

Date: 30th April 2025
Reference: 17-659-V1

COVER SYSTEM VALIDATION – KNOWSLEY EAST HUB

Project Name:	Knowsley East Hub
Project Number:	17-659
Client:	Portal Construction
Date:	23-04-2025
Project Manager:	R. Hodnett
E3P Engineer:	Z. Galvin
Plots:	POS 101-105

OVERVIEW

An E3P engineer attended the above site to validate the thickness of the cover system placed within the landscaped areas at the site known as Knowsley East Hub located off Gale Road, Knowlsey.

Five hand-excavated trial pits were advanced, with the resulting strata detailed at the rear of this letter.

All trial pits were completed to highlight the required cover system of 300 mm (300 mm topsoil).

E3P can confirm that our independent validation demonstrates that all landscaped areas have been installed with 300 mm of certified topsoil.





TOPSOIL

E3P attended the site on 4th March 2025 to obtain three samples of the topsoil deposits which were analysed following the E3P Remediation Strategy. Chemical analysis confirmed that these topsoil deposits were chemically suitable for use within the proposed landscaped areas.

A total of 80 tonnes of topsoil has been imported from Tiger Trailers, Alan Cartwright House, Road One, Winsford, CW7 3RL.

Analysis for topsoil undertaken by Eurofins Chemtest using UKAS accredited methods where applicable.

The chemical analysis suite comprises heavy metals, sulphates, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAHs), speciated and total Petroleum Hydrocarbons (TPH) and asbestos. The sampling frequency follows the agreed Remediation Strategy.

Chemical analysis results are included within lab report 25-07533 (attached to this letter).

The cover system validation photographs are enclosed within this letter.



POS (public open space) Cover System Validation

Score	30 / 30 (100%)	Flagged items	0	Actions	0
Site Name	Knowsley east hub				
Location	South Boundary Road, Knowsley Industrial Park Liverpool England L33 United Kingdom (53.473462559550384, - 2.8561125648075265)				
Project Number	17659				
Developer	Knowsley Hub				
Project Manager	Rebecca Hodnett				
Conducted By	Zak Galvin				
Date of visit	23 Apr 2025 9:11 AM BST				
Subsoil/Topsoil Material Source (If the site manager can't supply you with detail of where the soil is sourced STOP THE INSPECTION and call the PM)					
Where has the Subsoil been sourced	N/A				
Where has the Topsoil been sourced	Tiger trailers Winsford				



Plot Validation 1		6 / 6 (100%)
What Three Words location		///brambles.fail.caressed https://w3w.co/brambles.fail.caressed
POS 101		
Is Location Ready	Yes	
Installation Standard	Pass	
Depth of Cover System Materials (record the depth and support with Photo down the hole)		350
  Photo 1 Photo 2		
Depth of Topsoil (mm)		350
Depth of Subsoil (mm)		
Depth of Cover System at Ground Level (Photo)		☒
  Photo 3 Photo 4		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)		☒
  Photo 5 Photo 6		
Soil suitable (Must be free from Brick, concrete, wood, plastics, glass, metal and anything none natural) if identified contact PM and take photos.		Yes
Geotextile membrane present		N/A



Plot Validation 2		6 / 6 (100%)
What Three Words location POS 102		///prepped.elder.sigh https://w3w.co/prepped.elder.sigh
Is Location Ready	Yes	
Installation Standard	Pass	
Depth of Cover System Materials (record the depth and support with Photo down the hole)		300
   Photo 7 Photo 8 Photo 9		
Depth of Topsoil (mm)		300
Depth of Subsoil (mm)		
Depth of Cover System at Ground Level (Photo)		☒
   Photo 10 Photo 11 Photo 12		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)		☒
   Photo 13 Photo 14 Photo 15		
Soil suitable (Must be free from Brick, concrete, wood, plastics, glass, metal and anything none natural) if identified contact PM and take photos.		Yes
Geotextile membrane present		N/A



Plot Validation 3		6 / 6 (100%)
What Three Words location POS 103		///hippy.marmalade.steroids https://w3w.co/hippy.marmalade.steroids
Is Location Ready	Yes	
Installation Standard	Pass	
Depth of Cover System Materials (record the depth and support with Photo down the hole)		380
    Photo 16 Photo 17 Photo 18 Photo 19		
Depth of Topsoil (mm)	380	
Depth of Subsoil (mm)		
Depth of Cover System at Ground Level (Photo)	☒	
   Photo 20 Photo 21 Photo 22		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒	
   Photo 23 Photo 24 Photo 25		
Soil suitable (Must be free from Brick, concrete, wood, plastics, glass, metal and anything none natural) if identified contact PM and take photos.	Yes	
Geotextile membrane present	N/A	



Plot Validation 4		6 / 6 (100%)
What Three Words location		https://www.dweller.skimmers.envy.co.uk/what-three-words/location/104
POS 104		
Is Location Ready	Yes	
Installation Standard	Pass	
Depth of Cover System Materials (record the depth and support with Photo down the hole)		400
    Photo 26 Photo 27 Photo 28 Photo 29		
Depth of Topsoil (mm)		400
Depth of Subsoil (mm)		
Depth of Cover System at Ground Level (Photo)		☒
    Photo 30 Photo 31 Photo 32 Photo 33		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)		☒
   Photo 34 Photo 35 Photo 36		
Soil suitable (Must be free from Brick, concrete, wood, plastics, glass, metal and anything none natural) if identified contact PM and take photos.		Yes
Geotextile membrane present		N/A



Plot Validation 5		6 / 6 (100%)
What Three Words location POS 105		///untruth.rational.avoid https://w3w.co/untruth.rational.avoid
Is Location Ready	Yes	
Installation Standard	Pass	
Depth of Cover System Materials (record the depth and support with Photo down the hole)		300
    Photo 37 Photo 38 Photo 39 Photo 40		
Depth of Topsoil (mm)	300	
Depth of Subsoil (mm)		
Depth of Cover System at Ground Level (Photo)		☒
   Photo 41 Photo 42 Photo 43		
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)		☒
   Photo 44 Photo 45 Photo 46		
Soil suitable (Must be free from Brick, concrete, wood, plastics, glass, metal and anything none natural) if identified contact PM and take photos.		Yes
Geotextile membrane present	N/A	



Site Manager or Representative

Name

Nigel Andrews

Signature

23 Apr 2025 9:06 AM BST



Media summary



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5



Photo 6



Photo 7



Photo 8



Photo 9



Photo 10



Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18



Photo 19



Photo 20



Photo 21



Photo 22



Photo 23



Photo 24



Photo 25



Photo 26



Photo 27



Photo 28



Photo 29



Photo 30



Photo 31



Photo 32



Photo 33



Photo 34



Photo 35



Photo 36



Photo 37



Photo 38



Photo 39



Photo 40



Photo 41



Photo 42



Photo 43



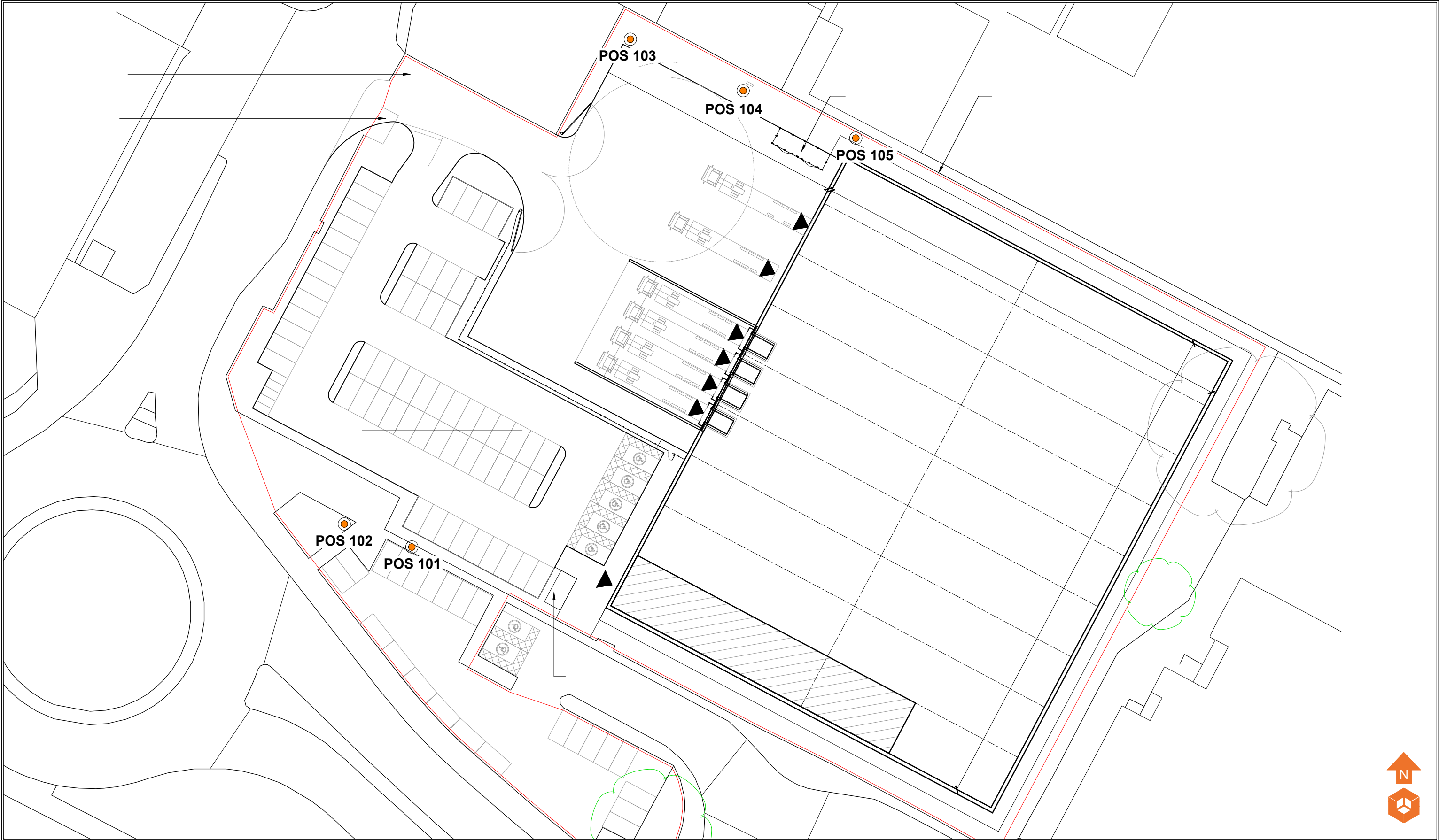
Photo 44



Photo 45



Photo 46



Location Symbols
Approximate POS Depth Validation Locations

Notes:

Client:

Redsun / Portal
Construction

Job No:	17-659	Date:	29.04.2025
Drawing No:	031	Scale:	NTS



Environmental Engineering
Partnership Ltd
Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
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Website: www.e3p.co.uk

P1	REVA	29.04.2025	TG	ID	RH
Phase	Issue	Date	Drawn	Checked	PM

Job Title:

Knowsley East
Hub

Drawing Title:

POS Depth Validation
Location Plan

The client must not amend any drawing, design or other intellectual property produced by E3P Ltd without permission in writing from E3P Ltd in advance of any amendments being made. In the event that such written permission is not obtained in advance of the amendments being made, E3P Ltd shall not be liable for any damage and/or losses occurring as a result of the amended drawing, design or intellectual property.



Final Report

Report No.: 25-07533-1

Initial Date of Issue: 19-Mar-2025

Re-Issue Details:

Client E3P

Client Address: Taylor Road
Trafford Park
Urmston
Manchester
M41 7JQ

Contact(s): rhodnett@e3p.co.uk

Project Knowsley East Hub

Quotation No.: **Date Received:** 05-Mar-2025

Order No.: 010693 **Date Instructed:** 05-Mar-2025

No. of Samples: 3

Turnaround (Wkdays): 5 **Results Due:** 11-Mar-2025

Date Approved: 19-Mar-2025

Approved By:

Details: David Smith, Technical Director

For details about application of accreditation to specific matrix types, please refer to the Table at the back of this report

Results - Soil

Project: Knowsley East Hub

Client: E3P		Chemtest Job No.:				25-07533	25-07533	25-07533
Quotation No.:		Chemtest Sample ID.:				1942496	1942497	1942498
Order No.: 010693		Client Sample Ref.:				TS101	TS102	TS103
		Client Sample ID.:				TS101	TS102	TS103
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				04-Mar-2025	04-Mar-2025	04-Mar-2025
		Time Sampled:				12:00	12:00	12:00
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
ACM Type		N	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	16	15	15
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Roots	Roots	Roots
Soil Texture		N	2040		N/A	Loam	Clay	Clay
pH at 20C		M	2010		4.0	7.4	7.8	7.8
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	< 0.010	0.029	0.021
Total Sulphur		U	2175	%	0.010	0.020	0.020	0.010
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	4.7	3.3	2.5
Sulphate (Total)		U	2430	%	0.010	0.062	0.086	0.075
Arsenic		M	2455	mg/kg	0.5	6.9	8.0	8.1
Cadmium		M	2455	mg/kg	0.10	0.15	0.24	0.20
Chromium		M	2455	mg/kg	0.5	15	22	21
Copper		M	2455	mg/kg	0.50	14	18	17
Mercury		M	2455	mg/kg	0.05	0.05	0.06	0.05
Nickel		M	2455	mg/kg	0.50	11	17	16
Lead		M	2455	mg/kg	0.50	30	36	34
Selenium		M	2455	mg/kg	0.25	< 0.25	0.31	0.29
Zinc		M	2455	mg/kg	0.50	44	60	56
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Organic Matter		M	2625	%	0.40	1.6	1.3	1.2
Total Organic Carbon		M	2625	%	0.20	0.90	0.77	0.72
TPH >C6-C8	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C8-C10	EH_1D_Total	N	2670	mg/kg	1.0	7.1	1.4	1.5
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	2.3	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	2.1	2.0	4.1
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	3.9	4.1	5.8
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	6.7	6.2	6.1
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	9.4	4.9	11
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	1.4	1.4	1.5
Total TPH >C6-C40	EH_1D_Total	U	2670	mg/kg	10	33	20	31
Naphthalene		M	2800	mg/kg	0.10	0.92	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	0.23	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	0.15	< 0.10	< 0.10

Results - Soil

Project: Knowsley East Hub

Client: E3P		Chemtest Job No.:				25-07533	25-07533	25-07533
Quotation No.:		Chemtest Sample ID.:				1942496	1942497	1942498
Order No.: 010693		Client Sample Ref.:				TS101	TS102	TS103
		Client Sample ID.:				TS101	TS102	TS103
		Sample Type:				SOIL	SOIL	SOIL
		Date Sampled:				04-Mar-2025	04-Mar-2025	04-Mar-2025
		Time Sampled:				12:00	12:00	12:00
		Asbestos Lab:				NEW-ASB	NEW-ASB	NEW-ASB
Determinand	HWOL Code	Accred.	SOP	Units	LOD			
Phenanthrene		M	2800	mg/kg	0.10	0.27	< 0.10	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.15	< 0.10	< 0.10
Pyrene		M	2800	mg/kg	0.10	0.18	< 0.10	< 0.10
Benzo[a]anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chrysene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[b]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[k]fluoranthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[a]pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Indeno(1,2,3-c,d)Pyrene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Dibenz(a,h)Anthracene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Benzo[g,h,i]perylene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Total Of 16 PAH's		N	2800	mg/kg	2.0	< 2.0	< 2.0	< 2.0
Total Phenols		M	2920	mg/kg	0.10	0.18	0.14	0.19

Test Methods

SOP	Title	Parameters included	Method summary	Water Accred.
2010	pH Value of Soils	pH at 20°C	pH Meter	
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <30°C.	
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930	
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES	
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry	
2300	Cyanides & Thiocyanate in Soils	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Alkaline extraction followed by colorimetric determination using Automated Flow Injection Analyser.	
2325	Sulphide in Soils	Sulphide	Steam distillation with sulphuric acid / analysis by 'Aquakem 600' Discrete Analyser, using N,N-dimethyl-p-phenylenediamine.	
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.	
2455	Acid Soluble Metals in Soils	Metals, including: Arsenic; Barium; Beryllium; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Vanadium; Zinc	Acid digestion followed by determination of metals in extract by ICP-MS.	
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazine.	
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.	
2670	Total Petroleum Hydrocarbons (TPH) in Soils by GC-FID	TPH (C6–C40); optional carbon banding, e.g. 3-band – GRO, DRO & LRO*TPH C8–C40	Dichloromethane extraction / GC-FID	
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS	
2920	Phenols in Soils by HPLC	Phenolic compounds including Resorcinol, Phenol, Methylphenols, Dimethylphenols, 1-Naphthol and TrimethylphenolsNote: chlorophenols are excluded.	60:40 methanol/water mixture extraction, followed by HPLC determination using electrochemical detection.	

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

This report shall not be reproduced except in full, and only with the prior approval of the laboratory.

Any comments or interpretations are outside the scope of UKAS accreditation.

The Laboratory is not accredited for any sampling activities and reported results relate to the samples 'as received' at the laboratory.

Uncertainty of measurement for the determinands tested are available upon request .

None of the results in this report have been recovery corrected.

All results are expressed on a dry weight basis.

The following tests were analysed on samples 'as received' and the results subsequently corrected to a dry weight basis EPH, VPH, TPH, BTEX, VOCs, SVOCs, PCBs, Phenols.

For all other tests the samples were dried at $\leq 30^{\circ}\text{C}$ prior to analysis.

All Asbestos testing is performed at the indicated laboratory .

Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1.

NEW_ASB	Eurofins Chemtest Limited, 11 Depot Road, Newmarket, CB8 0AL
DURHAM	Eurofins Chemtest Limited, Unit A North Wing, Prospect Business Park, Crookhall Lane, Consett, Co Durham, DH8 7PW

Sample Deviation Codes

As a result of any of the below deviations applying, the test results may be unreliable

A - Date of sampling not supplied

B - Sample age exceeds stability time (sampling to extraction)

C - Sample not received in appropriate containers

D - Broken Container

E - The required amount of sample for analysis was not received

H - Appropriate cooling measures were not taken for sample transportation

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt.

All water samples will be retained for 14 days from the date of receipt.

Charges may apply to extended sample storage.

Report Information

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable
PL - Prepared Leachate
PW - Processed Water
RE - Recreational Water
SA - Saline Water
SW - Surface Water
TE - Treated Effluent
TS - Treated Sewage
UL - Unspecified Liquid

Clean Up Codes

NC - No Clean Up
MC - Mathematical Clean Up
FC - Florisil Clean Up

HWOL Acronym System

HS - Headspace analysis
EH - Extractable hydrocarbons – i.e. everything extracted by the solvent
CU - Clean-up – e.g. by Florisil, silica gel
1D - GC – Single coil gas chromatography
Total - Aliphatics & Aromatics
AL - Aliphatics only
AR - Aromatic only
2D - GC-GC – Double coil gas chromatography
#1 - EH_2D_Total but with humics mathematically subtracted
#2 - EH_2D_Total but with fatty acids mathematically subtracted
+ - Operator to indicate cumulative e.g. EH+EH_Total or EH_CU+HS_Total

Asbestos Tests LOD = LOQ

Limit of Detection = Limit of Quantification for asbestos results only

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com