Date: 22nd May 2024
Reference: 17-440 V2-Rev 1

GARDEN VALIDATION – DOWNLEY DRIVE

Project Name:	Downley Drive, Manchester
Project Number:	17-440
Client:	Rowlinson Construction Ltd
Date:	23-04-2024
Project Manager:	N. Sellars
E3P Engineer:	T. Preston
Plots:	1-11

OVERVIEW

An E3P engineer attended the above site to validate the thickness of the cover system placed within the rear garden of plots 1-11 at the site located off Downley Drive, Manchester.

In total eleven 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 600 mm (600 mm topsoil) underlain by a suitable geotextile.

E3P can confirm that our independent validation demonstrates that all gardens have been installed with 600 mm of certified topsoil under the NHBC requirements for a site of this nature.

A list of plots requiring validation and their associated validation letters is presented in Table 1 for reference.

TOPSOIL

E3P attended site on the 22nd February 2024 to obtain three samples of the imported topsoil. Three further samples were collected on 23rd April 2024. The topsoil was sourced from Baldwin's Landscape Supplies, Landgate Farm, Wigan. Chemical analysis confirmed that these topsoil deposits were chemically suitable for use within the proposed garden areas.

Analysis for topsoil undertaken by I2 Analytical Laboratory 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.

Sampling frequency following the agreed Remediation Strategy at 1 sample per 50 m3. Approximately 300 m3 of topsoil has been imported to date.

Chemical analysis results are included within lab reports 24-005186 and 24-13131 (attached to this letter).

CHEMICAL ANALYSIS

TOPSOIL	SOURCE	LAB REFERENCE	SAMPLE REFERENCE	PASS/FAIL
Topsoil	Landgate Farm	24-005186	TS101 – Plot 23 TS102 – Plot 19 TS103 – Plot 15	Pass
Topsoil	Landgate Farm	24-13131	TS101 – Plot 10 TS102 – Plot 8 TS103 – Plot 5	Pass

The cover system validation photographs are enclosed within this letter. For information, Table 1 includes references and validation dates of previously validated plots.

Table 1 – Validation Letter Reference

PLOT NUMBER	DATE	REPORT REFERENCE
1	23rd April 2024	V2
2	23rd April 2024	V2
3	23rd April 2024	V2
4	23rd April 2024	V2
5	23rd April 2024	V2
6	23rd April 2024	V2
7	23rd April 2024	V2
8	23rd April 2024	V2
9	23rd April 2024	V2
10	23rd April 2024	V2
11	23rd April 2024	V2
12		
13		
14		
15	22nd February 2024	V1

PLOT NUMBER	DATE	REPORT REFERENCE
16	22nd February 2024	V1
17		
18	22nd February 2024	V1
19	22nd February 2024	V1
20	22nd February 2024	V1
21	22nd February 2024	V1
22	22nd February 2024	V1
23	22nd February 2024	V1

Garden Cover System Validation

	Complete
Score	(100%)
Site Name	Downley Drive
Location	10 St Vincent St Manchester England M4 United Kingdom (53.48491785110003, -2.222452836494558)
Project Number	17440
Developer	Rowlinson
Project Manager	Nicola Sellars
Conducted By	Tom Preston
Date of visit	23 Apr 2024 3:28 PM 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	Landgate Farm, Wigan

Plot Validation 1	6 / 6 (100%)
Plot Number	4
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 1

Photo 2

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 3

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 4

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	Yes

Photo 5

Plot Validation 2	6 / 6 (100%)
Plot Number	3
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 6

Photo 7

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 8

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 9

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

Photo 10

Plot Validation 3	6 / 6 (100%)
Plot Number	2
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 11

Photo 12

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 13

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 14

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	Yes

Photo 15

Plot Validation 4	6 / 6 (100%)
Plot Number	1
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 16

Photo 17

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 18

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 19

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	Yes

Photo 20

Plot Validation 5	6 / 6 (100%)
Plot Number	5
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600
Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒
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 – photo of geotextile from adjacent plot due to groundwater level	Yes

Photo 21

Photo 22

Photo 23

Photo 24

Photo 25

Plot Validation 6	6 / 6 (100%)
Plot Number	6
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600
Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒
Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒
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 – photo of geotextile from adjacent plot due to groundwater level	Yes

Photo 26

Photo 27

Photo 28

Photo 29

Photo 30

Site Manager or Representative	
Name	Jordan Hackland
Signature	

23 Apr 2024 3:35 PM 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

Garden Cover System Validation

	Complete
Score	(100%)
Site Name	Downley Drive
Location	17 Kingham Dr Manchester England M4 7JT United Kingdom (53.48544035542787, -2.2215820115669342)
Project Number	17440
Developer	Rowlinson
Project Manager	Nicola Sellars
Conducted By	Tom Preston
Date of visit	23 Apr 2024 2:56 PM 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	Landgate Farm

Plot Validation 1	6 / 6 (100%)
Plot Number	Plot 11
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 1

Photo 2

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 3

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 4

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	Yes

Photo 5

Photo 6

Plot Validation 2	6 / 6 (100%)
Plot Number	Plot 10
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 7

Photo 8

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 9

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 10

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	Yes

Photo 11

Plot Validation 3	6 / 6 (100%)
Plot Number	9
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 12

Photo 13

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 14

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

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	Yes

Photo 16

Plot Validation 4	6 / 6 (100%)
Plot Number	8
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 17

Photo 18

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 19

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

Photo 20

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	Yes

Photo 21

Plot Validation 5	6 / 6 (100%)
Plot Number	7
Is Plot Ready	Yes
Installation Standard	Pass
Depth of Cover System Materials (record the depth and support with Photo down the hole)	600

Photo 22

Photo 23

Depth of Topsoil (mm)	600
Depth of Subsoil (mm)	0
Depth of Cover System at Ground Level (Photo)	☒

Photo 24

Depth of Cover System in Relation to Plot (Ensure the whole plot can be seen in the photo)	☒

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	Yes

Photo 26

Site Manager or Representative

Name	Jordan Hackland
Signature	

23 Apr 2024 3:19 PM 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

e3p☐
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Manchester

e: Rhorseman@e3p.co.uk; nsellars@e3p.co.uk

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7 Woodshots Meadow,
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Herts,
WD18 8YS

t: 01923 225404
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e: reception@i2analytical.com

Analytical Report Number : 24-005186

Project / Site name:	Downley Drive	**Samples received on:**	23/02/2024
Your job number:	17440	**Samples instructed on/ Analysis started on:**	23/02/2024
Your order number:		**Analysis completed by:**	29/02/2024
Report Issue Number:	1	**Report issued on:**	01/03/2024
Samples Analysed:	3 soil samples		

Signed: JSzwagrzak

Joanna Szwagrzak
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 are representative of the samples submitted for analysis.

Analytical Report Number: 24-005186
Project / Site name: Downley Drive

Lab Sample Number				126748	126749	126750
Sample Reference				Plot 23 TS101	Plot 19 TS102	Plot 15 TS103
Sample Number				TS	TS	TS
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2024	22/02/2024	22/02/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	25	26	28
Total mass of sample received	kg	0.1	NONE	0.4	0.5	0.4
Asbestos						
Asbestos in Soil Detected/Not Detected	Type	N/A	ISO 17025	Not-detected	Not-detected	Not-detected
Asbestos Analyst ID	N/A	N/A	N/A	PDO	PDO	PDO
General Inorganics						
pH (L099)	pH Units	N/A	MCERTS	7.8	7.9	7.8
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO4	mg/kg	50	MCERTS	270	250	260
Water Soluble SO4 1hr extraction	mg/kg	2.5	MCERTS	42	42	48
Water Soluble SO4 (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	20.9	21.1	24.1
Sulphide	mg/kg	1	MCERTS	2.4	2.1	1.4
Total Sulphur	mg/kg	50	MCERTS	310	340	500
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	3.4	3.4	2.8
Total Phenols						
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Speciated PAHs						
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.17	0.1	< 0.05
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.4	0.35	0.24
Pyrene	mg/kg	0.05	MCERTS	0.35	0.35	0.22
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.16	0.12	0.1
Chrysene	mg/kg	0.05	MCERTS	0.22	0.19	0.14
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.21	0.21	0.14
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.11	0.07	0.06
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.16	0.16	0.11
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05
Dibenzo(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.14	< 0.05	< 0.05
Total PAH						
Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	2.02	1.55	1.01

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number: 24-005186
Project / Site name: Downley Drive

Lab Sample Number				126748	126749	126750
Sample Reference				Plot 23 TS101	Plot 19 TS102	Plot 15 TS103
Sample Number				TS	TS	TS
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				22/02/2024	22/02/2024	22/02/2024
Time Taken				None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**			
Heavy Metals / Metalloids						
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	3.3	4	2.9
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2
Chromium (hexavalent)	mg/kg	1.8	MCERTS	< 1.8	< 1.8	< 1.8
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	8.8	7.8	11
Copper (aqua regia extractable)	mg/kg	1	MCERTS	14	16	14
Lead (aqua regia extractable)	mg/kg	1	MCERTS	31	32	27
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	6.3	5.9	10
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	47	47	39
Petroleum Hydrocarbons						
TPH (>C5 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (>C5 - C6) HS_1D_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1
TPH (>C6 - C8) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0###	< 1.0###	< 1.0
TPH (>C8 - C10) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0###	< 1.0###	< 1.0
TPH (>C10 - C12) EH_CU_1D_TOTAL_#1_#2	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH (>C12 - C16) EH_CU_1D_TOTAL_#1_#2	mg/kg	4	MCERTS	< 4.0	< 4.0	< 4.0
TPH (>C16 - C21) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	< 10	< 10	< 10
TPH (>C21 - C35) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	52	56	33
TPH (>C35 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	27	18	< 10
TPH Total >C5 - C40 EH_CU+HS_1D_TOTAL_#1_#2	mg/kg	10	NONE	89###	85###	43
TPH (C10 - C40) EH_CU_1D_TOTAL_#1_#2	mg/kg	10	MCERTS	89	85	43

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

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The results included within the report relate only to the sample(s) submitted for testing.

Analytical Report Number : 24-005186
Project / Site name: Downley Drive

* 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 *
126748	Plot 23 TS101	TS	None Supplied	Brown loam and sand with gravel and vegetation
126749	Plot 19 TS102	TS	None Supplied	Brown loam and sand with gravel and vegetation
126750	Plot 15 TS103	TS	None Supplied	Brown loam and sand with gravel and vegetation

Analytical Report Number : 24-005186
Project / Site name: Downley Drive

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
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, 2021	A001B	D	ISO 17025
Total organic carbon (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate (Walkley Black Method)	In-house method	L009B	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	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically (up to 30°C)	In-house method	L019B	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.	L019B	D	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	L038B	D	MCERTS
Total sulphate (as SO4 in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES	In-house method	L038B	D	MCERTS
Total Sulphur in soil	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES	In-house method	L038B	D	MCERTS
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038B	D	MCERTS
Speciated EPA-16 PAHs and/or Semi-volatile organic compounds in soil	Determination of semi-volatile organic compounds (including PAH) in soil by extraction in dichloromethane and hexane followed by GC-MS	In-house method based on USEPA 8270	L064B	D	MCERTS
Total petroleum hydrocarbons by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS	In-house method	L076B/L088	D/W	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	W	MCERTS
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	L080	W	MCERTS
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	L080	W	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement	In-house method	L099	D	MCERTS

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.

Analytical Report Number : 24-005186
Project / Site name: Downley Drive

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.

- Quality control parameter failure associated with this result; other checks applied prior to reporting the data have been accepted. The result should be considered as being deviating and may be compromised.

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	24-13131-1		
Initial Date of Issue:	01-May-2024		
Re-Issue Details:			
Client	E3P		
Client Address:	Taylor Road Trafford Park Urmston Manchester M41 7JQ		
Contact(s):	nsellars@e3p.co.uk		
Project	17-440 Downley Drive		
Quotation No.:	Q23-31421	**Date Received:**	25-Apr-2024
Order No.:	8040	**Date Instructed:**	25-Apr-2024
No. of Samples:	3		
Turnaround (Wkdays):	5	**Results Due:**	01-May-2024
Date Approved:	01-May-2024		

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: 17-440 Downley Drive

Client: E3P								
Quotation No.: Q23-31421					**Chemtest Job No.:**	24-13131	24-13131	24-13131
Order No.: 8040					**Chemtest Sample ID.:**	1799323	1799324	1799325
					Client Sample Ref.:	PLOT 10	PLOT 8	PLOT 5
					Client Sample ID.:	TS101	TS102	TS103
					Sample Type:	SOIL	SOIL	SOIL
					Date Sampled:	23-Apr-2024	23-Apr-2024	23-Apr-2024
					Time Sampled:	0:00	0:00	0:00
					Asbestos Lab:	NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
ACM Type		U	2192		N/A	-	-	-
Asbestos Identification		U	2192		N/A	No Asbestos Detected	No Asbestos Detected	No Asbestos Detected
Moisture		N	2030	%	0.020	26	27	25
Soil Colour		N	2040		N/A	Brown	Brown	Brown
Other Material		N	2040		N/A	Stones and Roots	Stones and Roots	Stones and Roots
Soil Texture		N	2040		N/A	Loam	Loam	Loam
pH at 20C		M	2010		4.0	7.3	6.9	7.1
Sulphate (2:1 Water Soluble) as SO4		M	2120	g/l	0.010	0.20	0.17	0.17
Total Sulphur		U	2175	%	0.010	0.11	0.11	0.081
Cyanide (Total)		M	2300	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)		N	2325	mg/kg	0.50	5.9	4.5	3.4
Sulphate (Total)		U	2430	%	0.010	0.14	0.33	0.26
Arsenic		M	2455	mg/kg	0.5	1.4	2.3	1.6
Cadmium		M	2455	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Chromium		M	2455	mg/kg	0.5	3.1	5.5	4.9
Copper		M	2455	mg/kg	0.50	5.1	11	9.2
Mercury		M	2455	mg/kg	0.05	< 0.05	< 0.05	< 0.05
Nickel		M	2455	mg/kg	0.50	2.9	4.7	3.8
Lead		M	2455	mg/kg	0.50	8.0	68	19
Selenium		M	2455	mg/kg	0.25	< 0.25	< 0.25	< 0.25
Zinc		M	2455	mg/kg	0.50	14	37	180
Chromium (Hexavalent)		N	2490	mg/kg	0.50	< 0.50	< 0.50	< 0.50
Total Organic Carbon		M	2625	%	0.20	3.1	2.1	2.3
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	< 1.0	< 1.0	< 1.0
TPH >C10-C12	EH_1D_Total	N	2670	mg/kg	1.0	< 1.0	< 1.0	< 1.0
TPH >C12-C16	EH_1D_Total	N	2670	mg/kg	1.0	8.8	7.6	7.4
TPH >C16-C21	EH_1D_Total	N	2670	mg/kg	1.0	27	28	26
TPH >C21-C25	EH_1D_Total	N	2670	mg/kg	1.0	64	32	26
TPH >C25-C35	EH_1D_Total	N	2670	mg/kg	1.0	170	200	150
TPH >C35-C40	EH_1D_Total	N	2670	mg/kg	1.0	19	26	24
Total TPH >C6-C40	EH_1D_Total	M	2670	mg/kg	10	280	290	230
Naphthalene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthylene		N	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Acenaphthene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluorene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10

Results - Soil

Project: 17-440 Downley Drive

Client: E3P				**Chemtest Job No.:**		24-13131	24-13131	24-13131
Quotation No.: Q23-31421				**Chemtest Sample ID.:**		1799323	1799324	1799325
Order No.: 8040				Client Sample Ref.:		PLOT 10	PLOT 8	PLOT 5
				Client Sample ID.:		TS101	TS102	TS103
				Sample Type:		SOIL	SOIL	SOIL
				Date Sampled:		23-Apr-2024	23-Apr-2024	23-Apr-2024
				Time Sampled:		0:00	0:00	0:00
				Asbestos Lab:		NEW-ASB	NEW-ASB	NEW-ASB
Determinand	**HWOL Code**	**Accred.**	**SOP**	**Units**	**LOD**			
Phenanthrene		M	2800	mg/kg	0.10	0.22	0.39	< 0.10
Anthracene		M	2800	mg/kg	0.10	< 0.10	< 0.10	< 0.10
Fluoranthene		M	2800	mg/kg	0.10	0.44	0.61	< 0.10
Pyrene		M	2800	mg/kg	0.10	0.41	0.59	< 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	< 0.10	< 0.10	< 0.10

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	Allkaline 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-diphenylcarbazide.	
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 ≤ 30°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.

Sample Deviation Codes

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 - Insufficient Sample (Applies to LOI in Trommel Fines Only)

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.

Water Sample Category Key for Accreditation

DW - Drinking Water
GW - Ground Water
LE - Land Leachate
NA - Not Applicable

Report Information

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

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