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Validation Report For Remedial Cover System

Plots 4, 5 & 6 William Street Littleborough

REPORT PREPARED ON BEHALF OF Dimora Construction

Paul Palgrave BSc (Hons) ARSM MSc C.Geol FGS
13th February 2025
Report Ref. 687-R-03

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687-D-03: Cover System Verification Inspection Pit Locations

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Appendix 1: Laboratory test certificates

1. Introduction

GeoInvestigations Ltd have been instructed by Dimora Construction (the 'Client') to prepare a remediation cover system verification report for their residential development site on William Street, Littleborough.

The site had been subject to an intrusive ground investigation by GeoInvestigations Ltd and the findings were presented in report referenced 591-R-01, dated March 2022.

The investigation identified the presence of made ground beneath the site containing elevated concentrations of heavy metals and polycyclic aromatic hydrocarbons, likely to be related to ash within the made ground.

It was concluded that a 0.6 metre deep remedial cover of sub-soil and topsoil was required within the garden areas to minimise exposure of future residents to the contaminants in the made ground beneath.

This report presents the findings of site inspections by GeoInvestigations Ltd to sample the imported subsoil/fill and topsoil beneath the garden areas of Plots 4 5 and 6.

The cover system for Plots 1, 2, 4 and 7 has been placed previously and has already been subject to a verification exercise as reported in November 2023 (GeoInvestigations Ltd reports reference 687-R-01 and 687-D-02).

The appended site layout plan shows the location of the verification hand dug pits excavated through the cover system soils (Drawing 687-D-03).

2. Hand Dug Pit Records

Hand dug pits for Plots 4, 5 and 6 (HDP1 to HDP6) were extended to the base of the cover to the at the locations shown on the appended site layout Drawing 687-D-03.

The thickness of the topsoil and sub-soil cover was also measured in each of the hand dug pits.

The cover system soils were found to be at least 0.55 metres deep in each of the six hand dug pits across plots 4, 5 and 6, but at the time of the site visit the turf had not been placed, which will increase the cover to 0.60 metres at least.

The topsoil comprises a soft wet dark grey-brown, locally mottled slightly reddish-brown, organic rich silty clay with occasional root fibres.

The basal sub-soil layer comprises a soft yellowish mid-brown clay with some fine to coarse gravel of mainly coarse angular tabular sandstone fragments, and occasional other inert anthropogenic materials locally including brick, mortar or concrete, rare fine glazed pottery.

The basal sub-soil was found to be between 0.05 metres to 0.20 metres thick, although absent from HDP6 on Plot 4, where the topsoil extended to the base of the pit at 0.55 metres below the surface.

Photographs of the hand dug pits and completed gardens are presented below.



Hand Dug Pit HDP1, Plot 6. (Mark on stick 0.6m from base).



Hand dug pit HDP1, Plot 6.



Hand Dug Pit HDP2, Plot 6.



Hand Dug Pit HDP2, Plot 6.



Hand Dug Pit HDP3, Plot 5.



Close up of Hand Dug Pit HDP3, Plot 5.



Typical sub-soil material from base of HDP3.



Hand Dug Pit HDP4, Plot 5.



Close-up photograph of Hand Dug Pit HDP4, Plot 5.



Hand Dug Pit HDP5, Plot 4.



Hand Dug Pit HDP5, Plot 4.



Hand Dug Pit HDP6, Plot 4.



Close-up photograph of HDP6, Plot 4.



View west from Plot 6 towards Plot 4 across rear garden areas.



Plot 6 looking north to rear elevation of dwelling.



Plot 4 rear garden looking south towards rear car park.



View south-east across rear garden areas from Plot 4 towards Plot 6. Turf remains to be laid.



View east across rear garden areas, from Plot 4 towards Plot 6.



Rear garden of Plot 4, looking towards rear elevation of dwelling. Patio slabs remain to be placed.

3. Verification Sample Chemical Test Results

The topsoil and subsoil material to raise level were both obtained from Marchington Stone Ltd, 105 Buxton Road, High Lane, Stockport, SK6 8DX.

One additional sample of the topsoil, and three additional samples of the sub-soil, were selected for confirmatory chemical laboratory analysis.

The samples were subject to laboratory analysis in accordance with a general contamination screening suite (i2 Analytical Standard Spectrum Suite) selected from asbestos, pH, total and water soluble sulphate, total cyanide, soil organic matter, toxic heavy metals, total monophydric phenols, polyaromatic hydrocarbons (PAHs) and petroleum hydrocarbons (carbon banded with aromatic/aliphatic split).

The chemical test certificates are presented within Appendix 1.

The chemical test data for the soils have been compared against published 'Tier 1' generic assessment criteria (GAC), for a 'residential with home grown produce' end-use.

The Tier 1 GAC's adopted comprise the LQM/CIEH S4ULs (Suitable For Use Screening Levels) for Human Health Risk Assessment (Copyright Land Quality Management Limited reproduced with permission; Publication No. S4UL3429. All rights reserved, 2015).

The S4ULs currently exclude Lead, hence the Defra approved Category 4 Screening Level¹ (C4SL) of 200 mg/kg has been adopted. A peer-reviewed in house derived assessment criteria of 40 mg/kg has been derived for total cyanide.

With respect to the proposed residential development, none of the determinands for which testing was undertaken exceed their respective Tier 1 GAC, hence it is concluded that the sub-soil and topsoil beneath the gardens are suitable for the proposed use.

Samples of the topsoil and subsoil were also submitted previously for analysis to confirm compliance with the British Standard Specifications for subsoil (BS8601:2013) and topsoil (BS3882:2015). The test certificates are also presented within Appendix 1.

The results show the topsoil was compliant with the British Standard Specification, but the organic matter was slightly elevated for sub-soil, containing 2.4% mass loss on ignition. The limit is 2.0% for sub-soil. However, this is not considered to warrant any remedial action.

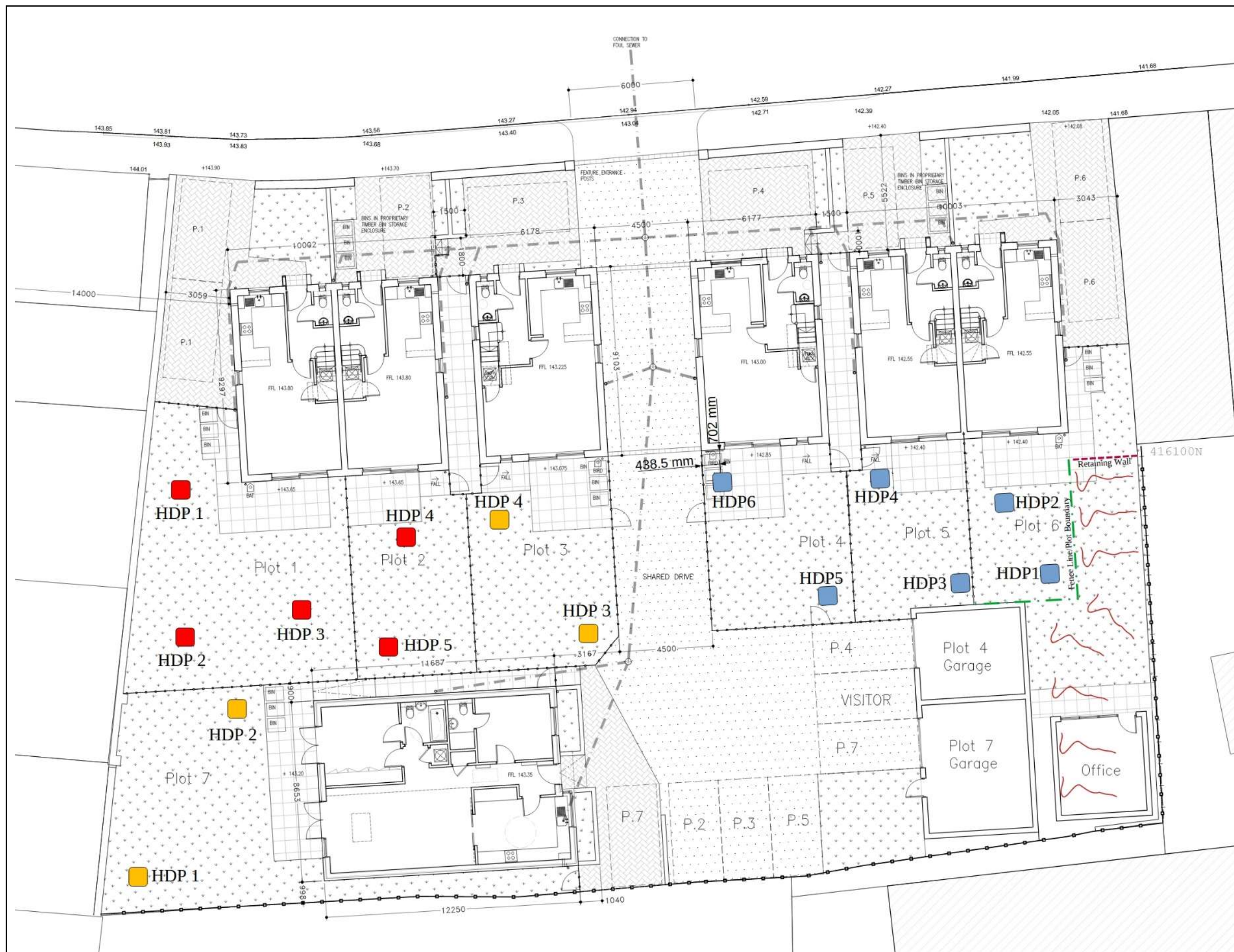
¹ Defra. SP1010. 'Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination – Policy Companion Document'. December 2012.

The material supplier's laboratory test certificates are also included within Appendix 1.

4. Conclusions

The inspection and chemical testing undertaken confirms that the imported topsoil and subsoil material is of sufficient thickness and are acceptable for use within a residential garden setting.

Drawings



Notes

© This drawing is copyright and may not be reproduced or used except with written permission

KEY

- HDP1 to HDP4
Hand Dug Verification
Inspection Pits 3rd May
2024.
- HDP1 to HDP5
Hand Dug Verification
Inspection Pits 27th October
2023.
- HDP1 to HDP6
Hand Dug Verification
Inspection Pits 29th January
2025

REV	DATE	AMENDMENT	BY

GeolInvestigations Ltd
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GI
GeolInvestigations

CLIENT

CLIENT
Dimora Construction

PROJECT

William Street, Littleborough

TITLE

Cover System Verification
Inspection Pit Locations

Date Feb 2025	Drawn by: PJP		
Scale as shown	Size	Checked PJP	Apprvd PJP

DRAWING No.

687-D-03

Rev

Appendix 1:

Chemical Laboratory Test Certificates

GeoInvestigations Ltd
c/o 138 Mill Lane Bentley Heath Solihull West Midlands

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

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e: reception@i2analytical.com

Analytical Report Number : 25-004860

Project / Site name:	William Street	Samples received on:	31/01/2025
Your job number:	687	Samples instructed on/ Analysis started on:	04/02/2025
Your order number:	1774	Analysis completed by:	11/02/2025
Report Issue Number:	1	Report issued on:	11/02/2025
Samples Analysed:	4 soil samples		

Signed:



Joanna Wawrzeczko
Senior 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
air	- once the analysis is complete

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

Retention period for records and reports is minimum 6 years from the date of issue of the final report.
Some records may be kept for longer according to other legal/best practice requirements.

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: 25-004860
Project / Site name: William Street
Your Order No: 1774

Lab Sample Number				441626	441627	441628	441629
Sample Reference				Plot 6/HDP1	Plot 5/HDP3	Plot 4/HDP5	Plot 4/HDP6
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.40-0.55	0.40-0.55	0.50-0.55	0.00-0.40
Date Sampled				29/01/2025	29/01/2025	29/01/2025	29/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)				Units	Test Limit of detection	Test Accreditation Status	

Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	14	12	17	18
Total mass of sample received	kg	0.1	NONE	0.5	0.4	0.5	0.4

Asbestos

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

General Inorganics

Organic Matter (automated)	%	0.1	MCERTS	1.3	0.9	-	3.6
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Speciated PAHs

Naphthalene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.42	< 0.05
Acenaphthylene	mg/kg	0.05	MCERTS	0.1	< 0.05	< 0.05	< 0.05
Acenaphthene	mg/kg	0.05	MCERTS	0.09	< 0.05	0.18	< 0.05
Fluorene	mg/kg	0.05	MCERTS	0.11	< 0.05	0.13	< 0.05
Phenanthrene	mg/kg	0.05	MCERTS	0.95	< 0.05	1.2	0.19
Anthracene	mg/kg	0.05	MCERTS	0.26	< 0.05	0.24	0.07
Fluoranthene	mg/kg	0.05	MCERTS	1.8	0.06	2.1	0.42
Pyrene	mg/kg	0.05	MCERTS	1.6	0.05	2	0.38
Benzo(a)anthracene	mg/kg	0.05	MCERTS	0.82	< 0.05	1.1	0.22
Chrysene	mg/kg	0.05	MCERTS	0.85	< 0.05	1.1	0.21
Benzo(b)fluoranthene	mg/kg	0.05	ISO 17025	1.1	< 0.05	1.3	0.24
Benzo(k)fluoranthene	mg/kg	0.05	ISO 17025	0.5	< 0.05	0.6	0.07
Benzo(a)pyrene	mg/kg	0.05	MCERTS	0.97	< 0.05	1.3	0.19
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	0.45	< 0.05	0.52	0.08
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	0.1	< 0.05	0.15	< 0.05
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	0.5	< 0.05	0.56	0.08

Total PAH

Speciated Total EPA-16 PAHs	mg/kg	0.8	ISO 17025	10.2	< 0.80	12.9	2.15
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Heavy Metals / Metalloids

Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	8	3.4	10	6.3
Boron (water soluble)	mg/kg	0.2	MCERTS	1.1	0.5	0.8	1.1
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	0.4	0.3	0.5	0.2
Chromium (hexavalent) Low Level	mg/kg	1.2	NONE	< 1.2	< 1.2	-	< 1.2
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	25	22	18	15
Copper (aqua regia extractable)	mg/kg	1	MCERTS	47	16	35	19
Lead (aqua regia extractable)	mg/kg	1	MCERTS	53	15	79	27
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	< 0.3	< 0.3
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	22	23	18	12
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	110	66	110	54

Analytical Report Number: 25-004860

Project / Site name: William Street

Your Order No: 1774

Lab Sample Number				441626	441627	441628	441629
Sample Reference				Plot 6/HDP1	Plot 5/HDP3	Plot 4/HDP5	Plot 4/HDP6
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied
Water Matrix				N/A	N/A	N/A	N/A
Depth (m)				0.40-0.55	0.40-0.55	0.50-0.55	0.00-0.40
Date Sampled				29/01/2025	29/01/2025	29/01/2025	29/01/2025
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	Units	Test Limit of detection	Test Accreditation Status				

Petroleum Hydrocarbons

TPHCWG - Aliphatic >EC5 - EC6 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC6 - EC8 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC8 - EC10 _{HS_1D_AL}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aliphatic >EC10 - EC12 _{EH_CU_1D_AL}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
TPHCWG - Aliphatic >EC12 - EC16 _{EH_CU_1D_AL}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0
TPHCWG - Aliphatic >EC16 - EC21 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0
TPHCWG - Aliphatic >EC21 - EC35 _{EH_CU_1D_AL}	mg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0
TPHCWG - Aliphatic >EC5 - EC35 _{EH_CU+HS_1D_AL}	mg/kg	10	NONE	< 10	< 10	-	< 10

TPHCWG - Aromatic >EC5 - EC7 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aromatic >EC7 - EC8 _{HS_1D_AR}	mg/kg	0.01	MCERTS	< 0.010	< 0.010	-	< 0.010
TPHCWG - Aromatic >EC8 - EC10 _{HS_1D_AR}	mg/kg	0.02	MCERTS	< 0.020	< 0.020	-	< 0.020
TPHCWG - Aromatic >EC10 - EC12 _{EH_CU_1D_AR}	mg/kg	1	MCERTS	< 1.0	< 1.0	-	< 1.0
TPHCWG - Aromatic >EC12 - EC16 _{EH_CU_1D_AR}	mg/kg	2	MCERTS	< 2.0	< 2.0	-	< 2.0
TPHCWG - Aromatic >EC16 - EC21 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	< 10
TPHCWG - Aromatic >EC21 - EC35 _{EH_CU_1D_AR}	mg/kg	10	MCERTS	< 10	< 10	-	< 10
TPHCWG - Aromatic >EC5 - EC35 _{EH_CU+HS_1D_AR}	mg/kg	10	NONE	< 10	< 10	-	< 10

VOCs

MTBE (Methyl Tertiary Butyl Ether)	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0
Benzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0
Toluene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0
Ethylbenzene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0
p & m-Xylene	µg/kg	8	MCERTS	< 8.0	< 8.0	-	< 8.0
o-Xylene	µg/kg	5	MCERTS	< 5.0	< 5.0	-	< 5.0

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

Analytical Report Number : 25-004860

Project / Site name: William 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 *
441626	Plot 6/HDP1	None Supplied	0.40-0.55	Brown clay and sand with gravel
441627	Plot 5/HDP3	None Supplied	0.40-0.55	Brown clay and sand with gravel
441628	Plot 4/HDP5	None Supplied	0.50-0.55	Brown clay and sand with gravel
441629	Plot 4/HDP6	None Supplied	0.00-0.40	Brown clay and sand with gravel

Analytical Report Number : 25-004860

Project / Site name: William Street

Water matrix abbreviations:

Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters Heating/Cooling (PrW) DI Process Water (DI 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
Organic matter (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
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
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	L038B	D	MCERTS
Speciated 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
BTEX and/or Volatile organic compounds in soil	Determination of volatile organic compounds in soil by headspace GC-MS	In-house method based on USEPA 8260	L073B	W	MCERTS
Total petroleum hydrocarbons with carbon banding by GC-FID/GC-MS HS in soil	Determination of total petroleum hydrocarbons in soil by GC-FID/GC-MS HS with carbon banding aliphatic and aromatic	In-house method	L076B/L088-PL	D/W	MCERTS
Hexavalent chromium in soil (low level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	In-house method	L080-PL	W	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.

Quality control parameter failure associated with individual result applies to calculated sum of individuals.

The result for sum should be interpreted with caution

TEST CERTIFICATE

SPECIFICATION FOR TOPSOIL
In-house method based on: BS 3882: 2015

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



Client: GeolInvestigations Ltd
Client Address: c/o 138 Mill Lane Bentley Heath Solihull West Midlands
Contact: Paul Palgrave
Site Address: William Street
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

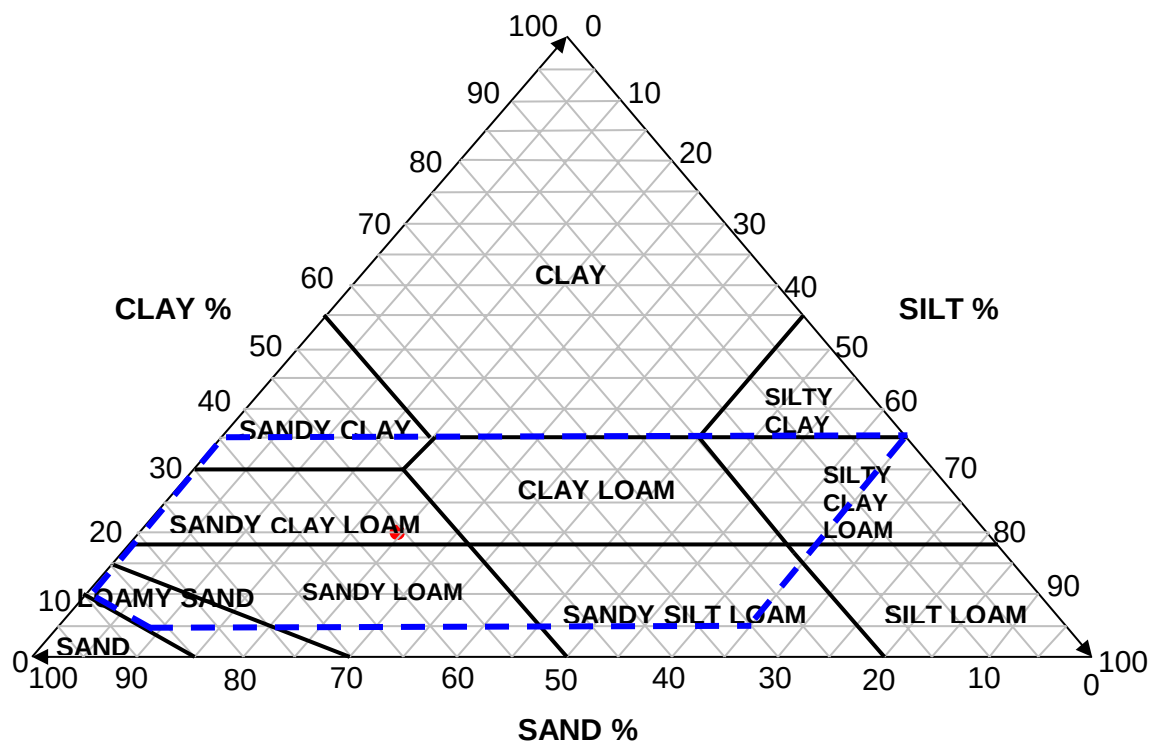
Client Reference: 687
Job Number: 24-018373-1
Date Sampled: 03/05/2024
Date Received: 07/05/2024
Date Tested: 14/05/2024
Sampled By: Not Given

Test Results:

Laboratory Reference: 192451
Hole No.: Plot7/HDP2
Sample Reference: 2
Sample Description: SANDY CLAY LOAM

Depth Top [m]: 0.00
Depth Base [m]: 0.30
Sample Type: D

Soil Texture Triangle



Sample Proportion	% dry mass
Sand	56.1
Silt	22.8
Clay	21.1

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:

Monika Siewior

Monika Siewior
Reporting Specialist
for and on behalf of i2 Analytical Ltd



GeoInvestigations Ltd
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Analytical Report Number : 24-018373

Project / Site name:	William Street	Samples received on:	07/05/2024
Your job number:	687	Samples instructed on/ Analysis started on:	09/05/2024
Your order number:	1713	Analysis completed by:	16/05/2024
Report Issue Number:	1	Report issued on:	17/05/2024
Samples Analysed:	1 soil sample		

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.

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

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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.

i2 Analytical

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Watford, WD18 8YS

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email:reception@i2analytical.com

Certificate of Analysis									
BS 3882:2015 Specification For Topsoil									
	Fail BS 3882				client				
Report No:	24-018373			GeoInvestigations Ltd					
Location	William Street								
Lab Reference (Sample Number)	192451								
Sampling Date	05/03/2024								
Sample ID	Plot7/HDP2								
Depth (m)	0.00			Compliant with range (Y/N)					
		unit	Result	Multi-P	Acid	Calc	Low-F	Low-F(a)	Low-F(c)
Soil texture	<2mm fraction	%m/m	SANDY CLAY LOAM	Y	Y	Y	Y	Y	Y
Maximum coarse fragment content:	>2mm	%m/m	12.00	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		%	4.00						
	Clay 5-20%		-	-	-	-	-	-	-
	Clay 20-35%		Y	N	N	N	Y	Y	Y
Soil pH:		pH	8.00	Y	N	Y	Y	N	Y
Carbonate:		%m/m	0.30	-	-	N	-	-	N
Available plant nutrients	Nitrogen	%m/m	0.17	Y	Y	Y	-	-	-
	Extractable Phosphate (as P)	mg/l	32.00	Y	Y	Y	N	N	N
	Extractable Potassium	mg/l	32.40	N	N	N	-	-	-
	Extractable Magnesium	mg/l	38.00	N	N	N	-	-	-
Carbon: Nitrogen Ratio:		:1	13.73	Y	Y	Y	Y	Y	Y
Conductivity		us/cm	1700.00	Y	-	-	-	-	-
Phytotoxic contaminants:	** Total Zinc	mg/kg	66.00	Y	Y	Y	Y	Y	Y
	** Total Copper	mg/kg	33.00	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
Compliance:				Fail	Fail	Fail	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 discrepancies with current legislation									

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** = MCERTS accredited

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* 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 *
192451	Plot7/HDP2	2	0.00-0.30	Brown clay and sand with gravel and vegetation

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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
Coarse Fragment and Contaminant Analysis	Determination of >2mm contaminants	BS3882:2007 & BS8601:2013 & PAS 100:2005	L019B	D	NONE
Density of available extract	Gravimetric determination of density of dried sample up to 2 mm	In-house method	L019B	D	NONE
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
Conductivity (BS 3882/BS 8601)	Determination of the conductivity of soil in accordance with BS 3882:2007 methodology	BS 3882:2007 & BS 8601:2013	L031B	D	NONE
Carbonate (Topsoil - BS 3882)	Determination of Carbonate as per BS 3882:2015	Method based on BS 3882:2015	L034	D	NONE
Extractable/Available Metals (BS 3882/BS 8601)	Determination of the extractable metals in soil, in accordance with BS 3882:2007 methodology	BS3882:2007 & BS8601:2013	L038B	D	ISO 17025
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
Carbon to Nitrogen Ratio (Topsoil - BS3882:2015)	Carbon to Nitrogen ratio (:1) calculated using Loss on Ignition	BS3882:2015	L047/L087B	W	NONE
Mass loss on ignition (Topsoil - BS 3882)	Determination of Loss on Ignition as per BS 3882:2015	Method based on BS 3882:2015	L047	D	NONE
Phosphorus as PO ₄ (BS 3882/BS 8601)	Determination of the extractable phosphorus in soil, in accordance with BS 3882:2007 methodology	Method based on BS 3882:2015 & BS 8601:2013	L048B	D	NONE
Kjeldahl nitrogen in soil	Determination of total nitrogen using the Kjeldahl-digestion method and ion selective electrode	In-house method based on BS 7755-3.7:1995	L087B	D	NONE
pH (BS 3882/BS 8601)	Determination of the pH of soil in accordance with BS 3882:2007 methodology	BS 3882:2007 & BS 8601:2013	L099	D	NONE
Topsoil (BS 3882:2015)	Specification for topsoil	BS 3882:2015	PL		NONE
Textural Classification Diagram (BS 3882:2015)	BS 3882:2015	BS 3882:2015	PL		NONE

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Water matrix abbreviations:

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Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Geotechnical Testing	See attached geotechnical report	See attached geotechnical report	PL		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.