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Ref: 11-813-Rev 1
Date: 14th November 2024

Steve Weir
Rowlinson Construction
London House
London Road South
Poynton
Stockport
SK12 1YP

BY email

Dear Steve,

COVER SYSTEM VALIDATION – HAPPI BLOCK

An E3P engineer attended the above site to validate the thickness of the cover system that had been placed within the rear public open space areas of the HAPPI block at Bowes Street, Manchester.

Three hand excavated trial pits were advanced with the resulting strata detailed to the rear of this letter. The validation locations are shown on Drawing 11-813-031 attached to 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 the landscaped areas have been installed with at least 300 mm of certified topsoil in accordance with the NHBC requirements for a site of this nature.

TOPSOIL

E3P attended site on 15th December 2022 to obtain three samples of the stockpiled topsoil deposits which were analysed in accordance with the E3P Remediation Strategy. Chemical analysis confirmed that these topsoil deposits were chemically suitable for use within the proposed soft landscaping areas.

Chemical analysis results are included within lab report 22-13840 (attached to this letter).



Bowes Street, Manchester
Rowlinson Construction
November 2024

I trust this information is satisfactory to your requirements, and should I be able to be of any further assistance, please do not hesitate to contact me.

Yours sincerely,

For and on behalf of E3P Ltd

Rob Horseman
Divisional Director



Site: Bowes Street

Date: 21-12-2022	Project Number: 11-813
Project Manager: R. Horseman	E3P Engineer: T. Newall
Plot Numbers Validated: HAPPI Block	

Chemical Laboratory Analysis

Analysis for topsoil undertaken by I2 Analytical Laboratory using UKAS accredited methods where applicable.

Chemical analysis suite comprises heavy metals, sulphates, phenols, speciated Polycyclic Aromatic Hydrocarbons (PAHs), speciated and total Petroleum Hydrocarbons (TPH) and asbestos.

Sampling frequency in accordance with the agreed Remediation Strategy. Laboratory analysis certificates attached to this validation certificate.

	Topsoil	Subsoil
<i>Chemical analysis confirmed materials suitable?</i>	Pass	N/A
<i>Further Comments</i>	N/A	N/A



Garden Cover System Validation

Complete

Score	100%
Site Name	Bowes street
Location	Princess parkway
Project Number	11813
Project Manager	Rob Horseman
Conducted By	Tobey Newall
Date of visit	21 Dec 2022 9:03 AM GMT



Plot Validation - 100%

100%

Plot Validation - 100%

100%

Plot Validation 1 - 100%

100%

Plot Number

(Happi Block)

Is Plot Ready

Yes

Installation Standard

Pass

Depth of Cover System Materials (record the depth and support with Photo down the hole)

0.3

Depth of Topsoil (mm)

300

Depth of Subsoil (mm)

-

Depth of Cover System at Ground Level (Photo)



Photo 1



Photo 2



Photo 3



Photo 4



Photo 5

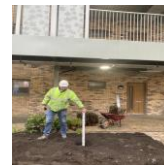


Photo 6



Photo 7



Photo 8



Photo 9

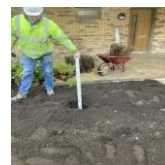


Photo 10

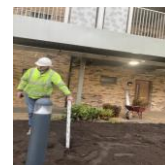


Photo 11



Photo 12



Photo 13



Photo 14



Photo 15



Photo 16



Photo 17



Photo 18

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



Soil suitable

Yes

Geotextile membrane present

N/A

Site Manager or Representative



Name	N/a
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Signature	21 Dec 2022 9:07 AM GMT
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Appendix



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



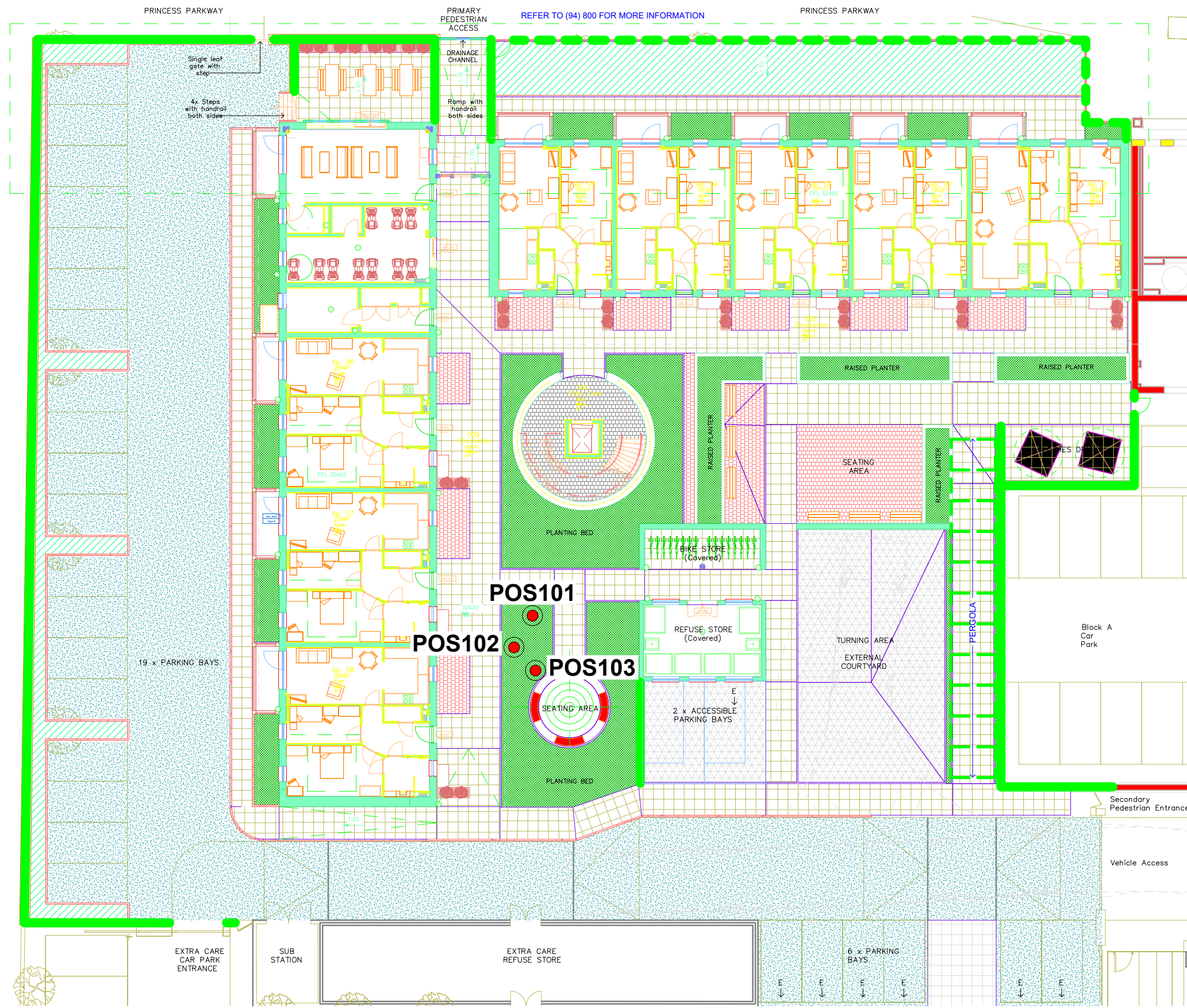


Photo 17



Photo 18





Location Symbols
● Approximate Pos Validation Location

Notes:

Client:

Job No:

Date:

Rowlinson

11-813

13.11.2024

Drawing No:

Scale:

031

NTS

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Taylor Road, Trafford Park
Urmston, Manchester, M41 7JQ
Tel: 0161 707 9612
E-mail: info@e3p.co.uk
Website: www.e3p.co.uk



Job Title:

Drawing Title:

Bowes Street

POS Validation Location Plan

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P1	REVA	13.11.2024	OW	NS	NS
Phase	Issue	Date	Drawn	Checked	PM

**Rob Horseman**

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Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

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e: reception@i2analytical.com

e: Rhorseman@e3p.co.uk

Analytical Report Number : 22-13840

Project / Site name:	Bowes Street	Samples received on:	16/12/2022
Your job number:	11813	Samples instructed on/ Analysis started on:	16/12/2022
Your order number:	11813-003715	Analysis completed by:	29/12/2022
Report Issue Number:	1	Report issued on:	29/12/2022
Samples Analysed:	3 soil samples		

Signed:

Anna Goc
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.

Analytical Report Number: 22-13840
Project / Site name: Bowes Street
Your Order No: 11813-003715

Lab Sample Number				2537082	2537083	2537084
Sample Reference				TS101	TS102	TS103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				15/12/2022	15/12/2022	15/12/2022
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	19	21	21
Total mass of sample received	kg	0.001	NONE	0.3	0.3	0.3

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

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.7	8.1
Total Cyanide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Total Sulphate as SO ₄	mg/kg	50	MCERTS	530	580	750
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	g/l	0.00125	MCERTS	0.23	0.2	0.2
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/kg	2.5	MCERTS	460	390	390
Water Soluble SO ₄ (2:1 Leach. Equiv.) 1hr extraction	mg/l	1.25	MCERTS	232	196	195
Sulphide	mg/kg	1	MCERTS	5.3	7.6	4.2
Total Sulphur	mg/kg	50	MCERTS	510	420	340
Total Organic Carbon (TOC) - Automated	%	0.1	MCERTS	4.4	4.5	4.3

Total Phenols

Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
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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	0.06	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.42	0.37	0.23
Anthracene	mg/kg	0.05	MCERTS	0.09	0.08	0.05
Fluoranthene	mg/kg	0.05	MCERTS	0.57	0.61	0.44
Pyrene	mg/kg	0.05	MCERTS	0.53	0.56	0.42
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.25	0.29	0.24
Chrysene	mg/kg	0.05	MCERTS	0.28	0.32	0.2
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	0.3	0.37	0.28
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.16	0.16	0.1
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.22	0.27	0.19
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.17	0.2	0.13
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.16	0.19	0.16

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	3.15	3.48	2.44
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Analytical Report Number: 22-13840
Project / Site name: Bowes Street
Your Order No: 11813-003715

Lab Sample Number				2537082	2537083	2537084
Sample Reference				TS101	TS102	TS103
Sample Number				None Supplied	None Supplied	None Supplied
Depth (m)				None Supplied	None Supplied	None Supplied
Date Sampled				15/12/2022	15/12/2022	15/12/2022
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	4.7	4.4	4
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	11	9.4	8.8
Copper (aqua regia extractable)	mg/kg	1	MCERTS	20	19	17
Lead (aqua regia extractable)	mg/kg	1	MCERTS	32	33	28
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	8.2	8	8.1
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	60	64	54

Petroleum Hydrocarbons

TPH (C5 - C6) HS_1D_TOTAL	mg/kg	1	NONE	< 1.0	< 1.0	< 1.0
TPH (C6 - C8) HS_1D_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1
TPH (C8 - C10) HS_1D_TOTAL	mg/kg	0.1	NONE	< 0.1	< 0.1	< 0.1
TPH (C10 - C12) EH_CU_1D_TOTAL	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0
TPH (C12 - C16) EH_CU_1D_TOTAL	mg/kg	4	MCERTS	< 4.0	7.6	< 4.0
TPH (C16 - C21) EH_CU_1D_TOTAL	mg/kg	1	MCERTS	9.4	12	10
TPH (C21 - C35) EH_CU_1D_TOTAL	mg/kg	1	MCERTS	48	54	65
TPH (C35 - C40) EH_CU_1D_TOTAL	mg/kg	10	MCERTS	< 10	14	21
TPH Total C5 - C40 EH_CU+HS_1D_TOTAL	mg/kg	10	NONE	57	88	96

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

Analytical Report Number : 22-13840

Project / Site name: Bowes Street

* 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 *
2537082	TS101	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.
2537083	TS102	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.
2537084	TS103	None Supplied	None Supplied	Brown loam and sand with gravel and vegetation.

Analytical Report Number : 22-13840

Project / Site name: Bowes Street

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
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
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
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
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
Total sulphate (as SO ₄ in soil)	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-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
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.	L038-PL	D	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 (Skalar)	L080-PL	W	MCERTS
Total organic carbon (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
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	MCERTS

Analytical Report Number : 22-13840

Project / Site name: Bowes Street

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
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
Sulphate, water soluble, in soil (1hr extraction)	Sulphate, water soluble, in soil (1hr extraction)	In-house method	L038-PL	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.

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