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DETS Report No: 23-03826

Site Reference: Buckingham Road, Heaton Moor

Project / Job Ref: A4908

Order No: A4908/DS/01

Sample Receipt Date: 17/03/2023

Sample Scheduled Date: 17/03/2023

Report Issue Number: 1

Reporting Date: 28/03/2023

Authorised by:

Ela Mysiara
Quality Manager

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

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Soil Analysis Certificate

DETS Report No: 23-03826	Date Sampled	15/03/23	15/03/23		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Buckingham Road, Heaton Moor	TP / BH No	T1	T2		
Project / Job Ref: A4908	Additional Refs	None Supplied	None Supplied		
Order No: A4908/DS/01	Depth (m)	0.05	0.05		
Reporting Date: 28/03/2023	DETS Sample No	641609	641610		

Determinand	Unit	RL	Accreditation	(n)	(n)
Asbestos Screen ^(S)	N/a	N/a	ISO17025	Not Detected	Not Detected
pH	pH Units	N/a	ISO17025	7.8	7.6
Total Cyanide	mg/kg	< 1	NONE	< 1	< 1
Complex Cyanide	mg/kg	< 1	NONE	< 1	< 1
Free Cyanide	mg/kg	< 1	NONE	< 1	< 1
Total Sulphate as SO ₄	mg/kg	< 200	ISO17025	1102	< 200
Total Sulphate as SO ₄	%	< 0.02	ISO17025	0.11	< 0.02
W/S Sulphate as SO ₄ (2:1)	mg/l	< 10	ISO17025	< 10	< 10
W/S Sulphate as SO ₄ (2:1)	g/l	< 0.01	ISO17025	< 0.01	< 0.01
Sulphide	mg/kg	< 5	NONE	< 5	< 5
Organic Matter (SOM)	%	< 0.1	ISO17025	12.4	11.8
Arsenic (As)	mg/kg	< 2	ISO17025	3	3
Barium (Ba)	mg/kg	< 2.5	ISO17025	38	4
Beryllium (Be)	mg/kg	< 0.5	ISO17025	< 0.5	< 0.5
W/S Boron	mg/kg	< 1	NONE	< 1	< 1
Cadmium (Cd)	mg/kg	< 0.2	ISO17025	1.8	0.2
Chromium (Cr)	mg/kg	< 2	ISO17025	< 2	< 2
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2
Copper (Cu)	mg/kg	< 4	ISO17025	< 4	< 4
Lead (Pb)	mg/kg	< 3	ISO17025	11	7
Mercury (Hg)	mg/kg	< 1	ISO17025	< 1	< 1
Nickel (Ni)	mg/kg	< 3	ISO17025	< 3	< 3
Selenium (Se)	mg/kg	< 2	ISO17025	< 2	< 2
Vanadium (V)	mg/kg	< 1	ISO17025	2	2
Zinc (Zn)	mg/kg	< 3	ISO17025	3620	821
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2
EPH (C10 - C40) : EH 1D Total	mg/kg	< 6	ISO17025	< 6	823

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)

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Soil Analysis Certificate - Speciated PAHs					
DETS Report No: 23-03826		Date Sampled	15/03/23	15/03/23	
Earth Environmental & Geotechnical Ltd		Time Sampled	None Supplied	None Supplied	
Site Reference: Buckingham Road, Heaton Moor		TP / BH No	T1	T2	
Project / Job Ref: A4908		Additional Refs	None Supplied	None Supplied	
Order No: A4908/DS/01		Depth (m)	0.05	0.05	
Reporting Date: 28/03/2023		DETS Sample No	641609	641610	

Determinand	Unit	RL	Accreditation	(n)	(n)
Naphthalene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Acenaphthylene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Acenaphthene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Fluorene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Phenanthrene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Anthracene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Fluoranthene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Pyrene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Benzo(a)anthracene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Chrysene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Benzo(b)fluoranthene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Benzo(k)fluoranthene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Benzo(a)pyrene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Dibenz(a,h)anthracene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Benzo(ghi)perylene	mg/kg	< 0.1	ISO17025	< 0.1	< 0.1
Total EPA-16 PAHs	mg/kg	< 1.6	ISO17025	< 1.6	< 1.6

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Soil Analysis Certificate - TPH CWG Banded

DETS Report No: 23-03826	Date Sampled	15/03/23	15/03/23		
Earth Environmental & Geotechnical Ltd	Time Sampled	None Supplied	None Supplied		
Site Reference: Buckingham Road, Heaton Moor	TP / BH No	T1	T2		
Project / Job Ref: A4908	Additional Refs	None Supplied	None Supplied		
Order No: A4908/DS/01	Depth (m)	0.05	0.05		
Reporting Date: 28/03/2023	DETS Sample No	641609	641610		

Determinand	Unit	RL	Accreditation	(n)			
Aliphatic >C5 - C6 : HS_1D_MS_AL	mg/kg	< 0.01	NONE	< 0.01	< 0.01		
Aliphatic >C6 - C8 : HS_1D_MS_AL	mg/kg	< 0.05	NONE	< 0.05	< 0.05		
Aliphatic >C8 - C10 : EH_CU_1D_AL	mg/kg	< 2	ISO17025	< 2	< 2		
Aliphatic >C10 - C12 : EH_CU_1D_AL	mg/kg	< 2	ISO17025	9	< 2		
Aliphatic >C12 - C16 : EH_CU_1D_AL	mg/kg	< 3	ISO17025	13	24		
Aliphatic >C16 - C21 : EH_CU_1D_AL	mg/kg	< 3	ISO17025	< 3	552		
Aliphatic >C21 - C34 : EH_CU_1D_AL	mg/kg	< 10	ISO17025	< 10	2538		
Aliphatic (C5 - C34) : HS_1D_MS+EH_CU_1D_AL	mg/kg	< 21	NONE	22	3114		
Aromatic >C5 - C7 : HS_1D_MS_AR	mg/kg	< 0.01	NONE	< 0.01	< 0.01		
Aromatic >C7 - C8 : HS_1D_MS_AR	mg/kg	< 0.05	NONE	< 0.05	< 0.05		
Aromatic >C8 - C10 : EH_CU_1D_AR	mg/kg	< 2	ISO17025	< 2	< 2		
Aromatic >C10 - C12 : EH_CU_1D_AR	mg/kg	< 2	ISO17025	< 2	< 2		
Aromatic >C12 - C16 : EH_CU_1D_AR	mg/kg	< 2	ISO17025	< 2	< 2		
Aromatic >C16 - C21 : EH_CU_1D_AR	mg/kg	< 3	ISO17025	< 3	149		
Aromatic >C21 - C35 : EH_CU_1D_AR	mg/kg	< 10	ISO17025	< 10	1852		
Aromatic (C5 - C35) : HS_1D_MS+EH_CU_1D_AR	mg/kg	< 21	NONE	< 21	2001		
Total >C5 - C35 : HS_1D_MS+EH_CU_1D_Tot	mg/kg	< 42	NONE	< 42	5115		

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Soil Analysis Certificate - BTEX / MTBE					
DETS Report No: 23-03826		Date Sampled		15/03/23	15/03/23
Earth Environmental & Geotechnical Ltd		Time Sampled		None Supplied	None Supplied
Site Reference: Buckingham Road, Heaton Moor		TP / BH No		T1	T2
Project / Job Ref: A4908		Additional Refs		None Supplied	None Supplied
Order No: A4908/DS/01		Depth (m)		0.05	0.05
Reporting Date: 28/03/2023		DETS Sample No		641609	641610

Determinand	Unit	RL	Accreditation	(n)	(n)
Benzene : HS 1D MS	ug/kg	< 2	ISO17025	< 2	< 2
Toluene : HS 1D MS	ug/kg	< 5	ISO17025	< 5	< 5
Ethylbenzene : HS 1D MS	ug/kg	< 2	ISO17025	< 2	< 2
p & m-xylene : HS 1D MS	ug/kg	< 2	ISO17025	< 2	< 2
o-xylene : HS 1D MS	ug/kg	< 2	ISO17025	< 2	< 2
MTBE : HS 1D MS	ug/kg	< 5	ISO17025	< 5	< 5

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Soil Analysis Certificate - Sample Descriptions

DETS Report No: 23-03826	
Earth Environmental & Geotechnical Ltd	
Site Reference: Buckingham Road, Heaton Moor	
Project / Job Ref: A4908	
Order No: A4908/DS/01	
Reporting Date: 28/03/2023	

DETS Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
641609	T1	None Supplied	0.05	7.9	Black tar with plastic
641610	T2	None Supplied	0.05	9.1	Black tar with plastic

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample ^{1/5}

Unsuitable Sample ^{U/5}

Soil Analysis Certificate - Methodology & Miscellaneous Information

DETS Report No: 23-03826

Earth Environmental & Geotechnical Ltd

Site Reference: Buckingham Road, Heaton Moor

Project / Job Ref: A4908

Order No: A4908/DS/01

Reporting Date: 28/03/2023

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 diphénylcarbazide 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

List of HWOL Acronyms and Operators
DETS Report No: 23-03826
Earth Environmental & Geotechnical Ltd
Site Reference: Buckingham Road, Heaton Moor
Project / Job Ref: A4908
Order No: A4908/DS/01
Reporting Date: 28/03/2023

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
Benzene - HS_1D_MS
EPH (C10 - C40) - EH_1D_Total
Ethylbenzene - HS_1D_MS
MTBE - HS_1D_MS
TPH CWG - Aliphatic >C10 - C12 - EH_CU_1D_AL
TPH CWG - Aliphatic >C12 - C16 - EH_CU_1D_AL
TPH CWG - Aliphatic >C16 - C21 - EH_CU_1D_AL
TPH CWG - Aliphatic >C21 - C34 - EH_CU_1D_AL
TPH CWG - Aliphatic >C5 - C6 - HS_1D_MS_AL
TPH CWG - Aliphatic >C6 - C8 - HS_1D_MS_AL
TPH CWG - Aliphatic >C8 - C10 - EH_CU_1D_AL
TPH CWG - Aliphatic C5 - C34 - HS_1D_MS+EH_CU_1D_AL
TPH CWG - Aromatic >C10 - C12 - EH_CU_1D_AR
TPH CWG - Aromatic >C12 - C16 - EH_CU_1D_AR
TPH CWG - Aromatic >C16 - C21 - EH_CU_1D_AR
TPH CWG - Aromatic >C21 - C35 - EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C35 - HS_1D_MS+EH_CU_1D_AR
TPH CWG - Aromatic >C5 - C7 - HS_1D_MS_AR
TPH CWG - Aromatic >C7 - C8 - HS_1D_MS_AR
TPH CWG - Aromatic >C8 - C10 - EH_CU_1D_AR
TPH CWG - Total >C5 - C35 - HS_1D_MS+EH_CU_1D_Total
Toluene - HS_1D_MS
m & p-xylene - HS_1D_MS
o-Xylene - HS_1D_MS