

4.1.2 Clay-with-Flints Formation

Directly beneath the topsoil (or made ground) in all locations, natural deposits representative of the Clay-with-Flints Formation were encountered. This generally comprised a firm to stiff, orangish-brown, sandy gravelly clay, with gravels of fine to coarse flint, chert, chalk and limestone fragments in varying proportions. In TP2 however, an initial layer of very gravelly (flinty) desiccated clay was encountered between around 0.2m and 0.4m. Elsewhere, the clay

was noted to contain frequent decayed organic material in WS3, WS4 and WS5, and was also noted to exhibit occasional very flint-rich horizons between around 1.5m and 4.0m.

This unit was fully penetrated in WS1, WS2 and WS5, but extended to beyond the maximum depth of WS3, WS4 and both trial pits.

4.1.3 *Lewes Nodular Chalk Formation*

Where the Clay-with-Flints Formation was fully proven, it was found to be underlain by bedrock of the Lewes Nodular Chalk Formation (Chalk). This was encountered at a depth of 3.2m bgl in WS5 but as high as around 1.7m bgl in WS1 and WS2, and was generally recovered as a crumbly white structureless chalk composed almost entirely of a silt matrix, with rare gravel of fine to medium flint and intact chalk fragments, extending to beyond the depth of each of the boreholes.

The fall in ground levels from south to north across the site is likely to be the reason for the variation in the depth to the Chalk unit, with the boreholes formed in the lowest parts of the site encountering chalk at the shallowest depths below ground level.

4.2 Groundwater

No groundwater strikes were recorded within any of the boreholes or trial pits, either during or upon completion of intrusive activities.

4.3 Physical Evidence of Contamination

Despite the presence of a limited thickness of made ground in isolated areas, there was no palpable evidence of contamination, waste or putrefiable material encountered in any of the sampling locations during the investigation.

4.4 Environmental Laboratory Analysis

A laboratory analysis testing schedule is presented as Table 1 and all environmental sample results obtained from the laboratory are included as Appendix D. The key results are summarised below.

Contaminant	No. of Samples	No. of Detections	Range of Detections (mg/kg)		Highest Location & Depth (mbgl)
			Min	Max	
Arsenic	5	5	12.6	15.9	WS5, 0.3-0.4
Cadmium	5	1	0.5		WS3, 0.2-0.3
Chromium III	5	5	51.2	68.7	WS2, 0.2-0.3
Chromium VI	5	0	-		-
Copper	5	5	26	47	WS2, 0.2-0.3
Lead	5	5	27	147	WS2, 0.2-0.3
Mercury	5	0	-		-
Nickel	5	5	26.1	38.5	WS5, 0.3-0.4
Selenium	5	3	1		Various
Zinc	5	5	88	280	WS3, 0.2-0.3
Naphthalene	5	0	-		-
Benzo[a]pyrene	5	3	0.18	0.99	WS4, 0.1-0.2
PAH (16 Total)	5	3	1.8	7.2	WS4, 0.1-0.2
Total Phenols	5	0	-		-
BTEX/MTBE	2	0	-		-
TPH CWG (Total)	2	1	66		TP1, 0.2-0.3
Cyanide	5	0	-		-
Asbestos	5	0	-		-

Notes:

-	Contaminant not found above laboratory detection limits
PAH	Polycyclic Aromatic Hydrocarbons
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
MTBE	Methyl Tertiary-Butyl Ether
TPH CWG	Total Petroleum Hydrocarbons (Criteria Working Group)

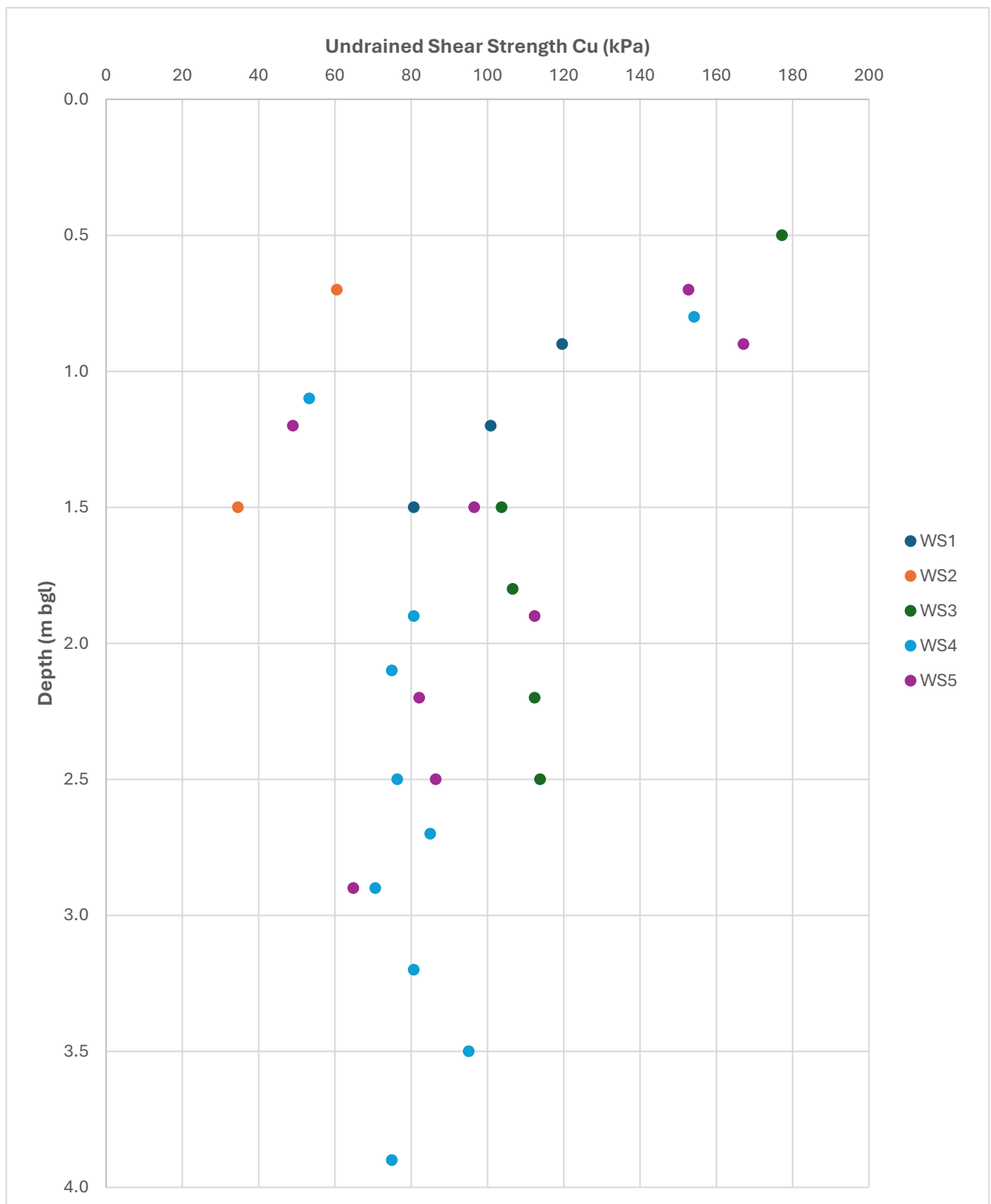
- The low levels of petroleum hydrocarbons detected in the sample obtained from TP1 were predominantly in the form of heavy-end TPH fractions (>C21, both aliphatic and aromatic). The interpretative comments made by the laboratory indicate these concentrations to derive from possible naturally-occurring compounds.

4.5 Geotechnical Testing

4.5.1 In-Situ Geotechnical Testing

The results of in-situ geotechnical testing, in the form of SPTs undertaken in the chalk bedrock and hand shear vane tests undertaken in the superficial clay soils, are summarised in the below table and graph respectively.

Depth (m bgl)	Min 'N' value	Max 'N' value
2.0	4	6
3.0	6	9
4.0	11	20



The data shows that the superficial clays appear to be generally of competent strength throughout the site, although some variation can be seen in the top 1.5m with the highest values in shallow soils possibly indicative of desiccation given the dry weather and presence of trees. Where Chalk is not present in WS3 and WS4 the strength can be seen to become more consistent with depth.

The Chalk where present appears to be slightly lower strength initially, then increasing in strength with depth.

4.5.2 Laboratory Geotechnical Testing

A geotechnical laboratory analysis testing schedule is presented as Table 2 and all geotechnical sample results obtained from the laboratory are included as Appendix E. The key results are summarised below.

Strata	Range of Parameters			
	Moisture Content (%)		Plasticity Index (%)	
	Min	Max	Min	Max
Clay-with-Flints Formation	38.4	48.5	53 (44)	76
Lewes Nodular Chalk Formation	34.3		10 (9)	

Notes: () Indicates plasticity adjusted for granular content of sample

The water content, liquid and plastic limits, and plasticity and liquidity indexes were established for four samples of predominantly cohesive superficial deposits and one sample of chalk, tested in line with BS EN ISO: 17892-1: 2014 & BS 1377: Part 2:1990:3.2, 4.4, 5.3 and 5.4.

Sulphate contents and pH value determinations were carried out by the environmental laboratory, the results of which are summarised in Section 5.6 of this report.

5 GEOTECHNICAL APPRAISAL

The ground conditions have been found to comprise a limited thickness of topsoil / made ground underlain by superficial deposits of the Clay-with-Flints Formation, and then Lewes Nodular Chalk Formation. The proposed development is understood to comprise the construction of 6No new residential properties with associated soft landscaping, parking space and an access road.

5.1 Geotechnical Complexity Class (GCC)

Geotechnical Complexity	Features
GC1	GCC1 - Lower - Negligible uncertainty regarding the ground conditions - Uniform ground conditions low sensitivity to groundwater and surface water conditions - Low complexity of the ground/structure interaction
GC2	GCC2 - Normal GCC2 applies if GCC1 and GCC3 are not applicable
GC3	GCC3 - Higher - Considerable uncertainty regarding ground conditions - Highly variable or difficult ground conditions - Significant sensitivity to groundwater and surface water conditions - Significant complexity of the ground/structure interaction

The below assessment has been undertaken in accordance with Geotechnical Complexity Class 2 (GCC2), including conventional types of structure and foundation with no exceptional risk or difficult ground / loading conditions, as defined by BS EN 1997 – 1, 2 & 3: 2024.

5.2 Structural Foundations

The foundation assessment has been undertaken in accordance with BS EN 1997 – 1, 2 & 3: 2024 to take account of;

- Bearing Pressure (Ultimate Limit State)
- Settlement (Serviceability Limit State)

Based on the information collected, the ground conditions are considered suitable for the use of conventional spread foundations, either strip footings or pad foundations bearing on the underlying Clay-with-Flints Formation deposits.

Allowable bearing capacities have been calculated for depths of 1.0m and 1.5m for the underlying natural soils and are provided in the table below. These calculations have been made using the assumption that the slightly lower strength chalk unit is present at around

1.7m deep although this was not the case across the entire site, with competent clay encountered to at least 4.0m in WS4 for example.

Foundation Depth (m bgl)	Allowable Bearing Capacity* (kN/m ²)
	Strip
1.0	120

* BS EN 1997 – 1, 2 & 3: 2024 (EC7) Geo Load Combination 2

The allowable bearing capacity is the permissible increase in vertical stress at the level of the underside of the foundation, above existing overburden pressure, which may be calculated on the basis of a soil density of 19kN/m³.

At the above bearing capacity, total settlements in soils are unlikely to exceed approximately 20mm to 25mm. Settlements in cohesive soils will comprise a relatively small proportion of immediate settlement and a larger portion of consolidation settlement which will take place over a long period of time, whilst settlements in the Chalk are likely to occur more rapidly.

A minimum foundation depth of 1.0m below existing or proposed ground level is considered suitable for the site, subject to the following provisos: -

- a) Foundations should fully penetrate any made / disturbed ground and should extend a minimum of 150mm into undisturbed natural strata. It is acknowledged that only a limited amount of made ground has been encountered throughout the ground investigation works, however this could become more common / deeper at close proximity to and beneath existing and former structures, which may result in increased foundation formation depth in areas which have been previously developed.
- b) The superficial clays will be subject to volume change (subsidence and / or heave) due to the presence of trees / vegetation. Foundations will therefore need to take into account the presence of trees, including those adjacent to the site boundaries and any either recently removed or yet to be planted. Laboratory analysis has established the Clay-with-Flints Formation as having ‘high volume change potential’ in accordance with NHBC Standards Chapter 4.2 ‘*Building Near Trees*’.

It is recommended that all trees present locally are given full consideration in the foundation design process. Where foundations exceed 1.5m in depth due to the influence of trees / vegetation, full anti-heave precautions will need to be adopted.

5.3 Ground Floor Construction

Given that the near surface soils are susceptible to volume change, suspended ground floor slabs are recommended for any new buildings, incorporating a sub-floor void suitable for a ‘high volume change potential’ soil.

The floor slab design will also need to take in to account the presence of trees / vegetation and should be designed to accommodate any heave / shrinkage that will be generated.

5.4 Groundworks

Whilst excavations in predominantly cohesive soils may remain stable for short periods during construction, the stability of these should not be relied upon for extended periods, along with that of any excavations in made / disturbed ground. Some form of excavation support should be provided in such circumstances.

Heavy plant and stockpiles of materials should not be permitted close to the edges of unsupported excavations. Further reference may be made to CIRIA Report No. 97 '*Trenching Practice*' 1992.

The presence of underground services is also anticipated and should be given full consideration in design proposals, as they may require diversion to accommodate the development.

Excavations must not be carried out in close proximity of any existing on-site or neighbouring structures / retaining features without support measures in place.

Based on the findings of the intrusive works, groundwater ingress is not anticipated within shallow excavations for new foundations and services.

5.5 External Works

5.5.1 Pavement Design

Five in-situ dynamic cone penetrometer (DCP) tests were undertaken through the shallow profile along the route of the proposed access road, in order to estimate California Bearing Ratio (CBR) values for use in the design of new hardstanding.

The results of the DCP testing are presented graphically in Appendix F and identify representative CBR values largely varying between 9% and 15% for the shallow soils, excluding topsoil and made ground. The wider variation then observed in terms of the frequent higher values recorded, is likely to represent coarse flints present within the superficial deposits and obstructing the penetration of the DCP. Nevertheless, from EPS' own experience of the natural strata encountered (clay with high plasticity of up to ~70%) a lower design CBR value of around 3% would typically be recommended, although this is likely to be improved somewhat by the granular content of the soils. On this basis, a value of 4% is considered appropriate for the natural cohesive soils at shallow depth.

Once the formation level for new pavement has been achieved, proof rolling should be carried out using a heavy roller, and any significant / extensive soft or loose areas revealed should be excavated and a greater depth of sub-base provided.

Exposed sub-grades will likely deteriorate rapidly on exposure to wet weather and should be shaped to shed water. Sub-base should be placed as soon as possible to minimise the exposure of the sub-grade to adverse weather conditions.

5.5.2 Drainage

Infiltration tests were attempted within the shallow soils at the two trial pit locations (TP1 & TP2), progressing to depths of up to 1.7m bgl, and in general accordance with '*BRE Digest 365 – Soakaway Design*'.

Both tests were run over a 2-day period and in the time available, only around 25% of the water in each pit drained away. A minimum of 75% is typically required in order to be able to calculate accurate infiltration rates, and therefore these results are considered to represent 'practically impermeable' drainage conditions for the soils present to this depth beneath the site.

It should be noted that both tests were undertaken in the superficial clay layer, and these soils are generally not appropriate for infiltration drainage as is reflected in the results. The underlying chalk bedrock may however exhibit more favourable drainage conditions and was subsequently found in the boreholes to be present only slightly deeper than the base of the trial pits in the north of the site (although considerably deeper elsewhere). Consideration would then need to be given to the potential for dissolution features to be created from any infiltration drainage infrastructure, especially if site-wide runoff is concentrated into a relatively small area via a borehole soakaway or similar.

Importantly, the Phase I Desk Study identified the site to be at moderate risk from potential chalk dissolution although no confirmed reports of such features were listed in the surrounding area. It is therefore recommended to consult local building control to confirm mitigation measures that would typically be expected, as soakaways may need to be a significant distance, at least 10m and possibly as much as 20m from any structures in such conditions.

5.6 Concrete Grade

Sulphate contents and pH value determinations were carried out by the environmental laboratory, and the results of this testing are summarised in the below table as well as being presented within Appendix D.

Strata	Water Soluble Sulphate 2:1 SO ₄ (mg/l)		pH	
	Min	Max	Min	Max
Topsoil / Made Ground	2.3	5.4	5.94	7.33
Clay-with-Flints Formation	8.4	22.5	6.12	7.80
Lewes Nodular Chalk Formation	7.3	12.3	8.62	8.68

In accordance with Part 1 of the BRE Special Digest 1 '*Concrete in Aggressive Ground*' 2005, as less than five samples of each strata were obtained for analysis, the highest water-soluble sulphate values and lowest pH values have been taken as characteristic. On this basis, a Design Sulphate class of DS-1 is considered suitable for concrete in direct contact with all soil layers beneath the site, with an Aggressive Chemical Environment for Concrete class of AC-1s.

6 ENVIRONMENTAL APPRAISAL

The following section outlines the approach applied to assessing the risks posed to human health, then identifies any sample results found by this investigation which warrant further consideration. In accordance with the Environment Agency's *Land Contamination: Risk Management*, this section represents the second tier of Stage 1, the Generic Quantitative Risk Assessment.

Risks to controlled water resources (groundwater and surface watercourses) have not been assessed at this stage, as these were discounted as part of the CSM included in the previous Phase I Desk Study.

6.1 Human Health

6.1.1 Land Use Setting

It is understood that development proposals for the site include the construction of 6No new residential properties with associated soft landscaping. In order to screen laboratory data for concentrations of contaminants in soil with potential to cause harm to human health in these soft landscaped areas, relevant generic screening values most applicable to this land use have been utilised. A land use setting of Residential (with homegrown produce) has been adopted as it is considered the most representative, as well as to remain consistent with the Phase I Desk Study.

The technical framework used to derive DEFRA's Category 4 Screening Levels (Policy Companion Document '*SP1010: Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination*') outlines the relevant factors for determining land use selection in the application of the screening levels.

6.1.2 Generic Screening

The technical framework used to derive the assessment criteria and the documents in which they are published are summarised as follows:

- *EA Science Reports* (SC050021/SR2, SC050021/SR3, and SC050021/SR7)
- *EA Soil Guideline Value Science Reports*
- *Suitable For Use Levels (S4ULs) for Human Health Risk Assessment – LQM & CIEH* (2015)
- *Soil Generic Assessment Criteria for Human Health Risk Assessment – EIC/AGS/CL:AIRE* (2010)
- *Development of Category 4 Screening Levels for assessment of land affected by contamination – SP1010 – DEFRA* (2013)

Category 4 Screening Levels (C4SLs) provide generic suitable for use screening values for some common contaminants in a variety of land uses and are also utilised as appropriate generic screening criteria.

A summary of the screening criteria and the methodology used to derive them is included in Appendix G.

6.1.3 *Assessment of Results*

The results of the screening process for on-site human receptors have showed that generic screening criteria representative of risks to future site users becoming exposed to contaminants of concern within shallow soils were not exceeded for any contaminant at any sample location.

6.2 **Summary of Findings**

EPS' previous Phase I Desk Study identified potential risks to future site users from potential ground contamination, mainly relating to the possible presence of unknown made ground materials in one isolated area which could be contaminated, as a result of previous site uses and the presence of former structures (albeit minor). It was considered possible that future site residents (and construction workers) could be exposed to these soils should they be uncovered during and after the proposed works, particularly in proposed landscaped areas.

Intrusive investigations therefore comprised the formation of five window boreholes and two trial pits across the area of investigation, to facilitate the collection of soil samples for inspection for physical evidence of contamination and subsequent laboratory analysis. The ground conditions encountered were initially found to comprise around 0.3m thickness of topsoil which was fairly desiccated. Sporadic fragments of man-made debris such as brick and glass were noted in the topsoil in TP1, and therefore it has been logged as made ground in this location rather than natural. The underlying natural soils in all locations comprised superficial deposits of the Clay-with-Flints Formation, recovered as an orangish-brown gravelly clay containing frequent fine to coarse flints, extending to beyond the maximum depth of the two trial pits as well as WS3 and WS4. In the remaining boreholes, this unit was found to be underlain by bedrock of the Lewes Nodular Chalk Formation, encountered at depths between around 1.8m and 3.2m, to beyond the maximum borehole depth. No groundwater was encountered.

The results of the site investigation, laboratory analysis of shallow soils samples, and subsequent risk assessment undertaken, have identified that the adopted screening criteria protective of future site users (including residents) have not been exceeded by any of the contaminants of concern. Therefore, no unacceptable risks to future site users from ground contamination are considered to be present, and no further assessment or remedial action is considered necessary.

In the context of potentially unacceptable or acceptable risks as outlined within the Environment Agency's *Land Contamination: Risk Management* guidance, the risks identified by this work are considered to be low and acceptable, and the site can be considered safe and suitable for the proposed development in its current condition.

6.3 Recommendations

In light of the above conclusions, no recommendations for further works or formal remedial action have been made.

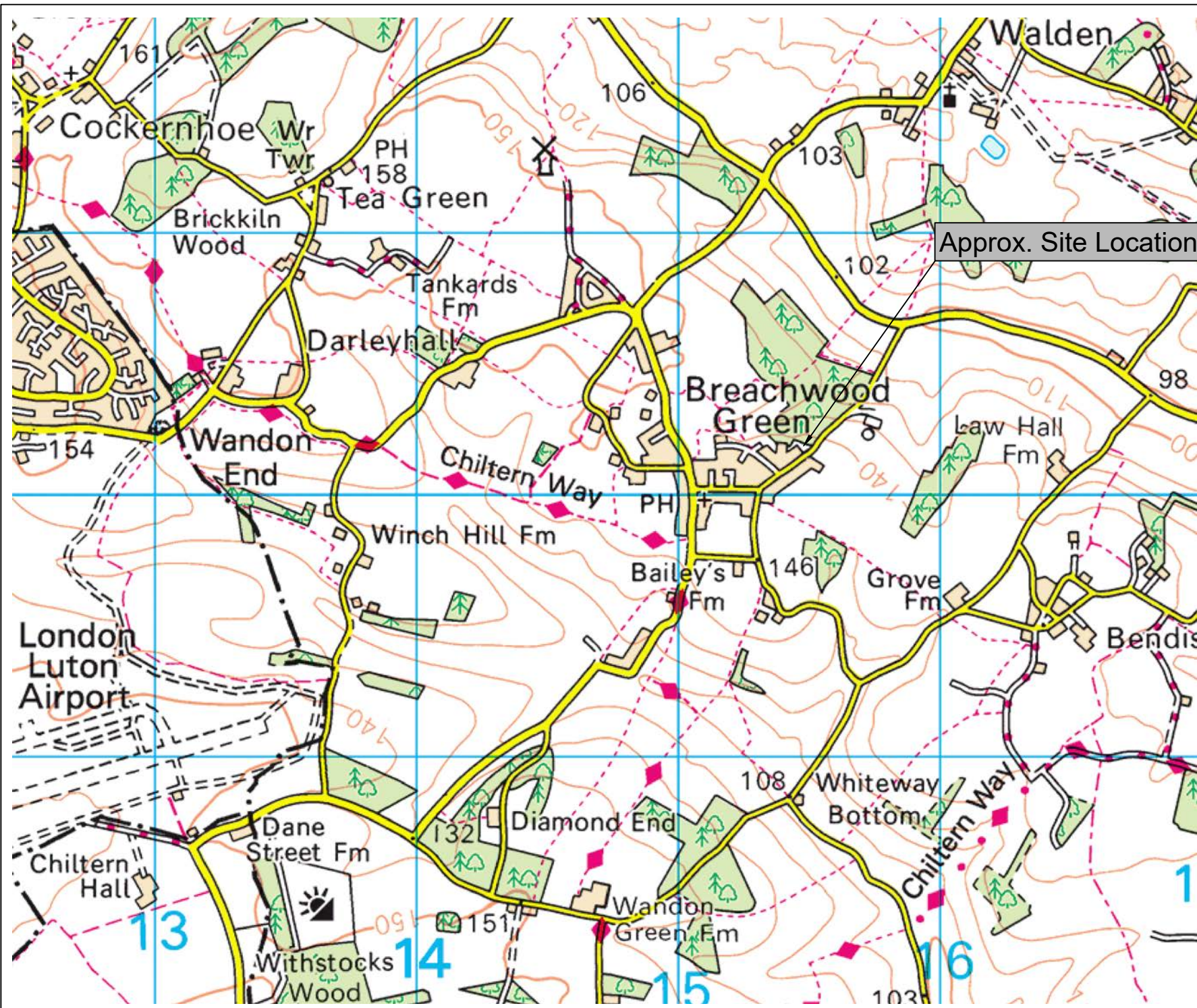
The following precautionary measures are however recommended as standard, to ensure safe development:

- a) Where made ground soils containing debris such as brick and glass are present in areas coinciding with proposed gardens, a nominal thickness of suitable clean topsoil should be imported in order to provide a growing medium for planting. This is in accordance with NHBC guidelines and would not represent a formal remedial recommendation made by EPS.
- b) All construction workers operating at the site should be advised of the potential for contact with made ground material within shallow soils, particularly where former structures were present, and beneath existing hardstanding. Appropriate health and safety precautions should be adopted during any excavation works to avoid exposure to infilled soils. Reference should be made to relevant health & safety guidance including the following CIRIA document: *R132 Guide to Safe Working on Contaminated Sites*.
- c) Although the findings of the investigation would suggest that significant quantities of asbestos are unlikely to be encountered, the possibility of discrete pockets of this material existing within the limited made ground remains. If any evidence of visually identifiable ACM is suspected and is to be disturbed during the site development it is recommended that all works are postponed until suitable assessment and control measures (including a Safe Working Method or SWM) are created. This SWM should be prepared in accordance with guidance from CIRIA as well as CL:AIRE and it will support the principal contractor in their duties under *The Construction (Design & Management) Regulations 2015* (CDM). EPS can assist with this SWM if required.
- d) Private (alkythene) drinking water supply pipes are unlikely to be at risk from contaminants in the ground, specifically petroleum hydrocarbons. However, some low levels of such contamination were detected, and it would therefore be advisable to confirm with the local water supplier whether an upgrade to barrier drinking water pipes are necessary.
- e) Should any palpable evidence of unexpected contamination be encountered during the redevelopment work, it should be reported to EPS so that an inspection can be made and appropriate sampling and assessment work carried out. A method statement for this is provided as Appendix H.

It is recommended that a copy of this report be provided to the Environmental Health Department of North Hertfordshire District Council so that the information may be incorporated into their land quality records and used to support the current planning application. This report should satisfy all outstanding requirements of Condition 7 under 22/02871/FP.

END

FIGURES



Notes:
1. Base map reproduced under Crown Copyright Licence
Number: 100054115

Rev	Date	Drawn	Description	CHK'd



The Geotechnical and Environmental Engineers
www.epstrategies.co.uk

Land at Lower Road, Breachwood Green
SG4 8NS

Mr Geoff Long

Figure 1 - Site Location Plan

Surveyed by	-	Drawn by	JMB
Checked by	TH	Date	July 2026
Scale	(M4 Sheet)	Drawing Reference	
NTS		UK26.7955_001	
Job No	UK26.7955	Rev	0



- KEY:
- APPROX. SITE BOUNDARY
 - APPROX. WINDOW SAMPLE BOREHOLE LOCATION
 - APPROX. TRIAL PIT LOCATION WITH INFILTRATION TESTING

Notes:

- Base map reproduced under Crown Copyright Licence Number: 100054115

Rev	Date	Drawn	Description	CHK'd



The Geotechnical and Environmental Engineers
www.epstrategies.co.uk

Site
Land at Lower Road, Breachwood Green
SG4 8NS

Client
Mr Geoff Long

Title
Figure 2 - Exploratory Hole Location Plan

Surveyed:	-	Drawn by:	TH
Checked by:	SB	Date:	August 2026

Scale	(A4 Sheet)	Drawing Reference
NTS		UK26.7955_004

Job No	Rev
UK26.7955b	1

TABLES

Table 1 – Laboratory Testing Schedule (Environmental)

Sample ID	Sample Depth (m bgl)	EPS Mini Suite	EPS TPH Suite	EPS Geotech Suite
WS2/ES1	0.2-0.3	X	-	-
WS3/ES1	0.2-0.3	X	-	-
WS4/ES1	0.1-0.2	X	-	-
WS5/ES1	0.3-0.4	X	X	-
TP1/ES1	0.2-0.3	X	X	-
WS1/D2	3.0	-	-	X
WS2/D3	4.0	-	-	X
WS3/D1	1.0	-	-	X
WS4/D1	1.5	-	-	X
WS5/D1	1.0	-	-	X

Notes:

m bgl

X

-

EPS Mini Suite

EPS TPH Suite

EPS Geotechnical Suite

meters below ground level

Sample Analysed

Sample Not Analysed

Organic Matter, Cyanide, Metals, PAH's, Phenols and Asbestos Screen

TPH CWG, BTEX, and MTBE

Water Soluble Sulphates, Sulphur & pH

Table 2 – Laboratory Testing Schedule (Geotechnical)

Sample ID	Sample Depth (m bgl)	Moisture Content	Liquid / Plastic Limits
WS1/D1	1.5	X	X
WS2/D1	0.75	X	X
WS2/D2	2.0	X	X
WS3/D2	2.5	X	X
WS4/D2	3.5	-	-
WS5/D2	4.0	X	X

Notes:

mbgl

X

-

meters below ground level

Sample Analysed

Sample Not Analysed

APPENDICES

APPENDIX A – SELECTED SITE PHOTOGRAPHS

Photo 1: Infiltration testing undertaken at TP1.



Photo 2: Trial pit and spoil heap at TP2.



Photo 3: Materials recovered from WS2.



Photo 4: Materials recovered from WS4.



APPENDIX B – PROPOSED DEVELOPMENT PLAN

ANY QUERIES REGARDING DIMENSIONS TO BE TAKEN UP WITH
PENTANGLE DESIGN GROUP.

ALL DIMENSIONS OF EXISTING BUILDINGS TO BE VERIFIED ON SITE.

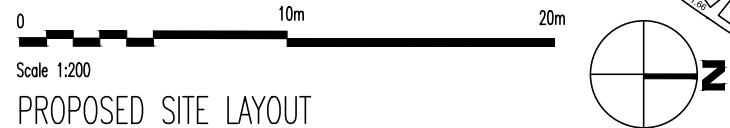
THIS DRAWING IS THE COPYRIGHT OF PENTANGLE DESIGN GROUP
AND SHALL NOT BE IN ANY WAY USED OR REPRODUCED WITHOUT
THEIR PRIOR WRITTEN CONSENT.

NOTES



LEGEND

- EVCHP • Car Charging Point.
- Lighting Bollard with cowl to minimise light spillage
- SW Swift Box located at high level.
- B Bat Box located at high level



PROPOSED SITE LAYOUT

S73

PENTANGLE

DESIGN GROUP

SUITE 1, 21 BANCROFT HITCHIN HERTS SG5 1JW
TEL(01462) 431133 E:PDG@PENTANGLEDESIGN.CO.UK
JOB TITLE

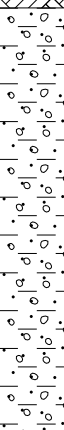
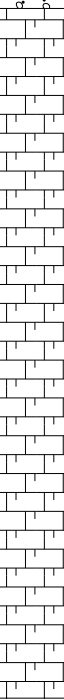
Residential Development. Land at Lower Road, Breachwood Green, Hitchin

DRAWING TITLE		DRAFTING NUMBER	
Proposed Site Layout			
SCALE	1:200	DRAWING NUMBER	
DATE	Sept '22	REVISION	
SHEET	A2		
JOB NUMBER	3660		
ARCHITECTS & INTERIOR DESIGNERS			

APPENDIX C – SITE SPECIFIC BOREHOLE LOGS

Hole Type WLS	Easting 515445.00	Northing 222200.00	Ground Level (m)	Scale 1:25
Project Name Land at Lower Road, Breachwood Green		Project No. UK26.7955b	Start Date 2026-07-28	End Date 2026-07-28

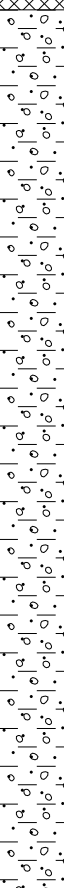
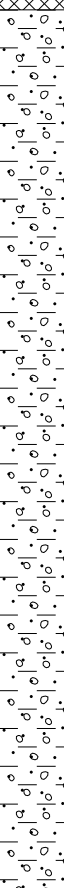
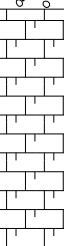
Client	Consultant	Contractor
Mr Geoff Long	JBe	

Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (thickness) (m)	Strata		
		Depth (m)	Type/ Ref	Results			Legend	Description	
		0.90 1.20 1.50 1.50 2.00 3.00 3.00 4.00	HV HV HV D 1 SPT(C) SPT(C) D 2 SPT(C)	120 (kPa) 101 (kPa) 81 (kPa) N=4 (1,2/1,1,1,1) N=6 (1,1/1,2,1,2) N=12 (2,3/3,4,2,3)		0.30		TOPSOIL: Grass over light brown, slightly desiccated clay loam, with rare gravel of fine to medium, angular to rounded flint, chert and limestone.	0.5
						0.30		Stiff orangish-brown sandy, slightly gravelly CLAY. Gravel is fine to coarse, angular to subrounded of flint, chert, limestone and chalk fragments. [Clay-with-Flints Formation]	1.0
						(1.42)			1.5
						1.72		White structureless CHALK composed of loose to medium dense silty matrix, with rare gravel of fine to medium, angular to rounded intact chalk and flint. Very crumbly / fissile. [Lewes Nodular Chalk Formation]	2.0
									2.5
						(2.28)			3.0
									3.5
									4.0
									4.5
									5.0

Remarks No groundwater encountered. No physical evidence of contamination.	Method, Plant, Stability, Dimensions 0.00 - 4.00m WLS Premier 110 Series	Logger JBe
Checked By: TH		

		Dynamic (Windowless) Sampler				WS3 Sheet 1 of 1			
		Hole Type WLS	Easting 515460.00	Northing 222185.00	Ground Level (m)	Scale 1:25			
		Project Name Land at Lower Road, Breachwood Green		Project No. UK26.7955b	Start Date 2026-07-28	End Date 2026-07-28			
Client Mr Geoff Long		Consultant JBe		Contractor					
Inst/ Backfill	Water Levels	Samples and Tests			Level	Depth (thickness)	Strata		
		Depth (m)	Type/ Ref	Results	(m)	(m)	Legend	Description	
		0.20-0.30	ES 1			(0.32)		TOPSOIL: Grass over light brown, slightly desiccated clay loam, with rare gravel of fine to coarse, angular flint.	
		0.50	HV	177 (kPa)		0.32		Stiff orangish-brown sandy gravelly CLAY with frequent decayed organic material. Gravel is fine to coarse, angular to subrounded of flint, chert and chalk fragments.	
		1.00	D 1					Becomes less gravelly from around 1.5m, of fine flint, with occasional very gravelly horizons containing fine to coarse flint. [Clay-with-Flints Formation]	
		1.50	HV	104 (kPa)					
		1.80	HV	107 (kPa)		(2.68)			
		2.20	HV	112 (kPa)					
		2.50	HV	114 (kPa)					
		2.50	D 2						
						3.00			
						(1.00)			
		4.00	SPT(C)	N=11 (5,3/2,2,4,3)		4.00		No recovery, due to encountering a very coarse flint fragment at the top of the 3.0m-4.0m drilling run.	
								End of Borehole at 4.00m	
Remarks No groundwater encountered. No physical evidence of contamination.							Method, Plant, Stability, Dimensions 0.00 - 4.00m WLS Premier 110 Series		Logger JBe
Checked By: TH									

		Dynamic (Windowless) Sampler				WS4					
				Sheet 1 of 1							
Hole Type		Easting		Northing		Ground Level (m)		Scale			
WLS		515480.00		222175.00				1:25			
Project Name		Project No.		Start Date		End Date					
Land at Lower Road, Breachwood Green		UK26.7955b		2026-07-28		2026-07-28					
Client			Consultant			Contractor					
Mr Geoff Long			JBe								
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m)	Strata				
		Depth (m)	Type/ Ref	Results			Legend	Description			
		0.10-0.20	ES 1			(0.25)		TOPSOIL: Grass over light brown, slightly desiccated clay loam, with rare gravel of fine to coarse, angular flint, and very rare fine brick fragments.			
						0.25		Firm to stiff, orangish-brown, sandy gravelly CLAY with frequent decayed organic material. Gravel is fine to coarse, angular to subrounded of flint, chert and chalk fragments.	0.5		
		0.80	HV	154 (kPa)				Becomes less gravelly from around 1.5m, of fine flint, with occasional very gravelly horizons containing fine to coarse flint. [Clay-with-Flints Formation]	1.0		
		1.10	HV	53 (kPa)					1.5		
		1.50	D 1						2.0		
		1.90	HV	81 (kPa)					2.5		
		2.10	HV	75 (kPa)		(3.75)			3.0		
		2.50	HV	76 (kPa)					3.5		
		2.70	HV	85 (kPa)					4.0		
		2.90	HV	71 (kPa)					4.5		
		3.20	HV	81 (kPa)					5.0		
		3.50	HV	95 (kPa)							
		3.50	D 2								
		3.90	HV	75 (kPa)		4.00					
							End of Borehole at 4.00m				

		Dynamic (Windowless) Sampler				WS5		
						Sheet 1 of 1		
		Hole Type WLS	Easting 515500.00	Northing 222180.00	Ground Level (m)	Scale 1:25		
Project Name Land at Lower Road, Breachwood Green		Project No. UK26.7955b		Start Date 2026-07-28		End Date 2026-07-28		
Client Mr Geoff Long		Consultant JBe		Contractor				
Inst/ Backfill	Water Levels	Samples and Tests			Level	Depth	Strata	
		Depth (m)	Type/ Ref	Results	(m)	(m)	Legend	Description
		0.30-0.40	ES 1			(0.27)		TOPSOIL: Grass over light brown, slightly desiccated clay loam, with rare gravel of fine to coarse, angular flint, and very rare fine brick fragments.
						0.27		Stiff orangish-brown sandy gravelly CLAY with frequent decayed organic material. Gravel is fine to coarse, angular to subrounded of flint, chert and chalk fragments. Becomes less gravelly from around 1.5m, of fine flint, with occasional very gravelly horizons containing fine to coarse flint. [Clay-with-Flints Formation]
		0.70	HV	153 (kPa)				
		0.90	HV	167 (kPa)				
		1.00	D 1					
		1.20	HV	49 (kPa)				
		1.50	HV	97 (kPa)				
		1.90	HV	112 (kPa)		(2.93)		
		2.20	HV	82 (kPa)				
		2.50	HV	86 (kPa)				
		2.90	HV	65 (kPa)				
						3.20		White structureless CHALK composed of loose to medium dense silty matrix, with rare gravel of fine to medium, angular to rounded intact chalk and flint. Very crumbly / fissile. [Lewes Nodular Chalk Formation]
						(0.80)		
		4.00	SPT(C)	N=20 (3,4/4,6,5,5)		4.00		
		4.00	D 2					
								End of Borehole at 4.00m
Remarks						Method, Plant, Stability, Dimensions		
No groundwater encountered. No physical evidence of contamination.						0.00 - 4.00m WLS Premier 110 Series		
Some shear strength values may be skewed by the clay breaking rather than shearing on insertion of the vane, and may be higher than measured. Conversely, higher values at shallow depths may be indicative of desiccation.						Logger		
Checked By: TH						JBe		



TP1
Sheet 1 of 1

Hole Type	Easting	Northing	Ground Level (m)	Scale
TP	515515.00	222185.00		1:10
Project Name		Project No.	Start Date	End Date
Land at Lower Road, Breachwood Green		UK26.7955b	2026-07-27	2026-07-27

Client
Mr Geoff Long

Consultant
JBe

Contractor

Remarks	No groundwater encountered. No physical evidence of contamination despite the presence of typical made ground materials.
---------	--

Method, Plant, Stability, Dimensions

0.00 - 1.50m TP 3T Tracked Excavator
OK

 $L = 2.00\text{m}$
$$W = 0.30m$$

Logger	
--------	--

JBe

Checked By: TH

				Trial Pit				TP2 Sheet 1 of 1															
Hole Type TP		Easting 515450.00		Northing 222215.00		Ground Level (m)		Scale 1:10															
Project Name Land at Lower Road, Breachwood Green				Project No. UK26.7955b		Start Date 2026-07-27		End Date 2026-07-27															
Client Mr Geoff Long				Consultant JBe				Contractor															
<table><tr><th rowspan="2">Inst/ Backfill</th><th rowspan="2">Water Levels</th><th colspan="3">Samples and Tests</th><th rowspan="2">Level (m)</th><th rowspan="2">Depth (m) (thickness)</th><th colspan="2">Strata</th></tr><tr><th>Depth (m)</th><th>Type/ Ref</th><th>Results</th><th>Legend</th><th>Description</th></tr></table>										Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata		Depth (m)	Type/ Ref	Results	Legend	Description
Inst/ Backfill	Water Levels	Samples and Tests			Level (m)	Depth (m) (thickness)	Strata																
		Depth (m)	Type/ Ref	Results			Legend	Description															
						(0.20)		TOPSOIL: Grass over light brown, slightly desiccated clay loam, with rootlets and rare gravel of fine to medium, angular to rounded flint.	0.5 1.0 1.5 2.0														
						0.20		Brown very gravelly, slightly desiccated CLAY. Gravel is fine to coarse, subangular to rounded of flint. [Clay-with-Flints Formation]															
						(0.21)		Orangish-brown slightly sandy, gravelly CLAY. Gravel is fine to coarse (including up to large cobble size), angular to rounded of flint. [Clay-with-Flints Formation]															
						0.41																	
						(1.29)																	
						1.70	End of Trial Pit at 1.70m																
Remarks No groundwater encountered. No physical evidence of contamination.								Method, Plant, Stability, Dimensions 0.00 - 1.70m TP 3T Tracked Excavator OK L = 1.55m W = 0.30m															
Checked By: TH								Logger JBe															

APPENDIX D – LABORATORY RESULTS (ENVIRONMENTAL)

EPS Ltd
7B Caxton House
Broad Street
Cambourne
Cambridgeshire
United Kingdom
CB23 6JN



4225



Attention : Tom Hodgkinson
Date : 12th August, 2026
Your reference : UK26.7955b
Our reference : Test Report 26/12166 Batch 1
Location : Land At Lower Road, Breachwood Green
Date samples received : 31st July, 2026
Status : Final Report
Issue : 202608120831

Ten samples were received for analysis on 31st July, 2026 of which ten were scheduled for analysis. Please find attached our Test Report which should be read with notes at the end of the report and should include all sections if reproduced. Interpretations and opinions are outside the scope of any accreditation, and all results relate only to samples supplied.

All analysis is carried out on as received samples and reported on a dry weight basis unless stated otherwise. Results are not surrogate corrected.

The greenhouse gas emissions generated (in Carbon – Co2e) to obtain the results in this report are estimated as:

Scope 1&2 emissions - 25.485 kg of CO2

Scope 1&2&3 emissions - 60.227 kg of CO2

Authorised By:



Phil Sommerton BSc

Senior Technical Account Manager

Please include all sections of this report if it is reproduced

Element Materials Technology

Client Name: EPS Ltd
Reference: UK26.7955b
Location: Land At Lower Road, Breachwood Green
Contact: Tom Hodgkinson
EMT Job No: 26/12166

Report : Solid

Solids: V=60g VOC jar. J=250g glass jar. T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16	17	18	19	20	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS2/ES1	WS3/ES1	WS4/ES1	WS5/ES1	TP1/ES1	WS1/D2	WS2/D3	WS3/D1	WS4/D1	WS5/D1			
Depth	0.20-0.30	0.20-0.30	0.10-0.20	0.30-0.40	0..20-0.30	3.00	4.00	1.00	1.50	1.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	B	B	B	B	B			
Sample Date	28/07/2026	28/07/2026	28/07/2026	28/07/2026	27/07/2026	28/07/2026	28/07/2026	28/07/2026	28/07/2026	28/07/2026			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026			
Arsenic ^{#M}	13.5	12.6	12.9	15.9	12.6	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Cadmium ^{#M}	<0.3	0.5	<0.3	<0.3	<0.3	-	-	-	-	-	<0.3	mg/kg	TM30/PM15
Chromium ^{#M}	68.7	60.3	51.2	60.3	57.8	-	-	-	-	-	<0.5	mg/kg	TM30/PM15
Copper ^{#M}	47	30	44	28	26	-	-	-	-	-	<1	mg/kg	TM30/PM15
Lead ^{#M}	147	141	107	27	97	-	-	-	-	-	<5	mg/kg	TM30/PM15
Mercury ^{#M}	<0.1	<0.1	<0.1	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM30/PM15
Nickel ^{#M}	33.8	37.2	34.3	38.5	26.1	-	-	-	-	-	<0.7	mg/kg	TM30/PM15
Selenium ^{#M}	1	<1	1	1	<1	-	-	-	-	-	<1	mg/kg	TM30/PM15
Sulphur as S	-	-	-	-	-	0.02	0.01	<0.01	0.01	0.02	<0.01	%	TM30/PM15
Total Sulphate as SO4 ^{#M}	587	781	1116	319	797	364	235	72	106	193	<50	mg/kg	TM50/PM25
Zinc ^{#M}	218	280	172	88	139	-	-	-	-	-	<5	mg/kg	TM30/PM15
PAH MS													
Naphthalene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Acenaphthylene	<0.03	<0.03	0.05	<0.03	<0.03	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Acenaphthene ^{#M}	<0.05	<0.05	<0.05	<0.05	<0.05	-	-	-	-	-	<0.05	mg/kg	TM4/PM8
Fluorene ^{#M}	<0.04	<0.04	<0.04	<0.04	<0.04	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Phenanthrene ^{#M}	0.39	<0.03	0.13	<0.03	0.09	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Anthracene [#]	<0.04	<0.04	0.07	<0.04	<0.04	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Fluoranthene ^{#M}	0.50	0.07	0.90	<0.03	0.29	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Pyrene [#]	0.40	0.06	0.93	<0.03	0.26	-	-	-	-	-	<0.03	mg/kg	TM4/PM8
Benzo(a)anthracene [#]	0.17	<0.06	0.63	<0.06	0.17	-	-	-	-	-	<0.06	mg/kg	TM4/PM8
Chrysene ^{#M}	0.22	0.05	0.66	<0.02	0.19	-	-	-	-	-	<0.02	mg/kg	TM4/PM8
Benzo(bk)fluoranthene ^{#M}	0.33	<0.07	1.49	<0.07	0.33	-	-	-	-	-	<0.07	mg/kg	TM4/PM8
Benzo(a)pyrene [#]	0.18	<0.04	0.99	<0.04	0.20	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Indeno(123cd)pyrene ^{#M}	0.13	<0.04	0.66	<0.04	0.16	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Dibenzo(ah)anthracene [#]	<0.04	<0.04	0.10	<0.04	<0.04	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
Benzo(ghi)perylene [#]	0.10	<0.04	0.55	<0.04	0.14	-	-	-	-	-	<0.04	mg/kg	TM4/PM8
PAH 16 Total	2.4	<0.6	7.2	<0.6	1.8	-	-	-	-	-	<0.6	mg/kg	TM4/PM8
Benzo(b)fluoranthene	0.24	<0.05	1.07	<0.05	0.24	-	-	-	-	-	<0.05	mg/kg	TM4/PM8
Benzo(k)fluoranthene	0.09	<0.02	0.42	<0.02	0.09	-	-	-	-	-	<0.02	mg/kg	TM4/PM8
PAH Surrogate % Recovery	72	91	107	93	89	-	-	-	-	-	<0	%	TM4/PM8

Element Materials Technology

Client Name: EPS Ltd
Reference: UK26.7955b
Location: Land At Lower Road, Breachwood Green
Contact: Tom Hodgkinson
EMT Job No: 26/12166

Report : Solid

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

EMT Sample No.	1-3	4-6	7-9	10-12	13-15	16	17	18	19	20	Please see attached notes for all abbreviations and acronyms		
Sample ID	WS2/ES1	WS3/ES1	WS4/ES1	WS5/ES1	TP1/ES1	WS1/D2	WS2/D3	WS3/D1	WS4/D1	WS5/D1			
Depth	0.20-0.30	0.20-0.30	0.10-0.20	0.30-0.40	0.20-0.30	3.00	4.00	1.00	1.50	1.00			
COC No / misc													
Containers	V J T	V J T	V J T	V J T	V J T	B	B	B	B	B			
Sample Date	28/07/2026	28/07/2026	28/07/2026	28/07/2026	27/07/2026	28/07/2026	28/07/2026	28/07/2026	28/07/2026	28/07/2026			
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay			
Batch Number	1	1	1	1	1	1	1	1	1	1	LOD/LOR	Units	Method No.
Date of Receipt	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026	31/07/2026			
TPH CWG													
Aliphatics													
>C5-C6 (HS_1D_AL) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C6-C8 (HS_1D_AL) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C8-C10 (HS_1D_AL) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>C10-C12 (EH_CU_1D_AL) ^{#M}	-	-	-	<0.2	<0.2	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>C12-C16 (EH_CU_1D_AL) ^{#M}	-	-	-	<4	<4	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>C16-C21 (EH_CU_1D_AL) ^{#M}	-	-	-	<7	<7	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C21-C35 (EH_CU_1D_AL) ^{#M}	-	-	-	<7	8	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>C35-C40 (EH_CU_1D_AL)	-	-	-	<7	<7	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aliphatics C5-40 (EH_CU+HS_1D_AL)	-	-	-	<26	<26	-	-	-	-	-	<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Aromatics													
>C5-EC7 (HS_1D_AR) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC7-EC8 (HS_1D_AR) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC8-EC10 (HS_1D_AR) ^{#M}	-	-	-	<0.1	<0.1	-	-	-	-	-	<0.1	mg/kg	TM36/PM12
>EC10-EC12 (EH_CU_1D_AR) [#]	-	-	-	<0.2	<0.2	-	-	-	-	-	<0.2	mg/kg	TM5/PM8/PM16
>EC12-EC16 (EH_CU_1D_AR) [#]	-	-	-	<4	<4	-	-	-	-	-	<4	mg/kg	TM5/PM8/PM16
>EC16-EC21 (EH_CU_1D_AR) [#]	-	-	-	<7	<7	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC21-EC35 (EH_CU_1D_AR) [#]	-	-	-	<7	32	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
>EC35-EC40 (EH_CU_1D_AR)	-	-	-	<7	34	-	-	-	-	-	<7	mg/kg	TM5/PM8/PM16
Total aromatics C5-40 (EH_CU+HS_1D_AR)	-	-	-	<26	66	-	-	-	-	-	<26	mg/kg	TM5/PM8/PM16/PM12/PM10
Total aliphatics and aromatics (C5-40) (EH_CU+HS_1D_Total)	-	-	-	<52	66	-	-	-	-	-	<52	mg/kg	TM5/PM8/PM16/PM12/PM10
MTBE ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
Benzene ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
Toluene ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
Ethylbenzene ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
m/p-Xylene ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
o-Xylene ^{#M}	-	-	-	<5	<5	-	-	-	-	-	<5	ug/kg	TM36/PM12
Total Phenols HPLC	<0.15	<0.15	<0.15	<0.15	<0.15	-	-	-	-	-	<0.15	mg/kg	TM26/PM21B
Natural Moisture Content	28.8	14.5	13.7	16.6	11.0	-	-	-	-	-	<0.1	%	PM4/PM0
Hexavalent Chromium [#]	<0.3	<0.3	<0.3	<0.3	<0.3	-	-	-	-	-	<0.3	mg/kg	TM38/PM20
Sulphate as SO4 (2:1 Ext) ^{#M}	0.0046	0.0023	0.0052	0.0030	0.0054	0.0073	0.0123	0.0084	0.0225	0.0213	<0.0015	g/l	TM38/PM20
Chromium III	68.7	60.3	51.2	60.3	57.8	-	-	-	-	-	<0.5	mg/kg	NONE/NONE
Total Cyanide ^{#M}	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	-	-	-	<0.5	mg/kg	TM89/PM45
Organic Matter	2.2	4.7	9.3	1.4	5.0	-	-	-	-	-	<0.2	%	TM21/PM24
pH ^{#M}	6.11	6.69	7.33	7.16	5.94	8.68	8.62	7.80	6.97	6.12	<0.01	pH units	TM73/PM11
Sample Type	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	Clay	None		PM13/PM0

Element Materials Technology

Client Name: EPS Ltd
Reference: UK26.7955b
Location: Land At Lower Road, Breachwood Green
Contact: Tom Hodgkinson
EMT Job No: 26/12166

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

Solids: V=60g VOC jar, J=250g glass jar, T=plastic tub

[illegible]

Matrix : Solid

5 of 14

Client Name: EPS Ltd
Reference: UK26.7955b
Location: Land At Lower Road, Breachwood Green
Contact: Tom Hodgkinson

Note:

Asbestos Screen analysis is carried out in accordance with our documented in-house methods PM042 and TM065 and HSG 248 by Stereo and Polarised Light Microscopy using Dispersion Staining Techniques and is covered by our UKAS accreditation. Detailed Gravimetric Quantification and PCOM Fibre Analysis is carried out in accordance with our documented in-house methods PM042 and TM131 and HSG 248 using Stereo and Polarised Light Microscopy and Phase Contrast Optical Microscopy (PCOM). Asbestos sub-samples are retained for not less than 6 months from the date of analysis unless specifically requested.

The LOQ of the Asbestos Quantification is 0.001% dry fibre of dry mass of sample.

Where the sample is not taken by a Element Materials Technology consultant, Element Materials Technology cannot be responsible for inaccurate or unrepresentative sampling.

EMT Job No.	Batch	Sample ID	Depth	EMT Sample No.	Analyst Name	Date Of Analysis	Analysis	Result
26/12166	1	WS2/ES1	0.20-0.30	3	Simon Postlewhite	11/08/2026	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	11/08/2026	Asbestos Fibres	NAD
					Simon Postlewhite	11/08/2026	Asbestos Fibres (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type (2)	NAD
26/12166	1	WS3/ES1	0.20-0.30	6	Simon Postlewhite	11/08/2026	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	11/08/2026	Asbestos Fibres	NAD
					Simon Postlewhite	11/08/2026	Asbestos Fibres (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type (2)	NAD
26/12166	1	WS4/ES1	0.10-0.20	9	Simon Postlewhite	11/08/2026	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	11/08/2026	Asbestos Fibres	NAD
					Simon Postlewhite	11/08/2026	Asbestos Fibres (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type (2)	NAD
26/12166	1	WS5/ES1	0.30-0.40	12	Simon Postlewhite	11/08/2026	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	11/08/2026	Asbestos Fibres	NAD
					Simon Postlewhite	11/08/2026	Asbestos Fibres (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type (2)	NAD
26/12166	1	TP1/ES1	0..20-0.30	15	Simon Postlewhite	11/08/2026	General Description (Bulk Analysis)	Brown soil/stones
					Simon Postlewhite	11/08/2026	Asbestos Fibres	NAD
					Simon Postlewhite	11/08/2026	Asbestos Fibres (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM	NAD
					Simon Postlewhite	11/08/2026	Asbestos ACM (2)	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type	NAD
					Simon Postlewhite	11/08/2026	Asbestos Type (2)	NAD

Client Name:	EPS Ltd
Reference:	UK26.7955b
Location:	Land At Lower Road, Breachwood Green
Contact:	Tom Hodgkinson

[illegible]

Please note that only samples that are deviating are mentioned in this report. If no samples are listed it is because none were deviating. Only analyses which are accredited are recorded as deviating if set criteria are not met.

It is a requirement under ISO 17025 that we inform clients if samples are deviating i.e. outside what is expected. A deviating sample indicates that the sample 'may' be compromised but not necessarily will be compromised. The result is still accredited and our analytical reports will still show accreditation on the relevant analytes.

NOTES TO ACCOMPANY ALL SCHEDULES AND REPORTS

EMT Job No.: 26/12166

SOILS and ASH

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.

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation has been performed on clay, sand and loam, only samples that are predominantly these matrices, or combinations of them will be within our MCERTS scope. If samples are not one of a combination of the above matrices they will not be marked as MCERTS accredited.

It is assumed that you have taken representative samples on site and require analysis on a representative subsample. Stones will generally be included unless we are requested to remove them.

All samples will be discarded one month after the date of reporting, unless we are instructed to the contrary. Asbestos samples are retained for 6 months.

If you have not already done so, please send us a purchase order if this is required by your company.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

All analysis is reported on a dry weight basis unless stated otherwise. Limits of detection for analyses carried out on as received samples are not moisture content corrected. Results are not surrogate corrected. Samples are dried at 35°C ±5°C unless otherwise stated. Moisture content for CEN Leachate tests are dried at 105°C ±5°C. Ash samples are dried at 35°C ±5°C.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

Where a CEN 10:1 ZERO Headspace VOC test has been carried out, a 10:1 ratio of water to wet (as received) soil has been used.

% Asbestos in Asbestos Containing Materials (ACMs) is determined by reference to HSG 264 The Survey Guide - Appendix 2 : ACMs in buildings listed in order of ease of fibre release.

Sufficient amount of sample must be received to carry out the testing specified. Where an insufficient amount of sample has been received the testing may not meet the requirements of our accredited methods, as such accreditation may be removed.

Negative Neutralization Potential (NP) values are obtained when the volume of NaOH (0.1N) titrated (pH 8.3) is greater than the volume of HCl (1N) to reduce the pH of the sample to 2.0 - 2.5. Any negative NP values are corrected to 0.

The calculation of Pyrite content assumes that all oxidisable sulphides present in the sample are pyrite. This may not be the case. The calculation may be an overestimate when other sulphides such as Barite (Barium Sulphate) are present.

WATERS

Please note we are not a UK Drinking Water Inspectorate (DWI) Approved Laboratory .

ISO17025 accreditation applies to surface water and groundwater and usually one other matrix which is analysis specific, any other liquids are outside our scope of accreditation.

As surface waters require different sample preparation to groundwaters the laboratory must be informed of the water type when submitting samples.

Where Mineral Oil is quoted, this refers to Total Aliphatics C10-C40.

STACK EMISSIONS

Where an MCERTS report has been requested, you will be notified within 48 hours of any samples that have been identified as being outside our MCERTS scope. As validation for Dioxins and Furans and Dioxin like PCBs has been performed on XAD-2 Resin, only samples which use this resin will be within our MCERTS scope.

Where appropriate please make sure that our detection limits are suitable for your needs, if they are not, please notify us immediately.

DEVIATING SAMPLES

All samples should be submitted to the laboratory in suitable containers with sufficient ice packs to sustain an appropriate temperature for the requested analysis. The temperature of sample receipt is recorded on the confirmation schedules in order that the client can make an informed decision as to whether testing should still be undertaken.

SURROGATES

Surrogate compounds are added during the preparation process to monitor recovery of analytes. However low recovery in soils is often due to peat, clay or other organic rich matrices. For waters this can be due to oxidants, surfactants, organic rich sediments or remediation fluids. Acceptable limits for most organic methods are 70 - 130% and for VOCs are 50 - 150%. When surrogate recoveries are outside the performance criteria but the associated AQC passes this is assumed to be due to matrix effect. Results are not surrogate corrected.

DILUTIONS

A dilution suffix indicates a dilution has been performed and the reported result takes this into account. No further calculation is required.

BLANKS

Where analytes have been found in the blank, the sample will be treated in accordance with our laboratory procedure for dealing with contaminated blanks.

NOTE

Data is only reported if the laboratory is confident that the data is a true reflection of the samples analysed. Data is only reported as accredited when all the requirements of our Quality System have been met. In certain circumstances where all the requirements of the Quality System have not been met, for instance if the associated AQC has failed, the reason is fully investigated and documented. The sample data is then evaluated alongside the other quality control checks performed during analysis to determine its suitability. Following this evaluation, provided the sample results have not been effected, the data is reported but accreditation is removed. It is a requirement of our Accreditation Body for data not reported as accredited to be considered indicative only, but this does not mean the data is not valid.

Where possible, and if requested, samples will be re-extracted and a revised report issued with accredited results. Please do not hesitate to contact the laboratory if further details are required of the circumstances which have led to the removal of accreditation.

Laboratory records are kept for a period of no less than 6 years.

Date

The dates of the performance of laboratory activity are available on request.

Measurement Uncertainty

Measurement uncertainty defines the range of values that could reasonably be attributed to the measured quantity. This range of values has not been included within the reported results. Uncertainty expressed as a percentage can be provided upon request.

Customer Provided Information

Sample ID and depth is information provided by the customer.

Age of Diesel

The age of release estimation is based on the nC17/pristane ratio only as prescribed by Christensen and Larsen (1993) and Kaplan, Galperin, Alimi et al., (1996).

Age estimation should be treated with caution as it can be influenced by site specific factors of which the laboratory are not aware.

Tentatively Identified Compounds (TICs)

Where Tentatively Identified Compounds (TICs) are reported, up to 10 Tentatively Identified Compounds will be listed where there is found to be a greater than 80% match with the NIST library. The reported concentration is determined semi-quantitatively, with a matrix specific limit of detection.

Note, other compounds may be present but are not reported.

ABBREVIATIONS and ACRONYMS USED

#	ISO17025 (UKAS Ref No. 4225) accredited - UK.
SA	ISO17025 (SANAS Ref No.T0729) accredited - South Africa
B	Indicates analyte found in associated method blank.
DR	Dilution required.
M	MCERTS accredited.
NA	Not applicable
NAD	No Asbestos Detected.
ND	None Detected (usually refers to VOC and/SVOC TICs).
NDP	No Determination Possible
SS	Calibrated against a single substance
SV	Surrogate recovery outside performance criteria. This may be due to a matrix effect.
W	Results expressed on as received basis.
+	AQC failure, accreditation has been removed from this result, if appropriate, see 'Note' on previous page.
>>	Results above quantitative calibration range. The result should be considered the minimum value and is indicative only. The actual result could be significantly higher.
*	Analysis subcontracted to an Element Materials Technology approved laboratory.
CO	Suspected carry over
LOD/LOR	Limit of Detection (Limit of Reporting) in line with ISO 17025 and MCERTS
ME	Matrix Effect
NFD	No Fibres Detected
BS	AQC Sample
LB	Blank Sample
N	Client Sample
TB	Trip Blank Sample
OC	Outside Calibration Range

HWOL ACRONYMS AND OPERATORS USED

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.
Total	Aliphatics & Aromatics.
AL	Aliphatics only.
AR	Aromatics only.
2D	GC-GC - Double coil gas chromatography.
#1	EH_Total but with humics mathematically subtracted
#2	EU_Total but with fatty acids mathematically subtracted
_	Operator - underscore to separate acronyms (exception for +).
+	Operator to indicate cumulative e.g. EH+HS_Total or EH_CU+HS_Total
MS	Mass Spectrometry.

EMT Job No: 26/12166

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
PM4	Gravimetric measurement of Natural Moisture Content and % Moisture Content at either 35 degrees Celsius or 105 degrees Celsius. Calculation based on ISO 11465:1993(E) and BS1377-2:1990.	PM0	No preparation is required.			AR	
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.			AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes		AR	Yes
TM4	Modified USEPA 8270D v5:2014 method for the solvent extraction and determination of PAHs by GC-MS.	PM8	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required.	Yes	Yes	AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM16	Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.			AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes		AR	Yes
TM5	Modified 8015B v2:1996 method for the determination of solvent Extractable Petroleum Hydrocarbons (EPH) within the range C8-C40 by GCFID. For waters the solvent extracts dissolved phase plus a sheen if present.	PM8/PM16	End over end extraction of solid samples for organic analysis. The solvent mix varies depending on analysis required/Fractionation into aliphatic and aromatic fractions using a Rapid Trace SPE.	Yes	Yes	AR	Yes
TM5/TM36	please refer to TM5 and TM36 for method details	PM8/PM12/PM16	please refer to PM8/PM16 and PM12 for method details			AR	Yes
PM13	A visual examination of the solid sample is carried out to ascertain sample make up, colour and any other inclusions. This is not a geotechnical description.	PM0	No preparation is required.			AR	No

EMT Job No: 26/12166

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM21	Modified BS 7755-3:1995, ISO10694:1995 Determination of Total Organic Carbon or Total Carbon by combustion in an Eltra TOC furnace/analyser in the presence of oxygen. The CO2 generated is quantified using infra-red detection. Organic Matter (SOM) calculated as per EA MCERTS Chemical Testing of Soil.	PM24	Preparation of Soil and Marine Sediment Samples for Total Organic Carbon.			AD	Yes
TM26	Determination of phenols by Reversed Phased High Performance Liquid Chromatography and Electro-Chemical Detection.	PM21B	As Received samples are extracted in Methanol: Water (60:40) by reciprocal shaker.			AR	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.			AD	Yes
TM30	Determination of Trace Metals by ICP-OES (Inductively Coupled Plasma-Optical Emission Spectrometry): WATERS by Modified USEPA Method 200.7, Rev. 4.4, 1994; Modified EPA Method 6010B, Rev.2, Dec 1996; Modified BS EN ISO 11885:2009: SOILS by Modified USEP 6010B, Rev.2, Dec.1996; Modified EPA Method 3050B, Rev.2, Dec.1996	PM15	Acid digestion of dried and ground solid samples using Aqua Regia refluxed at 112.5 degrees Celsius. Samples containing asbestos are not dried and ground.	Yes	Yes	AD	Yes
TM36	Modified US EPA method 8015B v2:1996. Determination of Gasoline Range Organics (GRO) in the carbon chain range of C4-12 by headspace GC-FID. MTBE by GC/FID co-elutes with 3-methylpentane if present and therefore can give a false positive. Positive MTBE results will be re-run using GC-MS to double check, when requested.	PM12	Modified US EPA method 5021A v2:2014. Preparation of solid and liquid samples for GC headspace analysis.	Yes	Yes	AR	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes	Yes	AD	Yes
TM38	Soluble Ion analysis using Discrete Analyser. Modified US EPA methods: Chloride 325.2 (1978), Sulphate 375.4 (Rev.2 1993), o-Phosphate 365.2 (Rev.2 1993), TON 353.1 (Rev.2 1993), Nitrite 354.1 (1971), Hex Cr 7196A (1992), NH4+ 350.1 (Rev.2 1993) - All anions comparable to BS ISO 15923-1: 2013I	PM20	Extraction of dried and ground or as received samples with deionised water in a 2:1 water to solid ratio using a reciprocal shaker for all analytes except hexavalent chromium. Extraction of as received sample using 10:1 ratio of 0.2M sodium hydroxide to soil for hexavalent chromium using a reciprocal shaker.	Yes		AR	Yes
TM50	Acid soluble sulphate (Total Sulphate) analysed by ICP-OES	PM29	A hot hydrochloric acid digest is performed on a dried and ground sample, and the resulting liquor is analysed.	Yes	Yes	AD	Yes
TM65	Asbestos Bulk Identification method based on HSG 248 Second edition (2021)	PM42	Modified SCA Blue Book V.12 draft 2017 and WM3 1st Edition v1.1:2018. Solid samples undergo a thorough visual inspection for asbestos fibres prior to asbestos identification using TM065.	Yes		AR	
TM73	Modified US EPA methods 150.1 (1982) and 9045D Rev. 4 - 2004) and BS1377-3:1990. Determination of pH by Metrohm automated probe analyser.	PM11	Extraction of as received solid samples using one part solid to 2.5 parts deionised water.	Yes	Yes	AR	No

EMT Job No: 26/12166

Test Method No.	Description	Prep Method No. (if appropriate)	Description	ISO 17025 (UKAS/S ANAS)	MCERTS (UK soils only)	Analysis done on As Received (AR) or Dried (AD)	Reported on dry weight basis
TM89	Modified USEPA method OIA-1667 (1999). Determination of cyanide by Flow Injection Analyser. Where WAD cyanides are required a Ligand displacement step is carried out before analysis.	PM45	As received solid samples are extracted with 1M NaOH by orbital shaker for Cyanide, Sulphide and Thiocyanate analysis.	Yes	Yes	AR	Yes
NONE	No Method Code	NONE	No Method Code			AD	Yes

APPENDIX E – LABORATORY RESULTS (GEOTECHNICAL)



TEST REPORT
ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 10/08/2026



Contract	UK26.7955b - Land at Lower Road, Breachwood Green		
Serial No.	50584_1		
Client: Environmental Protection Strategies Ltd Unit 7 Caxton House Broad Street Great Cambourne Cambridge CB23 6JN		Soil Property Testing Ltd 15, 16, 18 Halcyon Court, St Margaret's Way, Stukeley Meadows, Huntingdon, Cambridgeshire, PE29 6DG Tel: 01480 455579 Email: enquiries@soilpropertytesting.com Website: www.soilpropertytesting.com	
Samples Submitted By: Environmental Protection Strategies Ltd Samples Labelled: UK26.7955b - Land at Lower Road, Breachwood Green		Approved Signatories: ☒ J.C. Garner B.Eng (Hons) FGS Technical Director ☐ G. Ferguson Operations Manager ☐ M. Stevenson Site Services Manager 	
Date Received: 31/07/2026		Samples Tested Between: 31/07/2026 and 10/08/2026	
Remarks: For the attention of Thomas Hodgkinson Your Reference No: UK26.7955b Your Order No: 41428			
Notes: 1 All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary. 2 Opinions and interpretations expressed herein are outside the scope of UKAS accreditation. 3 Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory. 4 This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory. 5 The results within this report only relate to the items tested or sampled.			



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 10/08/2026



Contract		UK26.7955b - Land at Lower Road, Breachwood Green																				
Serial No.		50584_1										Target Date		14/08/2026								
Scheduled By		Environmental Protection Strategies Ltd																				
Schedule Remarks																						
Bore Hole No.	Type	Sample Ref.	Top Depth	Water Content (BS EN) Liquid/Plastic Limits Wet Sieve Preparation																		Sample Remarks
WS1	D	1	1.50	1	1																	
WS2	D	1	0.75	1	1																	
WS2	D	2	2.00	1	1	1																
WS3	D	2	2.50	1	1																	
WS5	D	2	4.00	1	1	1																
Totals				5	5	2															End of Schedule	



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 10/08/2026



Contract	UK26.7955b - Land at Lower Road, Breachwood Green
Serial No.	50584_1

SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

Borehole /Pit No.	Depth (m)	Type	Ref.	Water Content (%)	Liquid Limit (%)	Plastic Limit (%)	Plasticity Index (%)	Liquid-ity Index	Sample Preparation				Description	Class
									Method	Ret'd 0.425mm (%)	Corr'd W/C <0.425mm	Curing Time (hrs)		
WS1	1.50	D	1	48.5	112	40	72	0.12	From Natural	0 (A)		25	Firm dark yellowish brown silty CLAY with occasional black speckling	CE
WS2	0.75	D	1	42.4	117	41	76	0.02	From Natural	0 (A)		25	Stiff dark yellowish brown silty CLAY with occasional black speckling	CE
WS2	2.00	D	2	38.4	89	36	53	0.05	Wet Sieved	17 (M)	N/R*	24	Stiff dark yellowish brown slightly gravelly slightly sandy silty CLAY with occasional black speckling. Gravel is fine to coarse angular chert.	CV
WS3	2.50	D	2	42.0	102	41	61	0.02	From Natural	0 (A)		25	Stiff dark yellow silty CLAY with occasional black speckling	CE
WS5	4.00	D	2	34.3	35	25	10	0.93	Wet Sieved	10 (M)	N/R*	25	White structureless CHALK with occasional intact white chalk lumps	ML/MI

Method Of Preparation: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:4.2
Method of Test: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4
Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.
Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured



TEST REPORT

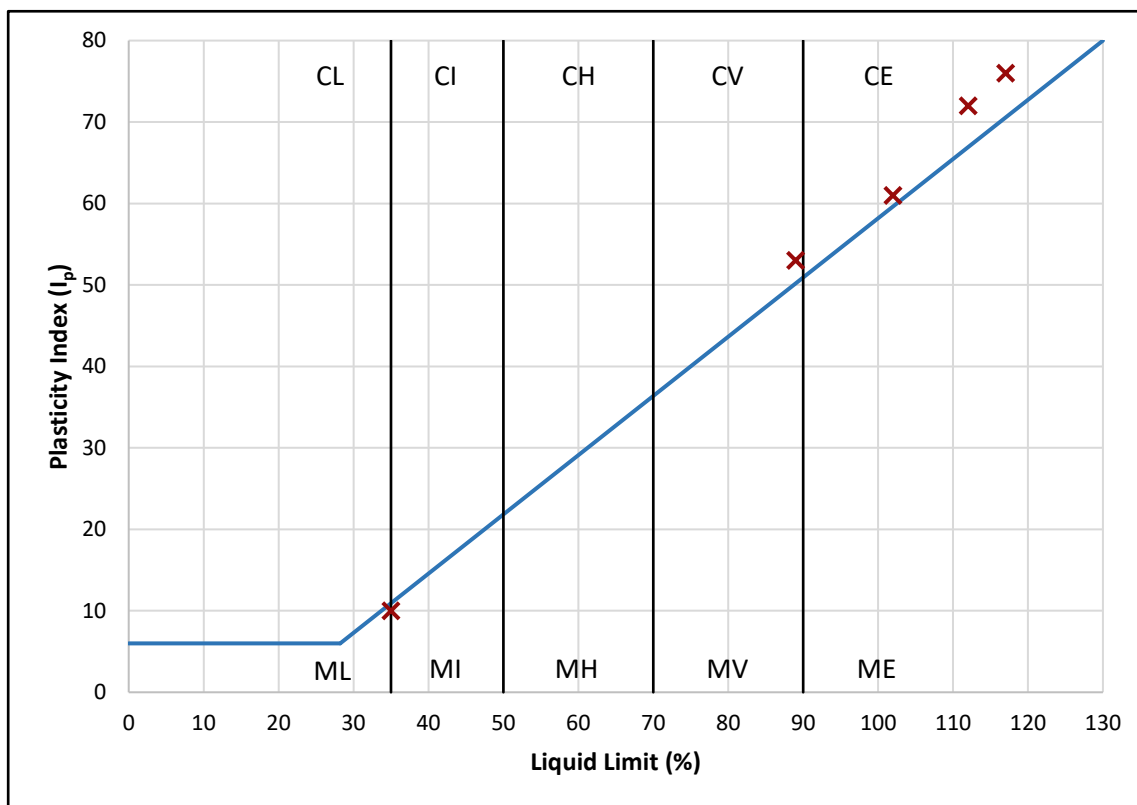
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DATE ISSUED: 10/08/2026



Contract	UK26.7955b - Land at Lower Road, Breachwood Green
Serial No.	50584_1

PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

Plasticity				
Low	Medium	High	Very High	Extremely High



High	NHBC Volume Change Potential
Medium	
Low	

Method of Preparation:	BS 1377: Part 2: 1990: 4.2
Method of Test:	BS1377: Part 2: 3.2, 4.4, 5.3, 5.4
Type of Sample Key:	U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter
Comments:	Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index



TEST REPORT

ISSUED BY SOIL PROPERTY TESTING LTD
DATE ISSUED: 10/08/2026



Contract	UK26.7955b - Land at Lower Road, Breachwood Green						
Serial No.	50584_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS1	1.50	D	1	48.5	Firm dark yellowish brown silty CLAY with occasional black speckling		
PREPARATION					Liquid Limit	112 %	
Method of preparation					From natural	Plastic Limit	40 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	72 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.12
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) NHBC Volume Change Potential High Medium Low						Liquid Limit %	
Plasticity Chart BS5930: 2015: Figure 8							
Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2							
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4							
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter							
Comments:							



TEST REPORT

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Contract	UK26.7955b - Land at Lower Road, Breachwood Green						
Serial No.	50584_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS2	0.75	D	1	42.4	Stiff dark yellowish brown silty CLAY with occasional black speckling		
PREPARATION					Liquid Limit	117 %	
Method of preparation					From natural	Plastic Limit	41 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	76 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.02
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) NHBC Volume Change Potential High Medium Low Liquid Limit %						Plasticity Chart BS5930: 2015: Figure 8	
Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2							
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4							
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter							
Comments:							



TEST REPORT

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Contract	UK26.7955b - Land at Lower Road, Breachwood Green						
Serial No.	50584_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS2	2.00	D	2	38.4	Stiff dark yellowish brown slightly gravelly slightly sandy silty CLAY with occasional black speckling. Gravel is fine to coarse angular chert.		
PREPARATION					Liquid Limit	89 %	
Method of preparation					Wet sieved over 0.425mm sieve	Plastic Limit	36 %
Sample retained 0.425mm sieve (Measured)					17 %	Plasticity Index	53 %
Corrected water content for material passing 0.425mm					Not reported	Liquidity Index	0.05
Sample retained 2mm sieve (Measured)					16 %	NHBC Modified (I'p)	44 %
Curing time		24 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (Ip) High Medium Low NHBC Volume Change Potential Liquid Limit %							

Plasticity Chart BS5930: 2015: Figure 8



TEST REPORT

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DATE ISSUED: 10/08/2026



Contract	UK26.7955b - Land at Lower Road, Breachwood Green						
Serial No.	50584_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type Reference		Water Content (W) %	Description	Remarks	
WS3	2.50	D	2	42.0	Stiff dark yellow silty CLAY with occasional black speckling		
PREPARATION					Liquid Limit	102 %	
Method of preparation					From natural	Plastic Limit	41 %
Sample retained 0.425mm sieve (Assumed)					0 %	Plasticity Index	61 %
Corrected water content for material passing 0.425mm						Liquidity Index	0.02
Sample retained 2mm sieve (Assumed)					0 %	NHBC Modified (I'p)	n/a
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (I_p) Liquid Limit %						High Medium Low NHBC Volume Change Potential	
Plasticity Chart BS5930: 2015: Figure 8							
Method of Preparation: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2							
Method of Test: BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4							
Type of Sample Key: U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter							
Comments:							



TEST REPORT

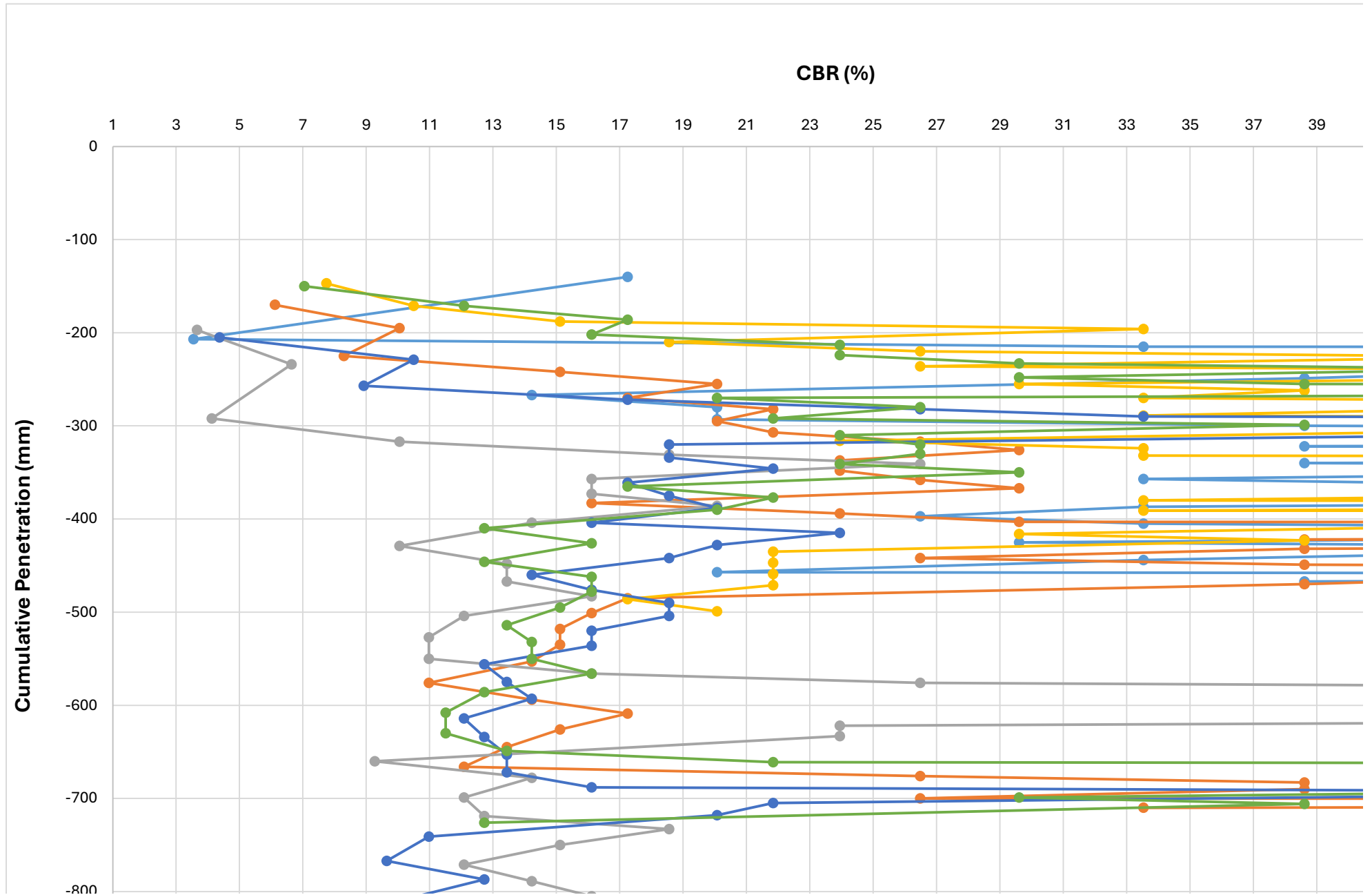
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Contract	UK26.7955b - Land at Lower Road, Breachwood Green						
Serial No.	50584_1						
DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX							
Borehole / Pit No.	Depth m	Sample Type	Reference	Water Content (W) %	Description	Remarks	
WS5	4.00	D	2	34.3	White structureless CHALK with occasional intact white chalk lumps		
PREPARATION					Liquid Limit	35 %	
Method of preparation					Wet sieved over 0.425mm sieve	Plastic Limit	25 %
Sample retained 0.425mm sieve (Measured)					10 %	Plasticity Index	10 %
Corrected water content for material passing 0.425mm					Not reported	Liquidity Index	0.93
Sample retained 2mm sieve (Measured)					9 %	NHBC Modified (I'p)	9 %
Curing time		25 hrs		Clay Content	Not analysed	Derived Activity	Not analysed
C=CLAY M=SILT Plasticity Index % (Ip) High Medium Low NHBC Volume Change Potential Liquid Limit %							

Plasticity Chart BS5930: 2015: Figure 8

APPENDIX F – DCP TESTING RESULTS



APPENDIX G – GENERIC SCREENING CRITERIA

EPS Generic Quantitative Risk Assessment - Residential Land Use

Contaminant	Soil Targets			Groundwater Targets		
	Human Health	Controlled Waters		Human Health	Controlled Waters	
		Surface Water	Groundwater		Surface Water	Groundwater
Unit	mg/kg			µg/l		
Arsenic	See C4SL	n/c	n/c	n/c	50	10
Cadmium	See C4SL	n/c	n/c	n/c	1.5	5
Chromium III	910	n/c	n/c	n/c	15	50
Chromium VI	See C4SL	n/c	n/c	n/c	3.4	2000
Copper	2400	n/c	n/c	n/c	93.1#	1
Mercury (elemental)	1.2	n/c	n/c	1.1	0.07	20
Nickel	180	n/c	n/c	n/c	14.8#	10
Lead	See C4SL	n/c	n/c	n/c	27.7#	10
Selenium	250	n/c	n/c	n/c	10	3000
Zinc	3700	n/c	n/c	n/c	373#	1
Benzene	See C4SL	0.020	0.0020	500	10	700
Toluene	130	0.399	3.77	230,000	74	300
Ethylbenzene	47	0.23	3.4	10,000	20	500
Xylene (para)	56	0.351	5.86	9,900	30	15
MTBE	49	0.00864		83,000	15	0.01
Benzo(a)Pyrene	See C4SL	n/c	n/c	n/c	0.27	2
Naphthalene	See C4SL	n/c	n/c	1400	2	300†
Aliphatic C5-C6	42	7.67		1,900	300†	300†
Aliphatic C6-C8	100	32.4		1,500	300†	300†
Aliphatic C8-C10	27	241		57	300	300
Aliphatic C10-C12	130(48)*	1,890		37	300	300
Aliphatic C12-C16	1100(8.48)**	37,600		n/c	300	300
Aliphatic C16-C35	65000 (8.48)**	n/c		n/c	-	-
Aromatic C8-C10	34	12		1,900	300	300
Aromatic C10-C12	74	5.67		6,800	90	90
Aromatic C12-C16	140	11.3		39,000	90	90
Aromatic C16-C21	260	35.6		n/c	90	90
Aromatic C21-C35	1100	284		n/c	90	90
Tetrachloroethene	See C4SL	0.07		61	10	10
Trichloroethene	See C4SL	0.04		3.2	10	10
cis-1,2 Dichloroethene	See C4SL	0.0657		370	50	50
Vinyl Chloride	See C4SL	0.0005		12	0.5	0.5
PFOS	See C4SL	0.000956		n/c	0.1	0.1
PFOA	See C4SL	0.000314		n/c	0.1	0.1
Asbestos##	0.001%	-	-	-	-	-

Notes:

* = S4UL exceeds vapour saturation limit (in brackets) ** = S4UL exceeds solubility saturation limit (in brackets)

n/c = not calculated. Under normal conditions contaminant exhibits low solubility /volatility, therefore risks from leaching and or vapour pathways are considered low.

To establish suitable compliance criteria for Surface Water, review of baseline groundwater quality in England and Wales was completed following research reported in Shand, P, Edmunds, W M, Lawrence, A R, Smedley, P L, and Burke, S. 2007. The natural (baseline) quality of groundwater in England and Wales. British Geological Survey Research Report No. RR/07/06. Where compliance criteria was found below the 97.7 percentile of baseline value, the latter was adopted as GAC.

Where assessment of the risk to human health from asbestos in soil is concerned there is no nationally recognised suitable for use /generic screening value commonly referred to through the planning system. As such, EPS has adopted a conservative value of 0.001% as a screening tool for initial risk assessment, although this should be supplemented with a qualitative assessment of the risk.

Soil Targets

Targets for Human Health have been taken from S4ULs 'Suitable For Use Levels for Human Health Risk Assessment' – LQM and CIEH (2014) derived using standard sandy loam soil with 1% SOM, except (*) = EIC/AGS/CL:AIRE GAC 'Soil Generic Assessment Criteria' (2010). For sites where ground conditions differ significantly from sandy loam or site-specific SOM and pH are available, the generic human health targets may be revised.

Targets for Controlled waters have been derived using EA Remedial Targets Worksheet (v3.1) - using standard Sandy Loam ground conditions as described in Science Report SC050021/SR3, literature values for chemical parameters and with criteria of EQS or UKDWS for Surface Water and Groundwater respectively (see notes for GW targets).

Groundwater Targets

For Surface Water, targets have been taken as Freshwater EQS, using the annual average where available, or else the maximum allowable concentration. For MTBE, in the absence of UK EQS, the UKDWS has been used. For individual TPH fractions, in absence of UK EQS, the WHO Drinking Water Standards have been used.

For Groundwater, targets have been taken as UKDWS where available. In the absence of UK targets internationally recognised criteria were adopted, notably WHO Drinking Water Standards for individual TPH fractions, BTEX and MTBE. † = Aliphatic C5-C8 ranges have utilised the longer chain values on a conservative basis (300ug/l compared to the published 15,000ug/l).

Targets for Human Health have been taken from Society of Brownfield Risk Assessment (SoBRA) 'Development of Generic Assessment Criteria for Assessing Vapour Risks to Human Health from Volatile Contaminants in Groundwater' - Version 2.0, September 2024, derived using sandy soil and 1%SOM. GAC were set up assuming source at 50cm below typical ground bearing slab of 15cm thickness. GAC were derived for vapour pathways only. For sites where ground conditions, or differ significantly from described above, the generic human health targets may be revised.



EPS Generic Quantitative Risk Assessment

Generic Screening Criteria (C4SLs) - All Land Uses

	Soil Targets					
Contaminant	Residential		Allotments	Commercial	Public Open Spaces	
	With Home Grown Produce	Without Home Grown Produce			Residential	Parks
Unit	mg/kg					
Arsenic	37	40	49	640	79	168
Benzene	0.87	3.3	0.18	98	140	230
Benzo(a)pyrene	5	5.3	5.7	76	10	21
Cadmium	26	149	4.9	410	220	880
Chromium (VI)	21	21	170	49	23	250
Lead	200	310	80	2330	630	1300
Chloroethene (Vinyl Chloride)	0.0064	0.015	0.0017	1.1	7.8	18
Trichloroethene (TCE)	0.0093	0.097	0.032	0.73	76	41
Tetrachloroethene (PCE)	0.31	0.32	2	24	3200	1400
cis-1,2 Dichloroethene	0.46	0.5	0.89	38	3800	2000
Naphthalene	15	15	65	1600	11000	800
PFOS	0.013	0.041	0.0027	0.6	0.079	0.17
PFOA	0.0076	0.041	0.0014	0.6	0.079	0.17

Notes:

Targets for Human Health have been taken from the publicly available Category 4 Screening Levels (C4SLs) for assessment of land affected by contamination issued by DEFRA/CL:AIRE between December 2013 and May 2024.

Within the modelling for the original six C4SLs (Arsenic, Benzene, Benzo(a)pyrene, Cadmium, Chromium VI, Lead), a Soil Organic Matter content of 6% was used. This differs from the older Suitable for Use Levels (S4ULs) which modelled contaminants with 1%, 2.5% and 6% SOM, with the latter the least conservative. These numbers are therefore not particularly conservative, however sensitivity analysis has shown that a change in SOM only makes a notable difference for Benzene and therefore caution should be taken when using the value for Benzene. For the remaining, newer C4SLs, these were modelled in all SOM and therefore the most conservative 1% values have been used. Reference to site-specific data should be made where possible.

APPENDIX H – METHOD STATEMENT FOR ENCOUNTERING UNEXPECTED CONTAMINATION



METHOD STATEMENT

ACTIONS TO BE TAKEN IN THE EVENT OF DISCOVERING UNEXPECTED CONTAMINATION DURING INTRUSIVE GROUNDWORKS

If at any point during intrusive groundworks at a site, evidence of unforeseen contamination is encountered in the form of significant noxious odours, discolouration, or instability within soils or sheen/ discolouration in groundwater, the following actions will be taken:

- Intrusive works in the immediate area of the impacted ground will be suspended and the continuation of work in other areas of the site will be considered within the context of the site specific health & safety plan.
- Environmental Protection Strategies Ltd (EPS) will be contacted and appraised of the situation so that arrangements can be made to characterise the impact and determine what action may be necessary in addition to the scheduled site works. Where possible / health & safety plan permits, digital photographs of the impacted ground will be taken and emailed to EPS at the address below to assist in the initial assessment
- It may well be necessary for EPS to attend site to undertake visual inspection and obtain samples for field and/or laboratory analysis, although the actions taken will be dependent on the nature of what is encountered
- In cases where EPS consider the unforeseen contamination likely to pose a significant risk of significant harm to adjacent site users or local environmental receptors, the local authority and the Environment Agency will be informed of the situation and the actions being taken
- Once appropriate action has been agreed and undertaken, a written summary will be produced by EPS for submission to the Local Authority, (and where relevant, the Environment Agency) in accordance with planning requirements. The submission will include details of work undertaken, analytical results of investigative and validation samples obtained and conclusions and recommendations for any further actions considered necessary
- Where regulatory bodies have been involved, site works should only recommence following their agreement and in all cases should only recommence when the site manager considers it safe to do so within the context of the site specific health & safety plan.

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