Land to the South of Gardner Road
Southwick
West Sussex

Verification Report

Report Beneficiary:
Adur & Worthing Councils
Worthing Town Hall
Chapel Road
Worthing
West Sussex
BN11 1HA

Project Reference: C16060

Report Reference: R15714

Document Control				
Issue No.	**Status**	**Issue Date**	**Notes**	
1	Final	13th March 2024		
Report Section			**Prepared By**	**Approved By**
Verification Report			Alex Minchell-Bewick BSc MSc DIC AIEMA MIEnvSc CEnv	Steven McSwiney BA mod Geol MSc FGS

Head Office
Unit 3
The Old Grain Store
Ditchling Common Business Park
Ditchling
West Sussex
BN6 8SG
Tel: 01273 483119
www.ashdownsi.co.uk

Limitations

The information presented within this report was prepared specifically for the Client's project and the information contained herein may not be appropriate to alternative schemes. The copyright for the report and licence for its use shall remain vested in Ashdown Site Investigation Limited (the Company) who disclaim all responsibility or liability (whether at common law or under the express or implied terms of the Contract between the Company and the Client) for any loss or damage of whatever nature in the event that this report is relied on by a third party, or is issued in circumstances or for projects for which it was not originally commissioned.

All wastes arising from the site works are deemed to have been in the possession of the main contractor, who was responsible for managing and disposing of waste in accordance with Section 34 of the Environmental Protection Act 1990 and the Environmental Protection (Duty of Care) Regulations 1991. A full waste audit of the development was beyond the scope of the verification works undertaken by Ashdown Site Investigation Ltd.

TABLE OF CONTENTS

1.	**INTRODUCTION**	**1**
2.	**SITE CONTEXT, RISK ASSESSMENT AND REMEDIATION STRATEGY**	**2**
2.1	Site Location	2
2.2	Risk Assessment	2
2.3	Remediation Strategy	2
3.	**VERIFICATION OF REMEDIATION WORKS**	**3**
3.1	7th November 2023	3
3.2	29th January 2024	4
3.3	7th February 2024	6
3.4	Compliance of cover soils with British Standards	7
3.5	Conclusions	8
4.	**POST REMEDIATION RISK ASSESSMENT**	**9**
4.1	Basis of Risk Assessment	9
4.2	Sources of Contamination	9
4.3	Contaminant Pathways	9
4.4	Post Remediation Conceptual Model	9

FIGURES AND APPENDICES

FIGURES

Figure 1 Site Location Plan

APPENDIX A

Laboratory Test Results

APPENDIX B

Imported Soils Supplier Provided Information

1. INTRODUCTION

This report has been prepared by Ashdown Site Investigation Limited following completion of the remediation works that have been carried out as part of the development of the former domestic garages site, located to the south of Gardner Road, Southwick, West Sussex, to provide two semi-detached dwellings with associated private gardens and soft landscaped areas.

The scope of the works covered by this report, and the terms and conditions under which they were undertaken, were set out within the offer letter Q12823, dated 6th March 2023, as subsequently amended. The instruction to proceed was received from Woodhart Group on behalf of the client, Adur & Worthing Councils.

This report provides a summary of the investigation and assessment works undertaken at the site, a summary of the agreed remediation strategy, details of the remediation works carried out and records of the verification inspections and testing that has been undertaken.

2. SITE CONTEXT, RISK ASSESSMENT AND REMEDIATION STRATEGY

2.1 Site Location

The site comprises an approximately rectangular shaped plot of land located to the south of Gardner Road, Southwick, West Sussex and is centred on the approximate Ordnance Survey national grid reference TQ 2533 0526. A site location plan is presented as Figure 1.

2.2 Risk Assessment

Laboratory testing recorded the made ground soils to contain concentrations of heavy metals and individual polycyclic aromatic hydrocarbon (PAH) compounds above soil screening values (SSV) calculated for a generic "Residential" land use.

Ground gas monitoring did not identify any elevated concentrations of ground gases and no specific gas protection measures were considered to be required.

2.3 Remediation Strategy

The objective of the recommended remedial works was to sever the pollutant linkages identified by the contamination assessments and thereby reduce the risk to end users of the site to an acceptable level.

To protect end users from the made ground soils, a cover system was required in all areas of private garden and communal soft landscaping.

Within private garden areas the cover system was to comprise 600mm of verified "clean" imported soils. The cover system soils were specified to be underlain by a high visibility geotextile marker lapping up the sides of the excavations to prevent future intermixing between the cover system soils and the residual made ground.

Within areas of general soft landscaping around the site the cover system was to comprise at least 450mm of verified "clean" cover soils, again underlain by the high visibility geotextile.

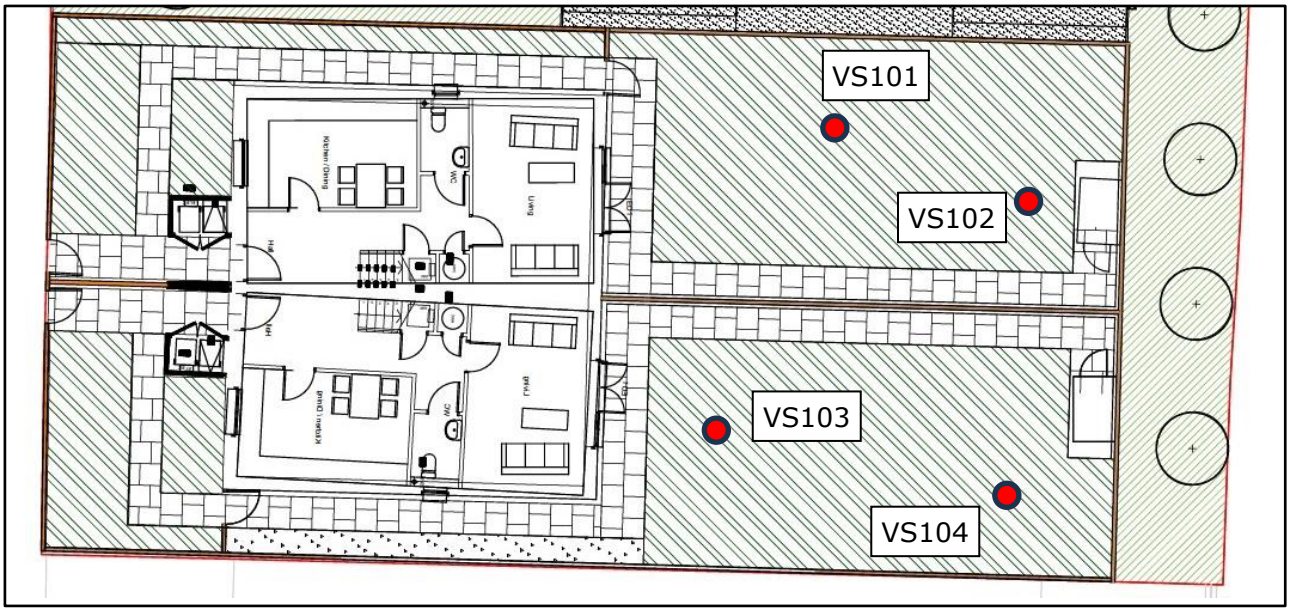
Elsewhere on site, it was considered that building cover, roadways and permanent access ways would act to sever the contaminant pathway and mitigate the risk to end users.

3. VERIFICATION OF REMEDIATION WORKS

A series of inspections of the site was undertaken during which soil samples were taken for laboratory testing. The results of the laboratory testing referred to in the following sections are presented in Appendix A. The results of the inspection visits are discussed below.

3.1 7th November 2023

At the time of this inspection, the houses had been constructed and the rear gardens had been stripped, a geotextile laid, and the areas partially filled with imported subsoil. Four samples of the subsoil, designated as VS101 to VS104, were taken from the rear gardens at the approximate locations shown below. Two of the samples, chosen at random, were tested for compliance with the chemical criteria set out in the remediation strategy.



Neither of the samples recorded concentrations of any of the heavy metals or PAH compounds tested for at concentrations above the screening values set out in the remediation strategy. No visual or olfactory evidence of suspected petroleum hydrocarbon contamination was observed, and no significant concentrations of petroleum hydrocarbons were recorded by the testing.

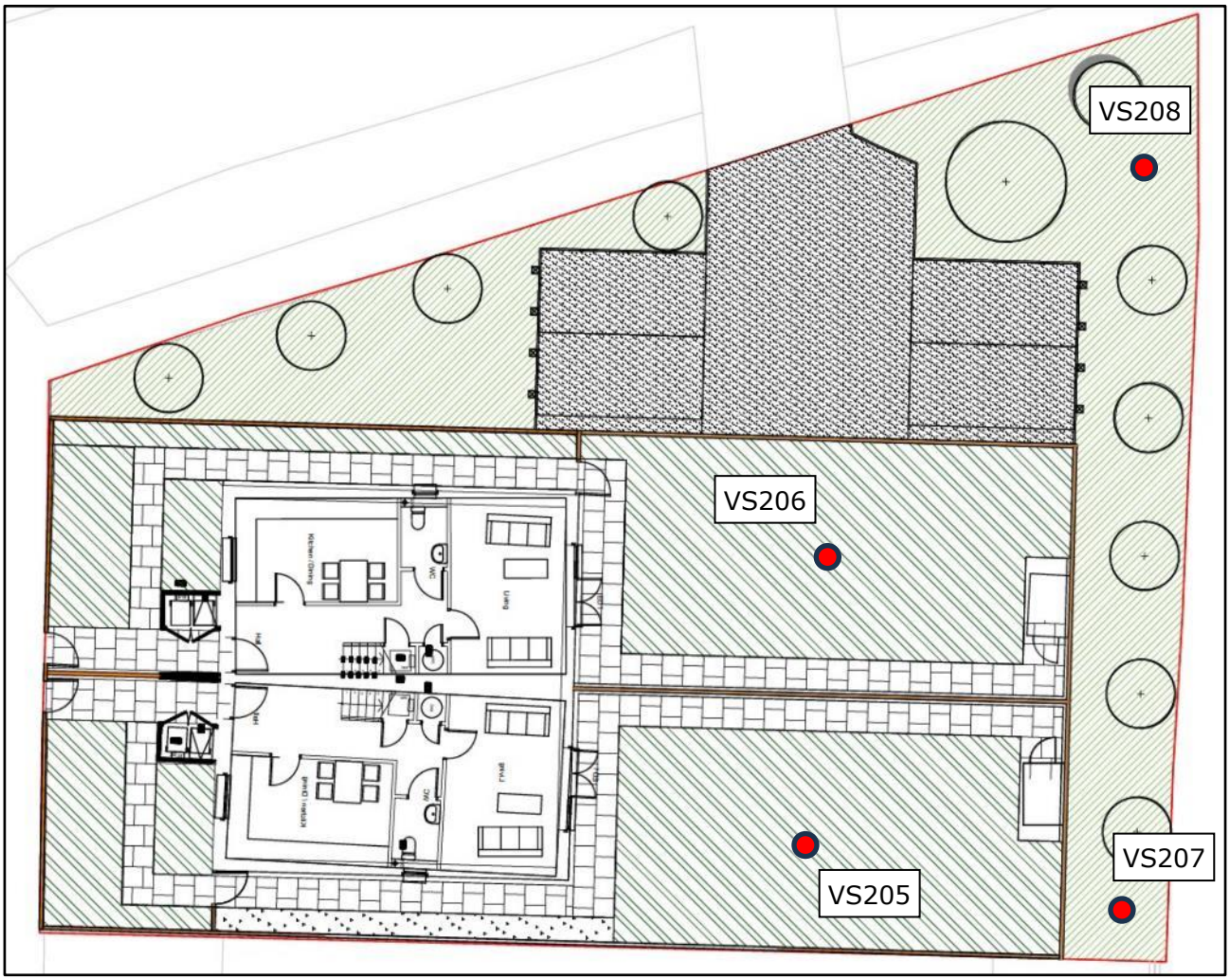
Photographs taken during the inspection showing the placed subsoil in the rear gardens are provided below.



3.2 29th January 2024

This inspection was carried out following the placement of topsoil across the rear gardens and some of the areas of soft landscaping within the north and east of the site. The cover system in the front garden areas was not completed at this time. Topsoil had been placed above the subsoil in the rear gardens and the soft landscaping areas in the eastern and north eastern parts of the site had been filled with imported topsoil.

Trial pits were dug through the cover soils in the rear gardens and in the soft landscaped area at the locations shown below. Samples of the topsoil were taken from each pit, and the total depths of cover soils were measured.



Samples of the topsoil from each location were tested for compliance with the chemical criteria set out in the remediation strategy. None of the samples recorded concentrations of any of the heavy metals or PAH compounds tested for at concentrations above the screening values set out in the remediation strategy. No visual or olfactory evidence of suspected petroleum hydrocarbon contamination was observed, and no significant concentrations of petroleum hydrocarbons were recorded by the testing.

Photographs taken during the inspection showing the topsoiled areas are provided below. The total depth of cover soils in the rear garden areas was confirmed to be around 600mm above

the geotextile marker, which was observed at the base of the pits. In the rear gardens the cover soils comprised approximately 300mm of subsoil overlain by 300mm of topsoil.

In the soft landscaped area along the eastern edge and within the northeastern part of the site, the total depth of cover soils was recorded to be between 600mm and 800mm above a geotextile marker. The cover soils in this area largely comprised topsoil.

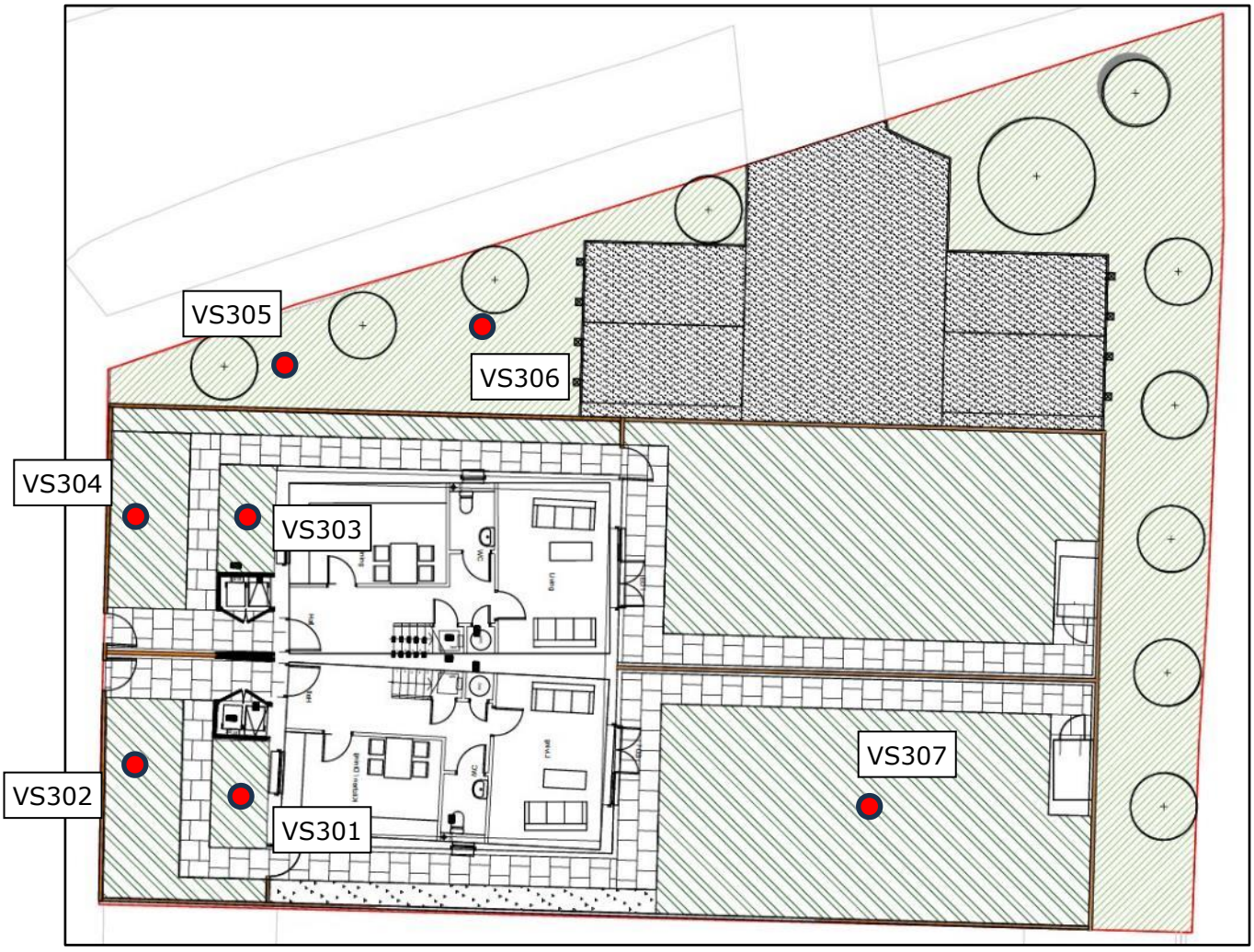


3.3 7th February 2024

When this inspection was carried out the front gardens and the area of soft landscaping in the north west of the site were in the process of being completed. The majority of soils had been placed in these areas, though some additional topsoil was still being brought to site and placed to bring up the final ground level.

Trial pits were dug through the cover soils in the front garden and soft landscaped areas at the locations marked as VS301 to VS306, shown below. Samples of the topsoil and subsoil were taken from each pit in the front garden areas, and samples of the topsoil were taken from each pit in the soft landscaped area. The total depth of the cover soils was measured in each pit.

A sample of recently placed topsoil was also taken from the rear gardens, at the location of VS307, and another sample of topsoil, labelled as "new topsoil" was taken directly from a delivery bag.



Three samples of the topsoil and subsoil from the front garden and soft landscaped areas, along with samples of the topsoil from the rear garden and the delivery bag, were tested for compliance with the chemical criteria set out in the remediation strategy.

None of the samples recorded concentrations of any of the heavy metals or PAH compounds tested for at concentrations above the screening values set out in the remediation strategy. No visual or olfactory evidence of suspected petroleum hydrocarbon contamination was observed and no significant concentrations of petroleum hydrocarbons were recorded by the testing.

Photographs taken during the inspection showing the completed front gardens and soft landscaped areas in the north west are provided below.

The total depth of cover soils in the front garden areas was confirmed to be around 600mm above the geotextile marker, which was observed at the base of the pits. In the front garden the cover soils comprised approximately 300mm of topsoil overlying approximately 300mm of subsoil. In the soft landscaping area in the north west of the site, the total depth of cover soils was confirmed to be around 450mm above the geotextile marker, which was observed at the base of the pits. The cover soils in this area comprised at least 300mm of topsoil overlying subsoil.



3.4 Compliance of cover soils with British Standards

The landscaping plans provided at the time of the production of the remediation strategy stated that the soils used in the cover system should comply with the British Standards for topsoil and subsoil.

Certificates have been provided from the supplier for the topsoil used in the back gardens, front gardens and soft landscaped areas to show that their materials comply with the textural and nutrient requirements for a multi-purpose topsoil as set out within BS3882.

A certificate was also provided for the subsoil used within the front garden and soft landscaping area indicating that the supplier has undertaken testing to show that their materials comply with the textural and nutrient requirements for a multi-purpose subsoil as set out within BS8601.

Copies of these certificates are presented in Appendix B.

A certificate was not provided for the subsoil used within the rear gardens. Ashdown Site Investigation Ltd. tested a sample of those soils for compliance with BS8601. The results of the testing are presented in Appendix A.

The results of this testing showed that, whilst the textural and nutrient parameters lay within that of a multi-purpose subsoil, as defined in BS8601, the loss on ignition was 3.5%, which is above the maximum set out in the standard of 2%.

This is a minor deviation from the British Standard, compliance with which was specified by the landscape architect, but does not represent a risk to human health.

3.5 Conclusions

The remedial works undertaken within the garden and soft landscaped areas are in accordance with the recommendations set out in the remediation strategy and are considered to have severed the previously identified pollutant linkages and thereby reduced the level of risk to end users to an acceptable level.

No further contamination investigation, risk assessment or long-term monitoring of the site is considered to be necessary.

4. POST REMEDIATION RISK ASSESSMENT

4.1 Basis of Risk Assessment

The risk assessment considers the potential sources of contamination, the potential receptors, and the pathways by which these may be linked. A complete pollutant linkage is only deemed to exist where all three are present.

A site is considered suitable for use where no complete pollutant linkages are present in relation to the proposed development.

4.2 Sources of Contamination

The following source of contamination was identified at the site:

1) Made ground soils across the site containing elevated concentrations of lead and PAH compounds.

4.3 Contaminant Pathways

The remedial works carried out have resulted in the severing of all contamination pathways.

4.4 Post Remediation Conceptual Model

A post remediation conceptual model for the development is presented in the following table.

Table 1. Post Remediation Conceptual Model – Potential Pollutant Linkages and Assessment of Risk

Contaminant Source	Mitigation Measures	Potential Pathway(s)	Assessment of Risk to Human Health
Made ground soils across the site containing elevated concentrations of lead and PAH compounds.	**Private Gardens** Provision of 600mm of verified "clean" cover soils overlying a high visibility geotextile marker	Pathways severed by mitigation measures	No significant pollutant linkage identified.
	Communal Soft Landscaped Areas Provision of at least 450mm of verified "clean" cover soils overlying a high visibility geotextile marker		
	Provision of building cover, roadways, car parking, patios and permanent access ways comprising hard cover		

Ashdown Site Investigation Ltd.

FIGURES

Figure 1 Site Location Plan



© OpenStreetMap contributors, CC BY-SA

ASHDOWN SITE INVESTIGATION LIMITED	Site Location Plan	Site Name	Figure No.	Project Reference
		Land to South of Gardner Road, Southwick, West Sussex	1	C16060

APPENDIX A

Laboratory Test Results

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 23-13864

Site Reference:	Gardner Road, Southwick, East Sussex
Project / Job Ref:	C16060 1898
Order No:	11407
Sample Receipt Date:	09/11/2023
Sample Scheduled Date:	09/11/2023
Report Issue Number:	1
Reporting Date:	15/11/2023

Authorised by:

[redacted]

Steve Knight
Customer Support Manager

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

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

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

4480

Soil Analysis Certificate						
DETS Report No: 23-13864	**Date Sampled**	07/11/23	07/11/23			
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Gardner Road, Southwick, East Sussex	**TP / BH No**	VS101	VS104			
Project / Job Ref: C16060_1898	**Additional Refs**	None Supplied	None Supplied			
Order No: 11407	**Depth (m)**	None Supplied	None Supplied			
Reporting Date: 15/11/2023	**DETS Sample No**	684660	684661			

Determinand	**Unit**	**RL**	**Accreditation**					
Asbestos Screen (S)	N/a	N/a	**ISO17025**	Not Detected	Not Detected			
pH	pH Units	N/a	**MCERTS**	7.6	7.8			
Total Sulphate as SO_4	mg/kg	< 200	**MCERTS**	749	439			
Total Sulphate as SO_4	%	< 0.02	**MCERTS**	0.07	0.04			
Organic Matter (SOM)	%	< 0.1	**MCERTS**	3.4	3.1			
Arsenic (As)	mg/kg	< 2	**MCERTS**	5	7			
W/S Boron	mg/kg	< 1	NONE	< 1	< 1			
Cadmium (Cd)	mg/kg	< 0.2	**MCERTS**	< 0.2	0.3			
Chromium (Cr)	mg/kg	< 2	**MCERTS**	10	11			
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2			
Copper (Cu)	mg/kg	< 4	**MCERTS**	16	30			
Lead (Pb)	mg/kg	< 3	**MCERTS**	65	87			
Mercury (Hg)	mg/kg	< 1	**MCERTS**	< 1	< 1			
Nickel (Ni)	mg/kg	< 3	**MCERTS**	8	9			
Selenium (Se)	mg/kg	< 2	**MCERTS**	< 2	< 2			
Zinc (Zn)	mg/kg	< 3	**MCERTS**	64	91			

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 23-13864	**Date Sampled**	07/11/23	07/11/23			
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Gardner Road, Southwick, East Sussex	**TP / BH No**	VS101	VS104			
Project / Job Ref: C16060_1898	**Additional Refs**	None Supplied	None Supplied			
Order No: 11407	**Depth (m)**	None Supplied	None Supplied			
Reporting Date: 15/11/2023	**DETS Sample No**	684660	684661			

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Phenanthrene	mg/kg	< 0.1	MCERTS	0.12	0.37			
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Fluoranthene	mg/kg	< 0.1	MCERTS	0.25	0.72			
Pyrene	mg/kg	< 0.1	MCERTS	0.22	0.64			
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	0.26			
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	0.31			
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.31			
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.26			
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.14			
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1			
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	3			

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

Soil Analysis Certificate - EPH Banded (Type F)						
DETS Report No: 23-13864	**Date Sampled**	07/11/23	07/11/23			
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied			
Site Reference: Gardner Road, Southwick, East Sussex	**TP / BH No**	VS101	VS104			
Project / Job Ref: C16060_1898	**Additional Refs**	None Supplied	None Supplied			
Order No: 11407	**Depth (m)**	None Supplied	None Supplied			
Reporting Date: 15/11/2023	**DETS Sample No**	684660	684661			

Determinand	Unit	RL	Accreditation					
EPH (>C8 - C10) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1			
EPH (>C10 - C12) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1			
EPH (>C12 - C16) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1			
EPH (>C16 - C21) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	2			
EPH (>C21 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	10	7			
EPH (C8 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	10	9			

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

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 23-13864	
Ashdown Site Investigations Ltd	
Site Reference: Gardner Road, Southwick, East Sussex	
Project / Job Ref: C16060_1898	
Order No: 11407	
Reporting Date: 15/11/2023	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
684660	VS101	None Supplied	None Supplied	15.1	Brown sandy clay with stones and brick
684661	VS104	None Supplied	None Supplied	15.1	Brown sandy clay with stones

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-13864
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, East Sussex
Project / Job Ref: C16060_1898
Order No: 11407
Reporting Date: 15/11/2023

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

D Dried
AR As Received

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

List of HWOL Acronyms and Operators
DETS Report No: 23-13864
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, East Sussex
Project / Job Ref: C16060_1898
Order No: 11407
Reporting Date: 15/11/2023

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

Det - Acronym
EPH Banded (C10 - C12) - EH_1D_Total
EPH Banded (C12 - C16) - EH_1D_Total
EPH Banded (C16 - C21) - EH_1D_Total
EPH Banded (C21 - C40) - EH_1D_Total
EPH Banded (C8 - C10) - EH_1D_Total
EPH Banded (C8 - C40) - EH_1D_Total

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-00978

Site Reference:	Gardner Road, Southwick, West Sussex
Project / Job Ref:	C16060_2011
Order No:	11496
Sample Receipt Date:	01/02/2024
Sample Scheduled Date:	01/02/2024
Report Issue Number:	1
Reporting Date:	07/02/2024

Authorised by:

[redacted]

Steve Knight
Customer Support Manager

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

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

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

4480

Soil Analysis Certificate						
DETS Report No: 24-00978	**Date Sampled**	29/01/24	29/01/24	29/01/24	29/01/24	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS205 - TS	VS206 - TS	VS207 - TS	VS208 - TS	
Project / Job Ref: C16060_2011	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 11496	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 07/02/2024	**DETS Sample No**	696917	696918	696919	696920	

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	
pH	pH Units	N/a	MCERTS	8.6	8.9	8.3	8.7	
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	< 200	< 200	296	< 200	
Total Sulphate as SO_4	%	< 0.02	MCERTS	< 0.02	< 0.02	0.03	< 0.02	
Organic Matter (SOM)	%	< 0.1	MCERTS	2.5	2.8	2.6	3.2	
Arsenic (As)	mg/kg	< 2	MCERTS	2	5	3	3	
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS	7	7	7	7	
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	
Copper (Cu)	mg/kg	< 4	MCERTS	5	6	8	6	
Lead (Pb)	mg/kg	< 3	MCERTS	7	7	81	8	
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS	< 3	< 3	< 3	< 3	
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	
Zinc (Zn)	mg/kg	< 3	MCERTS	16	15	30	18	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-00978	**Date Sampled**	29/01/24	29/01/24	29/01/24	29/01/24	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS205 - TS	VS206 - TS	VS207 - TS	VS208 - TS	
Project / Job Ref: C16060_2011	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 11496	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 07/02/2024	**DETS Sample No**	696917	696918	696919	696920	

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.24	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.18	< 0.1	0.52	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	0.14	< 0.1	0.47	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.21	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.23	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.21	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.18	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	0.12	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	2.2	< 1.6	

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

Soil Analysis Certificate - EPH Banded (Type F)							
DETS Report No: 24-00978	**Date Sampled**	29/01/24	29/01/24	29/01/24	29/01/24	
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS205 - TS	VS206 - TS	VS207 - TS	VS208 - TS	
Project / Job Ref: C16060_2011	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 11496	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	
Reporting Date: 07/02/2024	**DETS Sample No**	696917	696918	696919	696920	

Determinand	Unit	RL	Accreditation					
EPH (>C8 - C10) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	
EPH (>C10 - C12) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	
EPH (>C12 - C16) : EH_1D_Total	mg/kg	< 1	MCERTS	1	2	< 1	2	
EPH (>C16 - C21) : EH_1D_Total	mg/kg	< 1	MCERTS	3	4	4	6	
EPH (>C21 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	37	31	37	48	
EPH (C8 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	41	37	42	57	

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

Soil Analysis Certificate - Sample Descriptions	
DETS Report No: 24-00978	
Ashdown Site Investigations Ltd	
Site Reference: Gardner Road, Southwick, West Sussex	
Project / Job Ref: C16060_2011	
Order No: 11496	
Reporting Date: 07/02/2024	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
696917	VS205 - TS	None Supplied	None Supplied	16.3	Black loamy sand
696918	VS206 - TS	None Supplied	None Supplied	17.5	Black loamy sand
696919	VS207 - TS	None Supplied	None Supplied	17.2	Black loamy sand with vegetation
696920	VS208 - TS	None Supplied	None Supplied	18	Black loamy sand with vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 24-00978
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, West Sussex
Project / Job Ref: C16060_2011
Order No: 11496
Reporting Date: 07/02/2024

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

D Dried
AR As Received

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

List of HWOL Acronyms and Operators
DETS Report No: 24-00978
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, West Sussex
Project / Job Ref: C16060_2011
Order No: 11496
Reporting Date: 07/02/2024

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

Det - Acronym
EPH Banded (C10 - C12) - EH_1D_Total
EPH Banded (C12 - C16) - EH_1D_Total
EPH Banded (C16 - C21) - EH_1D_Total
EPH Banded (C21 - C40) - EH_1D_Total
EPH Banded (C8 - C10) - EH_1D_Total
EPH Banded (C8 - C40) - EH_1D_Total

Certificate of Analysis

Client: QTS ENVIRONMENTAL LTD
(K594) UNIT 1
ROSE LANE INDUSTRIAL EST.
ROSE LANE
LENHAM HEATH
KENT ME17 2JN

Originator: GARDNER ROAD
SOUTHWICK
WEST SUSSEX
C16060-2011 11496
SOIL

Lab ID: 20022 - 676442
Sample ID: 696921
Fresh Sample Weight: 979 (g)

Date Received: 02/02/2024
Date Reported: 13/02/2024

BS 8601 : 2013 SPECIFICATION FOR SUBSOIL
Fails BS 8601

		Unit	Result		Compliant with range (Y/N) Multi-P	Acid	Calc
Texture:	Clay	% w/w	9				
	Silt	% w/w	14		*See area of permitted soil textural*		
	Sand	% w/w	77		*classes in Fig. 1.*		
	Textural Class		Sandy Loam				
Mass Loss on Ignition:		% w/w	3.5		N	N	N
Coarse	>2 mm	% w/w	7.0		Y	Y	Y
Fragment	>20 mm	% w/w	3.4		Y	Y	Y
Content:	>75 mm	% w/w	0.0		Y	Y	Y
Soil pH:			8.4		Y	N	Y
Carbonate:		% w/w	1.9				Y
Exchangeable Sodium Percentage:		%	3.3		Y	Y	Y
Phytotoxic	Total Zinc	mg/kg	69.8		Y	Y	Y
Contaminants:	Total Copper	mg/kg	15.8		Y	Y	Y
	Total Nickel	mg/kg	16.7		Y	Y	Y
Visible	> 2mm	% w/w	0.30		Y	Y	Y
Contaminants:	Plastics	% w/w	0.00		Y	Y	Y
	Sharps	% w/w	0.00		Y	Y	Y
	Weight of Sharps	g	0.0				
Available	Phosphorus	mg/l	53.6	(4)*			
Plant	Potassium	mg/l	685.6	(5)*			
Nutrients:	Magnesium	mg/l	79.2	(2)*			
Additional	Available Sodium	mg/l	75.3				
Analysis:	Available Calcium	mg/l	1450.0				
	Conductivity	uS/cm	2962				
	Conductivity CaSO4 Adj.	uS/cm	1002				
Compliancy:					**N**	**N**	**N**

Results are expressed on a dry matter basis.
* Soil indices from RB209

Released by: *Daniel Petty* **Date: 13/02/2024**

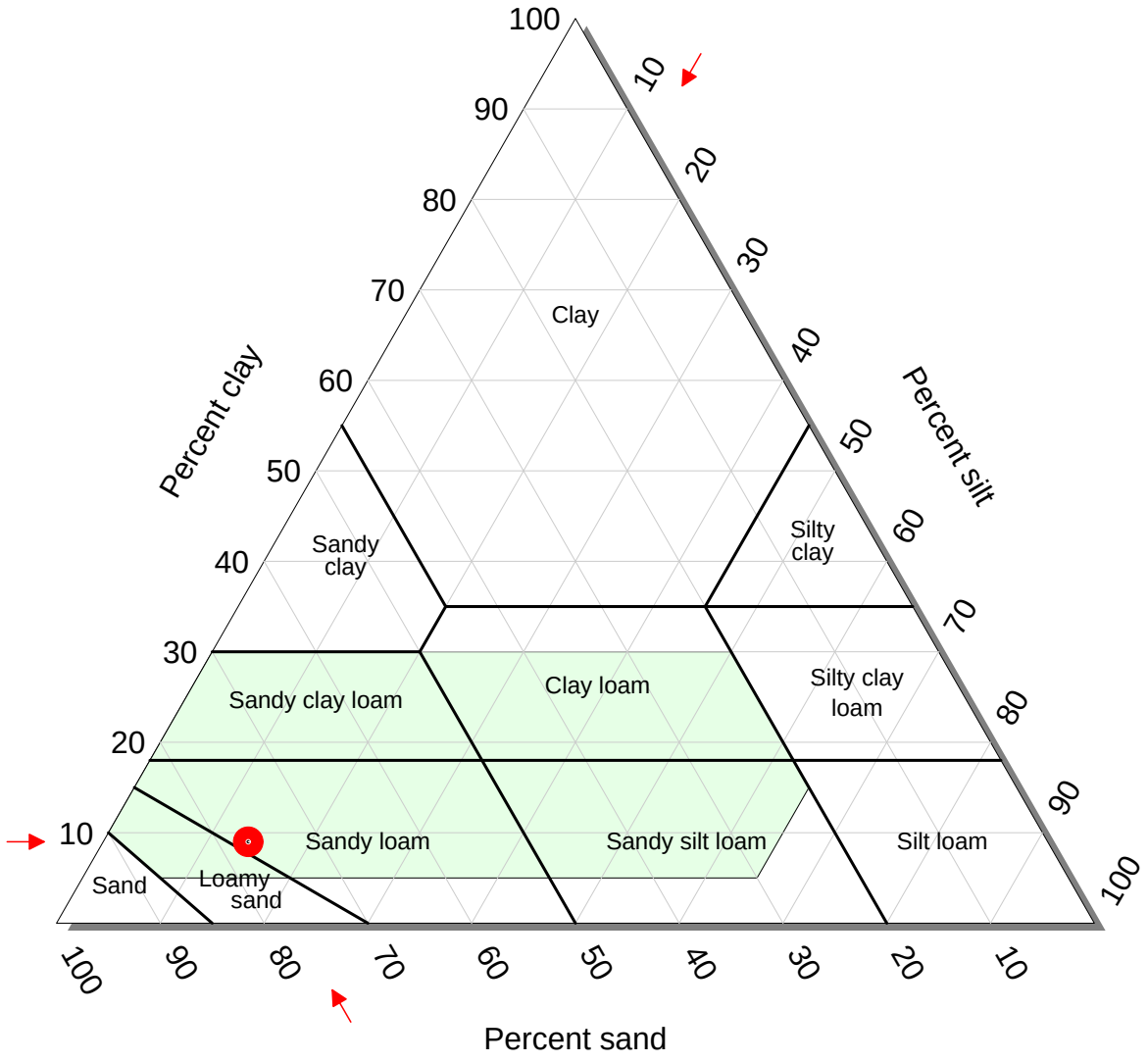
DECLARATION: I certify that this sample has been analysed by NRM. in accordance with BS 8601 Specification for Subsoil (2013).

Analytical Report

Client:	QTS ENVIRONMENTAL LTD	**Originator:**	GARDNER ROAD
(K594)	UNIT 1		SOUTHWICK
	ROSE LANE INDUSTRIAL EST.		WEST SUSSEX
	ROSE LANE		C16060-2011 11496
	LENHAM HEATH		SOIL
	KENT ME17 2JN		

Lab ID:	20022 - 676442	**Date Received:**	02/02/2024
Sample ID:	696921	**Date Reported:**	13/02/2024
Fresh Sample Weight:	979 (g)		

Fig. 1. Textural Class: Sandy Loam (compliant)



Key

Area within which texture of subsoil is required to fall.

Alex Bewick
Ashdown Site Investigations Ltd
Unit 3 The Grain Store
Ditchling Common Business Park
Ditchling Common
West Sussex
BN6 8SG

Derwentside Environmental Testing Services Ltd
Unit 1
Rose Lane Industrial Estate
Rose Lane
Lenham Heath
Kent
ME17 2JN
t: 01622 850410

DETS Report No: 24-01352

Site Reference:	Gardner Road, Southwick, West Sussex
Project / Job Ref:	C16060_2028
Order No:	11509
Sample Receipt Date:	09/02/2024
Sample Scheduled Date:	09/02/2024
Report Issue Number:	1
Reporting Date:	15/02/2024

Authorised by:

[redacted]

Steve Knight
Customer Support Manager

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

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

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

4480

Soil Analysis Certificate						
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24	07/02/24	07/02/24
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS301 - TS	VS306 - TS	VS305 - TS	VS301 - SS	VS303 - SS
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 15/02/2024	**DETS Sample No**	698432	698433	698434	698435	698436

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected
pH	pH Units	N/a	MCERTS	8.4	8.6	8.6	9.2	8.1
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	< 200	< 200	< 200	1044	309
Total Sulphate as SO_4	%	< 0.02	MCERTS	< 0.02	< 0.02	< 0.02	0.10	0.03
Organic Matter (SOM)	%	< 0.1	MCERTS	2.2	3.3	2.5	2.9	3.2
Arsenic (As)	mg/kg	< 2	MCERTS	3	4	2	5	5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	0.2
Chromium (Cr)	mg/kg	< 2	MCERTS	5	8	8	7	10
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2	< 2	< 2
Copper (Cu)	mg/kg	< 4	MCERTS	4	6	5	9	11
Lead (Pb)	mg/kg	< 3	MCERTS	8	9	7	20	22
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
Nickel (Ni)	mg/kg	< 3	MCERTS	< 3	< 3	< 3	4	6
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2	< 2	< 2
Zinc (Zn)	mg/kg	< 3	MCERTS	14	20	15	29	56

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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

4480

Soil Analysis Certificate						
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24		
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS304 - SS	New Topsoil	VS307 - TS		
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied		
Reporting Date: 15/02/2024	**DETS Sample No**	698437	698438	698439		

Determinand	Unit	RL	Accreditation					
Asbestos Screen (S)	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	7.7	7.6	8.5		
Total Sulphate as SO_4	mg/kg	< 200	MCERTS	694	341	< 200		
Total Sulphate as SO_4	%	< 0.02	MCERTS	0.07	0.03	< 0.02		
Organic Matter (SOM)	%	< 0.1	MCERTS	3.5	4.6	2.8		
Arsenic (As)	mg/kg	< 2	MCERTS	8	3	2		
W/S Boron	mg/kg	< 1	NONE	< 1	< 1	< 1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	1.1	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	19	7	7		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	24	12	6		
Lead (Pb)	mg/kg	< 3	MCERTS	43	22	7		
Mercury (Hg)	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	23	6	< 3		
Selenium (Se)	mg/kg	< 2	MCERTS	< 2	< 2	< 2		
Zinc (Zn)	mg/kg	< 3	MCERTS	86	45	15		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30°C. The Method Description page describes if the test is performed on the dried or as-received portion
Subcontracted analysis (S)

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

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24	07/02/24	07/02/24
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS301 - TS	VS306 - TS	VS305 - TS	VS301 - SS	VS303 - SS
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 15/02/2024	**DETS Sample No**	698432	698433	698434	698435	698436

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.19	< 0.1
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.14	< 0.1
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.84	< 0.1
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.20	< 0.1
Fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	0.15	< 0.1	1.39	0.15
Pyrene	mg/kg	< 0.1	MCERTS	< 0.1	0.14	< 0.1	1.62	0.15
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.59	< 0.1
Chrysene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.64	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.76	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.25	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.68	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.36	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	0.35	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	< 1.6	< 1.6	< 1.6	8	< 1.6

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

Soil Analysis Certificate - Speciated PAHs						
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24		
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS304 - SS	New Topsoil	VS307 - TS		
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied		
Reporting Date: 15/02/2024	**DETS Sample No**	698437	698438	698439		

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Phenanthrene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Fluoranthene	mg/kg	< 0.1	MCERTS	0.33	0.49	< 0.1		
Pyrene	mg/kg	< 0.1	MCERTS	0.45	0.44	< 0.1		
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.38	0.17	< 0.1		
Chrysene	mg/kg	< 0.1	MCERTS	0.41	0.18	< 0.1		
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.63	0.17	< 0.1		
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.19	< 0.1	< 0.1		
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.58	< 0.1	< 0.1		
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.36	< 0.1	< 0.1		
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1		
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.34	< 0.1	< 0.1		
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	3.7	< 1.6	< 1.6		

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

Soil Analysis Certificate - EPH Banded (Type F)							
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24	07/02/24	07/02/24
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS301 - TS	VS306 - TS	VS305 - TS	VS301 - SS	VS303 - SS
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Reporting Date: 15/02/2024	**DETS Sample No**	698432	698433	698434	698435	698436

Determinand	Unit	RL	Accreditation					
EPH (>C8 - C10) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	25	< 1
EPH (>C10 - C12) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1	< 1	< 1
EPH (>C12 - C16) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	4	3	4	2
EPH (>C16 - C21) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	11	5	15	3
EPH (>C21 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	30	101	66	117	31
EPH (C8 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	30	116	74	161	35

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

Soil Analysis Certificate - EPH Banded (Type F)						
DETS Report No: 24-01352	**Date Sampled**	07/02/24	07/02/24	07/02/24		
Ashdown Site Investigations Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied		
Site Reference: Gardner Road, Southwick, West Sussex	**TP / BH No**	VS304 - SS	New Topsoil	VS307 - TS		
Project / Job Ref: C16060_2028	**Additional Refs**	None Supplied	None Supplied	None Supplied		
Order No: 11509	**Depth (m)**	None Supplied	None Supplied	None Supplied		
Reporting Date: 15/02/2024	**DETS Sample No**	698437	698438	698439		

Determinand	Unit	RL	Accreditation					
EPH (>C8 - C10) : EH_1D_Total	mg/kg	< 1	MCERTS	2	< 1	< 1		
EPH (>C10 - C12) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	< 1	< 1		
EPH (>C12 - C16) : EH_1D_Total	mg/kg	< 1	MCERTS	< 1	6	3		
EPH (>C16 - C21) : EH_1D_Total	mg/kg	< 1	MCERTS	4	16	6		
EPH (>C21 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	30	129	57		
EPH (C8 - C40) : EH_1D_Total	mg/kg	< 6	MCERTS	36	151	65		

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

Soil Analysis Certificate - Sample Descriptions
DETS Report No: 24-01352
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, West Sussex
Project / Job Ref: C16060_2028
Order No: 11509
Reporting Date: 15/02/2024

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
698432	VS301 - TS	None Supplied	None Supplied	19.6	Black loamy sand
698433	VS306 - TS	None Supplied	None Supplied	19.5	Black loamy sand with vegetation
698434	VS305 - TS	None Supplied	None Supplied	18.2	Black loamy sand with vegetation
698435	VS301 - SS	None Supplied	None Supplied	16.6	Black loamy sand with stones
698436	VS303 - SS	None Supplied	None Supplied	19.2	Black loamy sand
698437	VS304 - SS	None Supplied	None Supplied	17.7	Brown sandy clay with stones
698438	New Topsoil	None Supplied	None Supplied	28.8	Black loamy sand with vegetation
698439	VS307 - TS	None Supplied	None Supplied	22.7	Black loamy sand with vegetation

Moisture content is part of procedure E003 & is not an accredited test
Insufficient Sample I/S
Unsuitable Sample U/S

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

4480

Soil Analysis Certificate - Methodology & Miscellaneous Information
DETS Report No: 24-01352
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, West Sussex
Project / Job Ref: C16060_2028
Order No: 11509
Reporting Date: 15/02/2024

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

D Dried
AR As Received

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

List of HWOL Acronyms and Operators
DETS Report No: 24-01352
Ashdown Site Investigations Ltd
Site Reference: Gardner Road, Southwick, West Sussex
Project / Job Ref: C16060_2028
Order No: 11509
Reporting Date: 15/02/2024

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

Det - Acronym
EPH Banded (C10 - C12) - EH_1D_Total
EPH Banded (C12 - C16) - EH_1D_Total
EPH Banded (C16 - C21) - EH_1D_Total
EPH Banded (C21 - C40) - EH_1D_Total
EPH Banded (C8 - C10) - EH_1D_Total
EPH Banded (C8 - C40) - EH_1D_Total

APPENDIX B

Imported Soils Supplier Provided Information

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Mr Richard Goddings
Tarmac Topscape
Manchester Road
Congleton
Cheshire, CW12 2LU

20th July 2023
Our Ref: TOHA/23/7999/SS
Your Ref: PO No. 2002639043

Dear Sirs

Subsoil Analysis Report: Topscape Subsoil (Sevenoaks)

We have completed the analysis of the soil sample recently submitted, referenced *Topscape Subsoil (Sevenoaks),* and have pleasure reporting our findings.

The purpose of the analysis was to determine the suitability of the sample for use as subsoil in general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil),* including analysis of potential contaminants.

This report presents the results of analysis for the sample submitted to our office, and it should be considered 'indicative' of the subsoil source. The report and results should therefore not be used by third parties as a means of verification or validation testing.

SAMPLE EXAMINATION

The sample was described as an olive brown (Munsell Colour 2.5YR 4/4), slightly moist, friable, non-calcareous, SANDY CLAY LOAM with a weakly developed, fine to medium granular and sub-angular structure*. The sample was slightly stony, and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed. *This appraisal of soil structure was made from examination of a disturbed sample(s). Structure is a key soil characteristic that may only be accurately assessed by examination in an in-situ state.

Tarmac Topscape

Tim O'Hare Associates LLP
Howbery Park Wallingford Oxfordshire OX10 8BA
T:01491 822653 E:info@toha.co.uk
www.toha.co.uk

Registered in England No. OC324049 Registered Office: The Innovation Centre, Howbery Park, Wallingford, Oxfordshire OX10 8BA

ANALYTICAL SCHEDULE

The sample was submitted to a UKAS and MCERTS accredited laboratory for a range of physical and chemical tests to confirm the composition of the soil, and the concentration of selected potential contaminants. The following parameters were determined:

- detailed particle size analysis (5 sands, silt, clay);
- stone content (2-20mm, 20-75mm, >75mm);
- pH and electrical conductivity values;
- exchangeable sodium percentage;
- organic matter content;
- heavy metals (As, B, Cd, Cr, Cu, Pb, Hg, Ni, Se, Zn);
- soluble sulphate, elemental sulphur, acid volatile sulphide;
- total cyanide and total (mono) phenols;
- speciated PAHs (US EPA16 suite);
- aromatic and aliphatic TPH (C5-C35 banding);
- benzene, toluene, ethylbenzene, xylene (BTEX);
- asbestos screen.

The results are presented on the attached Certificate of Analysis and an interpretation of the results is given below.

RESULTS OF ANALYSIS

Particle Size Analysis and Stone Content

The sample fell into the *sandy clay loam* texture class, which is usually considered suitable for general landscape applications provided the soil's physical condition is satisfactory.

Such soils usually have good water retention capacities, but they are also prone to structural degradation and compaction during handling, and especially when plastic in consistency. Any damage to the structural condition of this soil is likely to reduce its drainage and aeration properties.

The stone content of the sample was low and, as such, stones should not restrict the use of the soil for general landscape purposes.

pH and Electrical Conductivity Values

The sample was slightly alkaline in reaction (pH 7.4), with a pH value that would be suitable as subsoil for general landscape purposes.

The electrical conductivity (salinity) value (water extract) was low, which indicates that soluble salts should not be present at levels that would be harmful to plants.

The electrical conductivity value by $CaSO_4$ extract (*BS8601* requirement) fell below the maximum specified value (2800 µS/cm) given in *BS8601:2013 – Table 1*.

Organic Matter Content

The organic matter content was low (1.7%) and compliant with *BS8601:2013 – Table 1*.

Potential Contaminants

With reference to *BS8601:2013 – Section 4.2*: *Note 2*, there is a recommendation to confirm levels of potential contaminants in relation to the subsoil's proposed end use. This includes human health, environmental protection and metals considered toxic to plants. In the absence of site-specific assessment criteria, the concentrations that affect human health have been compared with the *residential with homegrown produce* land use in the Suitable For Use Levels (S4ULs) presented in *The LQM/CIEH S4ULs for Human Health Risk Assessment* (2015) and the DEFRA SP1010: *Development of Category 4 Screening Levels* (C4SLs) *for Assessment of Land Affected by Contamination – Policy Companion Document* (2014).

Of the potential contaminants determined, none exceeded their respective guideline values.

Tarmac Topscape

Phytotoxic Contaminants

Of the phytotoxic (toxic to plants) contaminants determined (copper, nickel, zinc), none was found at levels that exceeded the maximum permissible levels specified in *BS8601:2013 – Table 1*.

CONCLUSION

The purpose of the analysis was to determine the suitability of the sample for use as subsoil in general landscape purposes (trees, shrubs, amenity grass). In addition, this sample has been assessed to determine its compliance with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil),* including analysis of potential contaminants.

From the soil examination and subsequent laboratory analysis, the sample was described as a slightly alkaline, non-saline, sandy clay loam with a weakly developed structure and low stone content. The organic matter content was low and consistent with subsoil. Of the potential contaminants determined, none exceeded their respective guideline values.

To conclude, based on our findings, the soil represented by this sample would be considered suitable as subsoil for general landscape purposes (trees, shrubs and amenity grass), provided the physical condition of the soil is satisfactory.

The sample was also fully compliant with the requirements of the British Standard for Subsoil *(BS8601:2013 – Specification for subsoil and requirements for use – Table 1, Multipurpose Subsoil).*

Soil Handling Recommendations

Reference should be made to Section 6.0 of *BS8601:2013* with regard to the handling and management of the subsoil:

"Soils generally lose strength and become less resistant to damage as they become wetter; therefore, it is essential that they are stripped, handled and trafficked only in the appropriate conditions of weather and soil moisture, and with suitable machinery. If sustained heavy rainfall (e.g. >10 mm in 24 h) occurs during soil stripping operations, work should be suspended and not restarted until the ground has had at least one dry day or until a suitable moisture content has been reached. A soil can be considered to have a suitable moisture content for stripping and handling if the whole thickness of the subsoil layer being stripped and/or handled is at a moisture content below the plastic limit as determined in accordance with BS 1377-2:1990 (incorporating Amendment No. 1).

Machinery should be selected and routed to minimise soil compaction."

Further guidance is provided in Clauses 6.1–6.5.

_____

We hope this report meets with your approval and provides the necessary information. Please do not hesitate to contact the undersigned if we can be of further assistance.

Yours faithfully



Aaron Cross
BSc MSc
Soil Scientist

For & on behalf of Tim O'Hare Associates LLP

armac Topscape

TIM O'HARE ASSOCIATES
SOIL & LANDSCAPE CONSULTANCY

Client:	**Tarmac Topscape**
Project	**Topscape Subsoil (Sevenoaks)**
Job:	**Subsoil Analysis - BS8601:2013**
Date:	**20/07/2023**
Job Ref No:	**TOHA/23/7999/SS**

Sample Reference			**Topscape Subsoil (Sevenoaks)**
		Accreditation	
Clay (<0.002mm)	%	UKAS	19
Silt (0.002-0.063mm)	%	UKAS	7
Very Fine Sand (0.063-0.15mm)	%	UKAS	4
Fine Sand (0.15-0.25mm)	%	UKAS	15
Medium Sand (0.25-0.50mm)	%	UKAS	36
Coarse Sand (0.50-1.0mm)	%	UKAS	16
Very Coarse Sand (1.0-2.0mm)	%	UKAS	3
Total Sand (0.063-2.0mm)	%	UKAS	74
Texture Class (UK Classification)	--	UKAS	SCL
Stones (2-20mm)	% DW	GLP	1
Stones (20-75mm)	% DW	GLP	0
Stones (>75mm)	% DW	GLP	0
pH Value (1:2.5 water extract)	units	UKAS	7.4
Electrical Conductivity (1:2.5 water extract)	uS/cm	UKAS	385
Electrical Conductivity (1:2 $CaSO_4$ extract)	uS/cm	UKAS	2314
Organic Matter (LOI)	%	UKAS	1.7
Exchangeable Sodium Percentage	%	UKAS	1.4
Total Arsenic (As)	mg/kg	MCERTS	24
Total Cadmium (Cd)	mg/kg	MCERTS	< 0.2
Total Chromium (Cr)	mg/kg	MCERTS	82
Hexavalent Chromium (Cr VI)	mg/kg	MCERTS	< 1.8
Total Copper (Cu)	mg/kg	MCERTS	2.7
Total Lead (Pb)	mg/kg	MCERTS	11
Total Mercury (Hg)	mg/kg	MCERTS	< 0.3
Total Nickel (Ni)	mg/kg	MCERTS	37
Total Selenium (Se)	mg/kg	MCERTS	< 1.0
Total Zinc (Zn)	mg/kg	MCERTS	53
Water Soluble Boron (B)	mg/kg	MCERTS	< 0.2
Total Cyanide (CN)	mg/kg	MCERTS	< 1.0
Total (mono) Phenols	mg/kg	MCERTS	< 1.0
Naphthalene	mg/kg	MCERTS	< 0.05
Acenaphthylene	mg/kg	MCERTS	< 0.05
Acenaphthene	mg/kg	MCERTS	< 0.05
Fluorene	mg/kg	MCERTS	< 0.05
Phenanthrene	mg/kg	MCERTS	< 0.05
Anthracene	mg/kg	MCERTS	< 0.05
Fluoranthene	mg/kg	MCERTS	< 0.05
Pyrene	mg/kg	MCERTS	< 0.05
Benzo(a)anthracene	mg/kg	MCERTS	< 0.05
Chrysene	mg/kg	MCERTS	< 0.05
Benzo(b)fluoranthene	mg/kg	MCERTS	< 0.05
Benzo(k)fluoranthene	mg/kg	MCERTS	< 0.05
Benzo(a)pyrene	mg/kg	MCERTS	< 0.05
Indeno(1,2,3-cd)pyrene	mg/kg	MCERTS	< 0.05
Dibenzo(a,h)anthracene	mg/kg	MCERTS	< 0.05
Benzo(g,h,i)perylene	mg/kg	MCERTS	< 0.05
Total PAHs (sum USEPA16)	mg/kg	MCERTS	< 0.80
Aliphatic TPH >C5 - C6	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C6 - C8	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C8 - C10	mg/kg	MCERTS	< 0.001
Aliphatic TPH >C10 - C12	mg/kg	MCERTS	2.3
Aliphatic TPH >C12 - C16	mg/kg	MCERTS	4
Aliphatic TPH >C16 - C21	mg/kg	MCERTS	< 8.0
Aliphatic TPH >C21 - C35	mg/kg	MCERTS	< 8.0
Aliphatic TPH (C5 - C35)	mg/kg	MCERTS	< 10
Aromatic TPH >C5 - C7	mg/kg	MCERTS	< 0.001
Aromatic TPH >C7 - C8	mg/kg	MCERTS	< 0.001
Aromatic TPH >C8 - C10	mg/kg	MCERTS	< 0.001
Aromatic TPH >C10 - C12	mg/kg	MCERTS	< 1.0
Aromatic TPH >C12 - C16	mg/kg	MCERTS	< 2.0
Aromatic TPH >C16 - C21	mg/kg	MCERTS	< 10
Aromatic TPH >C21 - C35	mg/kg	MCERTS	< 10
Aromatic TPH (C5 - C35)	mg/kg	MCERTS	< 10
Benzene	mg/kg	MCERTS	< 0.005
Toluene	mg/kg	MCERTS	< 0.005
Ethylbenzene	mg/kg	MCERTS	< 0.005
o-xylene	mg/kg	MCERTS	< 0.005
p&m-xylene	mg/kg	MCERTS	< 0.005
MTBE (Methyl Tertiary Butyl Ether)	mg/kg	MCERTS	< 0.005
Asbestos	--	ISO 17025	Not-detected

SCL - SANDY CLAY LOAM

Visual Examination

The sample was described as an olive brown (Munsell Colour 2.5YR 4/4), slightly moist, friable, non-calcareous, SANDY CLAY LOAM with a weakly developed, fine to medium granular and sub-angular structure. The sample was slightly stony and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

[redacted]

Aaron Cross
BSc MSc
Soil Scientist

Results of analysis should be read in conjunction with the report they were issued with

The contents of this certificate shall not be reproduced without the express written permission of Tim O'Hare Associates LLP.

Tarmac Topscape

Timon Greenwood
Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100
f: 01342 410321
e: contamresults@southerntesting.co.uk

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

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

Analytical Report Number : 23-52909

Replaces Analytical Report Number: 23-52909, issue no. 1
Result correction by laboratory.
Sample 2791493 Carbon: Nitrogen Ratio result correction by laboratory.

Project / Site name:	The Haulage Yard, Dial Post RH13 8NY	**Samples received on:**	24/08/2023
Your job number:	GL8635	**Samples instructed on/ Analysis started on:**	24/08/2023
Your order number:	GL8635 2	**Analysis completed by:**	18/09/2023
Report Issue Number:	2	**Report issued on:**	18/09/2023
Samples Analysed:	1 soil sample		

[redacted]

Signed:

Joanna Szwagrzak
Junior Reporting Specialist
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

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

Telephone: 01923 225404
Fax: 01923 237404
email:reception@i2analytical.com

Certificate of Analysis

BS 3882:2015 Specification For Topsoil

	Pass BS 3882 for Multipurpose Topsoil; Calcareous;		client	
Report No:	**23-52909**		**Southern Testing Laboratories Ltd**	
Location	The Haulage Yard, Dial Post RH13 8NY			
Lab Reference (Sample Number)	2791493		01342 333100	
Sampling Date	16/08/2023			
Sample ID	14223			
Depth (m)	**0.00**			

		unit	Result	Compliant with range (Y/N) Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%m/m	CLAY LOAM	Y	Y	Y	Y	Y	Y
Maximum coarse fragment content:	>2mm	%m/m	4.20	Y	Y	Y	Y	Y	Y
	>20mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	>50mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
Mass loss on ignition		%	6.20						
	Clay 5-20%		-	-	-	-	-	-	-
	Clay 20-35%		Y	Y	Y	Y	Y	Y	Y
Soil pH:		pH	8.20	Y	N	Y	Y	N	Y
Carbonate:		%m/m	6.40	-	-	Y	-	-	Y
Available plant nutrients	Nitrogen	%m/m	0.24	Y	Y	Y	-	-	-
	Extractable Phosphate (as P)	mg/l	42.00	Y	Y	Y	N	N	N
	Extractable Potassium	mg/l	354.00	Y	Y	Y	-	-	-
	Extractable Magnesium	mg/l	120.00	Y	Y	Y	-	-	-
Carbon: Nitrogen Ratio:		:1	15.00	Y	Y	Y	Y	Y	Y
Conductivity		us/cm	2200.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	84.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	36.00	Y	Y	Y	Y	Y	Y
	** Total Nickel	mg/kg	20.00	Y	Y	Y	Y	Y	Y
Visible contaminants:	>2mm	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Plastics	%m/m	0.00	Y	Y	Y	Y	Y	Y
	Sharps	no. in 1 kg	0.00	Y	Y	Y	Y	Y	Y
Compliancy:				Pass	Fail	Pass	Fail	Fail	Fail

Results are expressed on a dry weight basis, after correction for moisture content where applicable
Stated limits are for guidance only and I2 cannot be held responsible for any discrepencies with current legislation

** = MCERTS accrediited

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52909
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2791493	14223	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52909
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing in Soil	See attached geotechnical report	See attached geotechnical report		W	NONE
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Textural Classification Diagram	Textural classification Diagram	BS3882:2015		D	NONE
Carbon to Nitrogen Ratio (Topsoil - BS3882:2015)	Carbon to Nitrogen ratio (:1) calculated using Loss on Ignition.	BS3882:2015	L01TS2015	W	NONE
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and colorimetric determination.	In house method based on BS 7755-3.7:1995 &	L087-PL	D	NONE
Topsoil		BS 3882: 2015	PL		NONE
Mass loss on ignition (Topsoil - BS3882)	Determination of Loss on Ignition as per BS 3882:2015.	BS3882:2015	L047-PL	D	NONE
Carbonate (Topsoil - BS3882)	Determination of Carbonate as per BS 3882:2015.	BS3882:2015	L034-PL	D	NONE
Phosphorus as PO4 (BS3882/BS8601)	Determiation of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.	BS3882:2015 & BS8601:2013	L048-PL	D	NONE
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L01TS	D	NONE
Nitrogen (TKN)	Determination of total nitrogen by Kjeldahl method.	BS3882:2007	L087-PL	D	NONE
Conductivity (BS3882/BS8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
pH (BS3882/BS8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L099-PL	D	NONE
Extractable/Available Metals (BS3882/BS8601)	Determiation of the extractable metals in soil, in accordance with BS3882:2007 methodology.	BS3882:2007 & BS8601:2013	L038-PL	D	NONE
Sodium (exchangeable %)	Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.	BS3882:2007	L038-PL	D	NONE

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52909
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Textural Classification	Determination of the textural classifcation of soil following BS3882:2015 methodology.	BS3882:2015 & BS8601:2013	L01TS	D	NONE

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52909

Project / Site name: The Haulage Yard, Dial Post RH13 8NY

This deviation report indicates the sample and test deviations that apply to the samples submitted for analysis.Please note
Key: a - No sampling date b - Incorrect container c - Holding time d - Headspace e - Temperature

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
14223	None Supplied	S	2791493	c	Carbon to Nitrogen Ratio	L01TS2015	c

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

TEST CERTIFICATE

SPECIFICATION FOR TOPSOIL
Tested in Accordance with: BS 3882: 2015

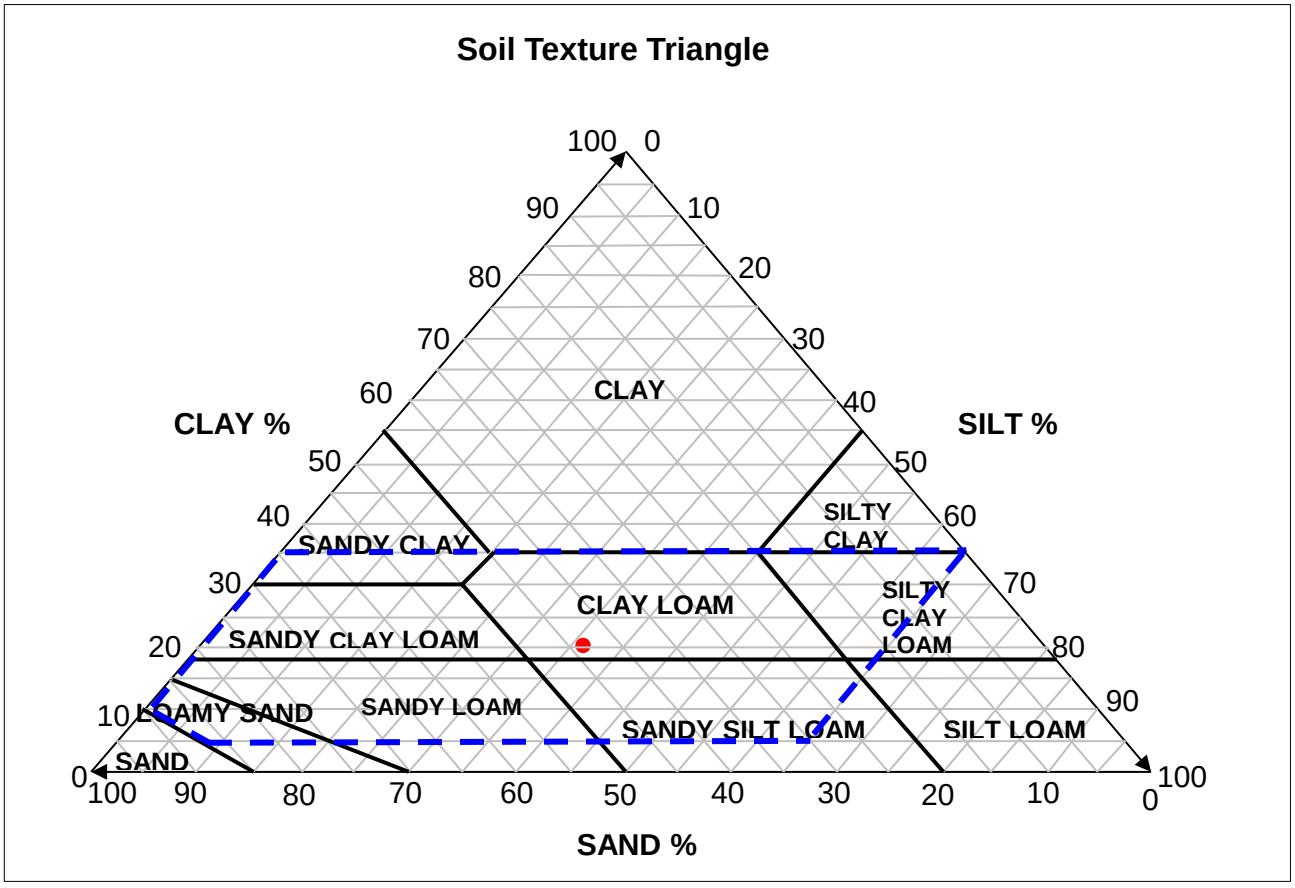
i2 Analytical Ltd
7 Woodshots Meadow
Croxley Green Business Park
Watford Herts WD18 8YS

Client:	Southern Testing Laboratories Ltd	Client Reference:	GL8635
Client Address:	Keeble House, Stuart Way, East Grinstead, West Sussex, RH19 4QA	Job Number:	23-52909-1
		Date Sampled:	16/08/2023
		Date Received:	24/08/2023
Contact:	Timon Greenwood	Date Tested:	29/08/2023
Site Address:	The Haulage Yard, Dial Post RH13 8NY	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2791493	Depth Top [m]:	0.00
Hole No.:	14223	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	CLAY LOAM		



Sample Proportion	% dry mass
Sand	44.0
Silt	34.6
Clay	21.4

Texture within acceptable area (Y/N) Y

Remarks:

Opinions and interpretations expressed herein are outside of the scope of the UKAS Accreditation. This report may not be reproduced other than in full without the prior written approval of the issuing laboratory. The results included within the report relate only to the sample(s) submitted for testing.

Signed: [redacted]

Katarzyna Koziel
Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 05/09/2023

GF 286.10

Timon Greenwood
Southern Testing Laboratories Ltd
Keeble House
Stuart Way
East Grinstead
West Sussex
RH19 4QA

t: 01342 333100
f: 01342 410321
e: contamresults@southerntesting.co.uk

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

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

Analytical Report Number : 23-52907

Project / Site name:	The Haulage Yard, Dial Post RH13 8NY	**Samples received on:**	24/08/2023
Your job number:	GL8635	**Samples instructed on/ Analysis started on:**	24/08/2023
Your order number:	GL8635 2	**Analysis completed by:**	04/09/2023
Report Issue Number:	1	**Report issued on:**	05/09/2023
Samples Analysed:	1 soil sample		

[redacted]

Signed:

Anna Goc
PL Head of Reporting Team
For & on behalf of i2 Analytical Ltd.

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

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

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

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

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

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY
Your Order No: GL8635 2

Lab Sample Number				2791488
Sample Reference				14223
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				16/08/2023
Time Taken				0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Stone Content	%	0.1	NONE	< 0.1
Moisture Content	%	0.01	NONE	14
Total mass of sample received	kg	0.001	NONE	1.2

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.2
Total Cyanide	mg/kg	1	MCERTS	< 1.0
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.136
Sulphide	mg/kg	1	MCERTS	< 1.0
Organic Matter (automated)	%	0.1	MCERTS	5.1

Total Phenols

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

Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.09
Acenaphthene	mg/kg	0.05	MCERTS	0.11
Fluorene	mg/kg	0.05	MCERTS	0.09
Phenanthrene	mg/kg	0.05	MCERTS	1.1
Anthracene	mg/kg	0.05	MCERTS	0.24
Fluoranthene	mg/kg	0.05	MCERTS	2.8
Pyrene	mg/kg	0.05	MCERTS	2.4
Benzo(a)anthracene	mg/kg	0.05	MCERTS	1.6
Chrysene	mg/kg	0.05	MCERTS	1.6
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	2.1
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.94
Benzo(a)pyrene	mg/kg	0.05	MCERTS	1.7
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.85
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.22
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	1.1

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	16.8

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY
Your Order No: GL8635 2

Lab Sample Number				2791488
Sample Reference				14223
Sample Number				None Supplied
Depth (m)				None Supplied
Date Sampled				16/08/2023
Time Taken				0900
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**	
Heavy Metals / Metalloids				
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	12
Boron (water soluble)	mg/kg	0.2	MCERTS	2
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	20
Copper (aqua regia extractable)	mg/kg	1	MCERTS	53
Lead (aqua regia extractable)	mg/kg	1	MCERTS	51
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	20
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	32
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	85
Petroleum Hydrocarbons				
TPH C10 - C40 $_{EH_CU_1D_TOTAL}$	mg/kg	10	MCERTS	93
TPH2 (C6 - C10) $_{HS_1D_TOTAL}$	mg/kg	0.1	NONE	< 0.1
TPH C6 - C40 $_{EH_CU+HS_CU_1D_TOTAL}$	mg/kg	10	NONE	93

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

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

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2791488	14223	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Asbestos identification in soil	Asbestos Identification with the use of polarised light microscopy in conjunction with dispersion staining techniques.	In house method based on HSG 248	A001-PL	D	ISO 17025
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
TPH2 (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	NONE
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	In house method.	L009-PL	D	MCERTS
Hexavalent chromium in soil	Determination of hexavalent chromium in soil by extraction in NaOH and addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
TPH C6 - C40 (soil)	Determination of TPH bands by HS-GC-MS/GC-FID	TPH> C10 Dry soil n-house method with silica gel split/clean up. TPH <C10 by Wet by HS-GC-MS	L088/L076		NONE

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

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

Information in Support of Analytical Results

List of HWOL Acronyms and Operators

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

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 23-52907
Project / Site name: The Haulage Yard, Dial Post RH13 8NY

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

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

Sample ID	Other ID	Sample Type	Lab Sample Number	Sample Deviation	Test Name	Test Ref	Test Deviation
14223	None Supplied	S	2791488	bc	Sulphide in soil	L010-PL	c
14223	None Supplied	S	2791488	bc	TPH2 (Soil)	L088-PL	b
14223	None Supplied	S	2791488	bc	Total cyanide in soil	L080-PL	c

This certificate should not be reproduced, except in full, without the express permission of the laboratory.
The results included within the report relate only to the sample(s) submitted for testing.