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# **Validation Report For Remedial Cover System**

## **Plots 3 & 7 William Street Littleborough**

**REPORT PREPARED ON BEHALF OF** Dimora Construction

Paul Palgrave BSc (Hons) ARSM MSc C.Geol FGS  
23<sup>rd</sup> May 2024  
Report Ref. 687-R-02

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## **Drawings**

687-D-02: Plots 1-3 & 7: Cover System Verification Inspection Pit Locations

## **Appendices**

Appendix 1: Invoice and delivery note for imported soils

Appendix 2: 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 3 and 7. The remaining plots are to be inspected and reported on when the cover system placement is completed in those plots.

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

The appended site layout plan shows the location of the verification hand dug pits excavated through the cover system soils (Drawing 687-D-02).

## **2. Hand Dug Pit Records**

Hand dug pits for Plots 3 and 7 (HDP1 to HDP4) were extended to the base of the cover to the at the locations shown on the appended site layout Drawing 687-D-02.

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

The cover system soils were found to be 0.55 metres deep in each of the four hand dug pits across plots 3 and 7, but at the time of the site visit the turf had not been placed, which will increase the cover to 0.60m.

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



Hand dug pit HDP1 (Plot 7).



Geotextile membrane at the base of hand dug pit HDP1.



View looking north-east across the garden of Plot 7, HDP 1 is in the foreground.



Plot 7, looking north along western boundary.



Hand dug pit HDP2, Plot 7.



Topsoil and sub-soil layers within HDP2, Plot 7. Geotextile visible at the base.



View south west across Plot 7 rear garden.



Hand dug pit HDP3, Plot 3.



Hand dug pit HDP 3, Plot 3 rear garden.



Plot 3 rear garden, looking north along eastern boundary.



Plot 3 rear garden, looking north-west across the garden.



Plot 3 looking west along southern boundary.



Hand dug pit HDP 4, Plot 3.



Hand dug pit HDP4, Plot 3.



View south across Plot 3 rear garden area.

### 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. A copy of the invoice for the topsoil is presented in Appendix 1.

The topsoil comprises an organic rich dark brown silty fine sandy organic clay loam with rare to occasional fine to coarse gravel including rounded quartzite and subangular blocks of meta-sandstone.

The subsoil comprises a soft yellowish brown very sandy clay with much gravel of medium to coarse subangular blocky to subrounded sandstone.

Two samples of the topsoil, and one 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 2.

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 Level<sup>1</sup> (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.

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

Samples of the topsoil and subsoil were also submitted 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 is compliant with the British Standard Specification, but the sub-soil is slightly elevated with respect to organic matter, with 2.4% mass loss on ignition. The limit is 2.0% for sub-soil. However, this is not considered to warrant any remedial action.

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  
GeoInvestigations Ltd 3<sup>rd</sup> May 2024.
  - HDP1 to HDP5  
Hand Dug Verification Inspection Pits  
GeoInvestigations Ltd 27<sup>th</sup> October 2023.

|     |      |           |    |
|-----|------|-----------|----|
|     |      |           |    |
| REV | DATE | AMENDMENT | BY |

GeoInvestigations Ltd  
07419 327 307  
paul@geoinvestigations.co.uk



|                                                                   |      |                  |               |
|-------------------------------------------------------------------|------|------------------|---------------|
| CLIENT                                                            |      |                  |               |
| CLIENT                                                            |      |                  |               |
| Dimora Construction                                               |      |                  |               |
| PROJECT                                                           |      |                  |               |
| William Street, Littleborough                                     |      |                  |               |
| TITLE                                                             |      |                  |               |
| Plots 1-3 & 7: Cover System Verification Inspection Pit Locations |      |                  |               |
| Date<br>May 2024                                                  |      | Drawn by:<br>PJP |               |
| Scale<br>as shown                                                 | Size | Checked<br>PJP   | Apprvd<br>PJP |
| DRAWING No.<br>687-D-02                                           |      |                  | Rev           |

# **Appendix 1:**

## **Invoice & Delivery Note for Imported Soils**

Through PARK ROCHDALE

|                                                                                                                                                                                                                                                      |                    |                    |                                                                                                                                                                                                  |                      |                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|----------------------------------------------------------------------------|
| <b>Customer:</b> DIMORA<br><b>Site Address:</b> WILLIAM ST<br>LITTLEBOROUGH<br><br>William ST<br>Plot 7<br>Turf (5016)                                                                                                                               |                    |                    | <br><b>MARCHINGTONSTONE</b><br>Buxton Road, High Lane, Stockport SK6 8DX<br>Tel: 01663 765000 Fax: 01663 763777 |                      |                                                                            |
|                                                                                                                                                                                                                                                      |                    |                    | <b>Delivery Date:</b> 23/4/24                                                                                                                                                                    |                      |                                                                            |
|                                                                                                                                                                                                                                                      |                    |                    | <b>Order No:</b>                                                                                                                                                                                 |                      |                                                                            |
| <b>Material Description</b><br>1x8mm<br>TOP SOIL 0.01m<br>(WRAP Recycled Aggs Protocol Compliant)                                                                                                                                                    |                    |                    | <b>In accordance with our Terms &amp; Conditions a charge for excessive waiting time may be made.</b><br><b>Waiting Time Agreed By:</b><br><br><b>Print</b> .....<br><br><b>Signed</b> .....     |                      |                                                                            |
| <b>Tonnes Gross</b>                                                                                                                                                                                                                                  | <b>Tonnes Tare</b> | <b>Tonnes Nett</b> | <b>Time On Site</b>                                                                                                                                                                              | <b>Time Off Site</b> | <b>Waiting Time Agreed</b>                                                 |
| <b>This vehicle may leave the road on your instruction and at the drivers discretion, providing you accept responsibility for damage to your own or third party property.</b><br><b>Customer Agreed</b> <input type="checkbox"/> <b>Signed</b> ..... |                    |                    | <b>Haulier</b> William<br>Tanner                                                                                                                                                                 |                      | <b>Place of Loading</b>                                                    |
| <b>Load Accepted on Behalf of Customer:</b><br><br><b>Print</b> .....<br><br><b>Signed</b> .....                                                                                                                                                     |                    |                    | <b>Registration No.</b><br>D1C69ZAO                                                                                                                                                              |                      | <b>Weighbridge Ticket No.</b>                                              |
|                                                                                                                                                                                                                                                      |                    |                    | <b>Driver</b><br>1004                                                                                                                                                                            |                      | <b>Marchington Ticket No.</b><br><br><b>462504</b><br><b>Customer Copy</b> |
| <b>Subject to the Conditions of Sale of Marchington Stone Limited applicable to goods of this kind. Available on request.</b>                                                                                                                        |                    |                    | <b>CE Mark &amp; Declaration of Performance available by contacting sales@marchington.net</b>                                                                                                    |                      |                                                                            |



**Parr Rochdale Ltd**  
Timber and Builders Merchants

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Rochdale  
Lancs  
OL12 0DN  
01706 656980



Hardware  
Power tools  
Handtools  
Fixings and fasteners  
Architectural ironmongery  
Key cutting  
Workwear and PPE

## Invoice

Invoice Number  
**1401/04003705**

**Invoice For:-**  
DIMORA CONSTRUCTION LTD  
UNIT 2 DOCTOR FOLD LANE  
HEYWOOD  
LANCASHIRE  
OL102QE

**Collected By:-**  
DIMORA CONSTRUCTION LTD  
WILLIAM STREET  
LITTLEBOROUGH

Email: [dimoraconst@btconnect.com](mailto:dimoraconst@btconnect.com)

| Account       | Our Operator    | Phone          | Taxpoint Date | Time  | Order Number |
|---------------|-----------------|----------------|---------------|-------|--------------|
| DI0030        | Michael Harwood |                | 21/11/2023    | 11:30 | 10112        |
| Your Contact  | Advice No       | Your Reference | Page          |       |              |
| JOHN PESSAGNO |                 | JOHN           | 1             |       |              |

| Line | Quantity | Product                                           | Price     | Total  | V |
|------|----------|---------------------------------------------------|-----------|--------|---|
| 1    | 2.00 EA  | tested as dug soil per 8 wheeler load<br>S/000926 | 437.00 EA | 874.00 | S |

Supplier: MA1500

Doc: 293912/465725

Items marked FSC® are FSC Mix 70% (INT-COC-815257),  
Items marked PEFC are 70% PEFC certified (CATG-PEFC-105)

|                              |        |        |             |         |
|------------------------------|--------|--------|-------------|---------|
| Rate                         | Goods  | VAT    | Total Goods | 874.00  |
| S 20.00                      | 874.00 | 174.80 | Total VAT   | 174.80  |
| Please pay via the below A/C |        |        |             |         |
| Sort Code: 40-12-26          |        |        |             |         |
| Acc No: 81565028             |        |        |             |         |
| Invoice Total                |        |        |             | 1048.80 |
| All prices are in Sterling   |        |        |             |         |
| GBP Sterling                 |        |        |             |         |

## **Appendix 2:**

### 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,  
Herts,  
WD18 8YS

t: 07419 327 307

e: paul@geoinvestigations.co.uk

t: 01923 225404

f: 01923 237404

e: reception@i2analytical.com

## **Analytical Report Number : 24-018369**

**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:** 17/05/2024

**Report Issue Number:** 1

**Report issued on:** 17/05/2024

**Samples Analysed:** 3 soil samples



**Signed:**

Dominika Liana  
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: 24-018369

Project / Site name: William Street

Your Order No: 1713

| Lab Sample Number                       |  |  |  | 192435        | 192436             | 192437               |
|-----------------------------------------|--|--|--|---------------|--------------------|----------------------|
| Sample Reference                        |  |  |  | Plot7/HDP1    | Plot7/HDP2         | Plot3/HDP3           |
| Sample Number                           |  |  |  | 1             | 3                  | 4                    |
| Depth (m)                               |  |  |  | 0.00-0.55     | 0.30-0.55          | 0.00-0.55            |
| Date Sampled                            |  |  |  | 03/05/2024    | 03/05/2024         | 03/05/2024           |
| Time Taken                              |  |  |  | None Supplied | None Supplied      | None Supplied        |
| Analytical Parameter<br>(Soil Analysis) |  |  |  | Units         | Limit of detection | Accreditation Status |

|                               |    |      |      |       |      |      |
|-------------------------------|----|------|------|-------|------|------|
| Stone Content                 | %  | 0.1  | NONE | < 0.1 | 31.2 | 42.3 |
| Moisture Content              | %  | 0.01 | NONE | 20    | 11   | 15   |
| Total mass of sample received | kg | 0.1  | NONE | 0.4   | 1.5  | 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       | DSA          | DSA          | DSA          |

#### General Inorganics

|                                                                         |          |         |        |        |        |        |
|-------------------------------------------------------------------------|----------|---------|--------|--------|--------|--------|
| pH (L099)                                                               | pH Units | N/A     | MCERTS | 7.4    | 7.4    | 7.5    |
| Total Cyanide                                                           | mg/kg    | 1       | MCERTS | < 1.0  | < 1.0  | < 1.0  |
| Total Sulphate as SO <sub>4</sub>                                       | mg/kg    | 50      | MCERTS | 420    | 92     | 360    |
| Water Soluble Sulphate as SO <sub>4</sub> 16hr extraction (2:1)         | mg/kg    | 2.5     | MCERTS | 65     | 32     | 61     |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | g/l      | 0.00125 | MCERTS | 0.0327 | 0.0161 | 0.0307 |
| Water Soluble SO <sub>4</sub> 16hr extraction (2:1 Leachate Equivalent) | mg/l     | 1.25    | MCERTS | 32.7   | 16.1   | 30.7   |
| Sulphide                                                                | mg/kg    | 1       | MCERTS | 1.8    | < 1.0  | < 1.0  |
| Total Organic Carbon (TOC) - Automated                                  | %        | 0.1     | MCERTS | 3.5    | 0.5    | 1.5    |

#### 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    | 0.4    | < 0.05 | < 0.05 |
| Fluorene               | mg/kg | 0.05 | MCERTS    | 0.27   | < 0.05 | < 0.05 |
| Phenanthrene           | mg/kg | 0.05 | MCERTS    | 2.7    | < 0.05 | 0.21   |
| Anthracene             | mg/kg | 0.05 | MCERTS    | 0.53   | < 0.05 | < 0.05 |
| Fluoranthene           | mg/kg | 0.05 | MCERTS    | 3      | 0.06   | 0.42   |
| Pyrene                 | mg/kg | 0.05 | MCERTS    | 2.4    | < 0.05 | 0.39   |
| Benzo(a)anthracene     | mg/kg | 0.05 | MCERTS    | 1.1    | < 0.05 | 0.23   |
| Chrysene               | mg/kg | 0.05 | MCERTS    | 1.3    | < 0.05 | 0.28   |
| Benzo(b)fluoranthene   | mg/kg | 0.05 | ISO 17025 | 1.3    | < 0.05 | < 0.05 |
| Benzo(k)fluoranthene   | mg/kg | 0.05 | ISO 17025 | 0.59   | < 0.05 | 0.11   |
| Benzo(a)pyrene         | mg/kg | 0.05 | MCERTS    | 1.1    | < 0.05 | 0.26   |
| Indeno(1,2,3-cd)pyrene | mg/kg | 0.05 | MCERTS    | 0.59   | < 0.05 | 0.16   |
| Dibenz(a,h)anthracene  | mg/kg | 0.05 | MCERTS    | 0.17   | < 0.05 | < 0.05 |
| Benzo(ghi)perylene     | mg/kg | 0.05 | MCERTS    | 0.66   | < 0.05 | 0.18   |

#### Total PAH

|                             |       |     |           |      |        |      |
|-----------------------------|-------|-----|-----------|------|--------|------|
| Speciated Total EPA-16 PAHs | mg/kg | 0.8 | ISO 17025 | 16.2 | < 0.80 | 2.24 |
|-----------------------------|-------|-----|-----------|------|--------|------|

Analytical Report Number: 24-018369

Project / Site name: William Street

Your Order No: 1713

| Lab Sample Number                       |  |  |  | 192435        | 192436             | 192437               |
|-----------------------------------------|--|--|--|---------------|--------------------|----------------------|
| Sample Reference                        |  |  |  | Plot7/HDP1    | Plot7/HDP2         | Plot3/HDP3           |
| Sample Number                           |  |  |  | 1             | 3                  | 4                    |
| Depth (m)                               |  |  |  | 0.00-0.55     | 0.30-0.55          | 0.00-0.55            |
| Date Sampled                            |  |  |  | 03/05/2024    | 03/05/2024         | 03/05/2024           |
| Time Taken                              |  |  |  | None Supplied | None Supplied      | None Supplied        |
| Analytical Parameter<br>(Soil Analysis) |  |  |  | Units         | Limit of detection | Accreditation Status |

#### Heavy Metals / Metalloids

|                                   |       |     |        |       |       |       |
|-----------------------------------|-------|-----|--------|-------|-------|-------|
| Arsenic (aqua regia extractable)  | mg/kg | 1   | MCERTS | 6.8   | 3.8   | 11    |
| Boron (water soluble)             | mg/kg | 0.2 | MCERTS | < 0.2 | < 0.2 | < 0.2 |
| Cadmium (aqua regia extractable)  | mg/kg | 0.2 | MCERTS | 0.3   | 0.3   | 0.4   |
| Chromium (hexavalent) Low Level   | mg/kg | 1.2 | NONE   | < 1.2 | < 1.2 | < 1.2 |
| Chromium (aqua regia extractable) | mg/kg | 1   | MCERTS | 15    | 20    | 25    |
| Copper (aqua regia extractable)   | mg/kg | 1   | MCERTS | 18    | 17    | 39    |
| Lead (aqua regia extractable)     | mg/kg | 1   | MCERTS | 31    | 16    | 61    |
| Mercury (aqua regia extractable)  | mg/kg | 0.3 | MCERTS | < 0.3 | < 0.3 | < 0.3 |
| Nickel (aqua regia extractable)   | mg/kg | 1   | MCERTS | 12    | 19    | 21    |
| Selenium (aqua regia extractable) | mg/kg | 1   | MCERTS | < 1.0 | < 1.0 | < 1.0 |
| Zinc (aqua regia extractable)     | mg/kg | 1   | MCERTS | 51    | 98    | 88    |

#### Petroleum Hydrocarbons

|                                             |       |      |        |         |         |         |
|---------------------------------------------|-------|------|--------|---------|---------|---------|
| TPHCWG - Aliphatic >C5 - C6 HS_1D_AL        | mg/kg | 0.02 | NONE   | < 0.020 | < 0.020 | < 0.020 |
| TPHCWG - Aliphatic >C6 - C8 HS_1D_AL        | mg/kg | 0.02 | NONE   | < 0.020 | < 0.020 | < 0.020 |
| TPHCWG - Aliphatic >C8 - C10 HS_1D_AL       | mg/kg | 0.05 | NONE   | < 0.050 | < 0.050 | < 0.050 |
| TPHCWG - Aliphatic >C10 - C12 EH_CU_1D_AL   | mg/kg | 1    | MCERTS | < 1.0   | < 1.0   | < 1.0   |
| TPHCWG - Aliphatic >C12 - C16 EH_CU_1D_AL   | mg/kg | 2    | MCERTS | < 2.0   | < 2.0   | < 2.0   |
| TPHCWG - Aliphatic >C16 - C21 EH_CU_1D_AL   | mg/kg | 8    | MCERTS | < 8.0   | < 8.0   | < 8.0   |
| TPHCWG - Aliphatic >C21 - C35 EH_CU_1D_AL   | mg/kg | 8    | MCERTS | 9.2     | < 8.0   | < 8.0   |
| TPHCWG - Aliphatic >C5 - C35 EH_CU+HS_1D_AL | mg/kg | 10   | NONE   | < 10    | < 10    | < 10    |

|                                              |       |      |        |         |         |         |
|----------------------------------------------|-------|------|--------|---------|---------|---------|
| TPHCWG - Aromatic >EC5 - EC7 HS_1D_AR        | mg/kg | 0.01 | NONE   | < 0.010 | < 0.010 | < 0.010 |
| TPHCWG - Aromatic >EC7 - EC8 HS_1D_AR        | mg/kg | 0.01 | NONE   | < 0.010 | < 0.010 | < 0.010 |
| TPHCWG - Aromatic >EC8 - EC10 HS_1D_AR       | mg/kg | 0.05 | NONE   | < 0.050 | < 0.050 | < 0.050 |
| 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   | 2.2     |
| 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 | 17      | < 10    | 11      |
| TPHCWG - Aromatic >EC5 - EC35 EH_CU+HS_1D_AR | mg/kg | 10   | NONE   | 17      | < 10    | 14      |

|                                |       |    |        |    |      |    |
|--------------------------------|-------|----|--------|----|------|----|
| TPH (C10 - C40) EH_CU_1D_TOTAL | mg/kg | 10 | MCERTS | 30 | < 10 | 18 |
|--------------------------------|-------|----|--------|----|------|----|

#### VOCs

|                                    |       |   |        |       |       |       |
|------------------------------------|-------|---|--------|-------|-------|-------|
| MTBE (Methyl Tertiary Butyl Ether) | µg/kg | 5 | NONE   | < 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 | 5 | MCERTS | < 5.0 | < 5.0 | < 5.0 |
| 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 : 24-018369**

**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 *                           |
|-------------------|------------------|---------------|-----------|------------------------------------------------|
| 192435            | Plot7/HDP1       | 1             | 0.00-0.55 | Brown clay and sand with gravel and vegetation |
| 192436            | Plot7/HDP2       | 3             | 0.30-0.55 | Brown clay and sand with vegetation and stones |
| 192437            | Plot3/HDP3       | 4             | 0.00-0.55 | Brown clay and sand with stones                |

**Analytical Report Number : 24-018369**

**Project / Site name: William 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 |
|-----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------|--------------------|----------------------|
| 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               |
| 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               |
| Total sulphate (as SO <sub>4</sub> in soil)                                 | Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES                                                                                | In-house method                                                                                        | L038B         | D                  | MCERTS               |
| Sulphate, water soluble, in soil (16hr extraction)                          | Sulphate, water soluble, in soil (16hr 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               |
| 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    | D/W                | 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 (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          | 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 | 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               |

**Analytical Report Number : 24-018369**

**Project / Site name: William 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 |
|------------------------|--------------------------------------------------------------------------------------------------|-----------------------------|---------------|--------------------|----------------------|
| 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.

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     |



TIM O'HARE ASSOCIATES  
SOIL & LANDSCAPE CONSULTANCY

|             |                                          |
|-------------|------------------------------------------|
| Project     | Field Adjacent Tollgate Road, Bursclough |
| Job:        | Topsoil Analysis - BS3882:2015           |
| Date:       | 18/07/2023                               |
| Job Ref No: | TOHA/23/1016/SS                          |

| Sample Reference                  |      |               |
|-----------------------------------|------|---------------|
|                                   |      | Accreditation |
| Clay (<0.002mm)                   | %    | UKAS          |
| Silt (0.002-0.063mm)              | %    | UKAS          |
| Sand (0.063-2.0mm)                | %    | UKAS          |
| Texture Class (UK Classification) | --   | UKAS          |
| Stones (2-20mm)                   | % DW | GLP           |
| Stones (20-50mm)                  | % DW | GLP           |
| Stones (>50mm)                    | % DW | GLP           |

|                                                         |       |      |
|---------------------------------------------------------|-------|------|
| pH Value (1:2.5 water extract)                          | units | UKAS |
| Electrical Conductivity (1:2.5 water extract)           | uS/cm | UKAS |
| Electrical Conductivity (1:2 CaSO <sub>4</sub> extract) | uS/cm | UKAS |
| Exchangeable Sodium Percentage                          | %     | UKAS |
| Organic Matter (LOI)                                    | %     | UKAS |
| Total Nitrogen (Dumas)                                  | %     | UKAS |
| C : N Ratio                                             | ratio | UKAS |
| Extractable Phosphorus                                  | mg/l  | UKAS |
| Extractable Potassium                                   | mg/l  | UKAS |
| Extractable Magnesium                                   | mg/l  | UKAS |

|                             |       |        |
|-----------------------------|-------|--------|
| Total Arsenic (As)          | mg/kg | MCERTS |
| Total Cadmium (Cd)          | mg/kg | MCERTS |
| Total Chromium (Cr)         | mg/kg | MCERTS |
| Hexavalent Chromium (Cr VI) | mg/kg | MCERTS |
| Total Copper (Cu)           | mg/kg | MCERTS |
| Total Lead (Pb)             | mg/kg | MCERTS |
| Total Mercury (Hg)          | mg/kg | MCERTS |
| Total Nickel (Ni)           | mg/kg | MCERTS |
| Total Selenium (Se)         | mg/kg | MCERTS |
| Total Zinc (Zn)             | mg/kg | MCERTS |
| Water Soluble Boron (B)     | mg/kg | MCERTS |
| Total Cyanide (CN)          | mg/kg | MCERTS |
| Total (mono) Phenols        | mg/kg | MCERTS |

|                          |       |        |
|--------------------------|-------|--------|
| Naphthalene              | mg/kg | MCERTS |
| Acenaphthylene           | mg/kg | MCERTS |
| Acenaphthene             | mg/kg | MCERTS |
| Fluorence                | mg/kg | MCERTS |
| Phenanthrene             | mg/kg | MCERTS |
| Anthracene               | mg/kg | MCERTS |
| Fluoranthene             | mg/kg | MCERTS |
| Pyrene                   | mg/kg | MCERTS |
| Benzo(a)anthracene       | mg/kg | MCERTS |
| Chrysene                 | mg/kg | MCERTS |
| Benzo(b)fluoranthene     | mg/kg | MCERTS |
| Benzo(k)fluoranthene     | mg/kg | MCERTS |
| Benzo(a)pyrene           | mg/kg | MCERTS |
| Indeno(1,2,3-cd)pyrene   | mg/kg | MCERTS |
| Dibenzo(a,h)anthracene   | mg/kg | MCERTS |
| Benzo(g,h,i)perylene     | mg/kg | MCERTS |
| Total PAHs (sum USEPA16) | mg/kg | MCERTS |

|                          |       |        |
|--------------------------|-------|--------|
| Aliphatic TPH>C5 - C6    | mg/kg | MCERTS |
| Aliphatic TPH> C6 - C8   | mg/kg | MCERTS |
| Aliphatic TPH>C8 - C10   | mg/kg | MCERTS |
| Aliphatic TPH>C10 - C12  | mg/kg | MCERTS |
| Aliphatic TPH>C12 - C16  | mg/kg | MCERTS |
| Aliphatic TPH>C16 - C21  | mg/kg | MCERTS |
| Aliphatic TPH> C21-C35   | mg/kg | MCERTS |
| Aliphatic TPH (C5 - C35) | mg/kg | MCERTS |
| Aromatic TPH>C5 - C7     | mg/kg | MCERTS |
| Aromatic TPH>C7 - C8     | mg/kg | MCERTS |
| Aromatic TPH>C8 - C10    | mg/kg | MCERTS |
| Aromatic TPH>C10 - C12   | mg/kg | MCERTS |
| Aromatic TPH>C12 - C16   | mg/kg | MCERTS |
| Aromatic TPH>C16 - C21   | mg/kg | MCERTS |
| Aromatic TPH>C21 - C35   | mg/kg | MCERTS |
| Aromatic TPH (C5 - C35)  | mg/kg | MCERTS |

|                                   |       |        |
|-----------------------------------|-------|--------|
| Benzene                           | mg/kg | MCERTS |
| Toluene                           | mg/kg | MCERTS |
| Ethylbenzene                      | mg/kg | MCERTS |
| p & m-xylene                      | mg/kg | MCERTS |
| o-xylene                          | mg/kg | MCERTS |
| MTB (Methyl Tertiary Butyl Ether) | mg/kg | MCERTS |

|                 |      |           |
|-----------------|------|-----------|
| Asbestos Screen | ND/D | ISO 17025 |
|-----------------|------|-----------|

SL = SANDY LOAM

#### Visual Examination

The sample was described as a very dark brown (Munsell Colour 10YR 2/2), slightly moist, friable, non-calcareous SANDY LOAM with a weakly developed, very fine to medium granular structure. The sample was stone free and no unusual odours, deleterious materials, roots or rhizomes of pernicious weeds were observed.

|                                       |
|---------------------------------------|
| Field Adjacent Tollgate Road, Topsoil |
|---------------------------------------|

|    |
|----|
| 13 |
| 13 |
| 74 |
| SL |
| 0  |
| 0  |
| 0  |

|      |
|------|
| 6.9  |
| 130  |
| 2111 |
| 1.1  |
| 3.9  |
| 0.10 |
| 23   |
| 15   |
| 33   |
| 48   |

|      |
|------|
| 8    |
| <0.2 |
| 15   |
| <1.8 |
| 29   |
| 46   |
| <0.3 |
| 14   |
| <1.0 |
| 37   |
| 0.5  |
| <1.0 |
| <1.0 |

|       |
|-------|
| <0.05 |
| <0.05 |
| <0.05 |
| <0.05 |
| 0.19  |
| <0.05 |
| 0.36  |
| 0.33  |
| 0.15  |
| 0.2   |
| 0.21  |
| 0.07  |
| 0.13  |
| 0.09  |
| <0.05 |
| 0.11  |
| 1.8   |

|        |
|--------|
| <0.001 |
| <0.001 |
| <0.001 |
| <1.0   |
| <2.0   |
| <8.0   |
| <8.0   |
| <10    |
| <0.001 |
| <0.001 |
| <0.001 |
| <1.0   |
| <2.0   |
| <10    |
| <10    |
| <10    |

|         |
|---------|
| <0.005- |
| <0.005- |
| <0.005- |
| <0.005- |
| <0.005- |
| <0.005- |

|              |
|--------------|
| Not Detected |
|--------------|





**Jeff Dean Barcal**  
Marchington Stone Ltd  
105 Buxton Road  
High Lane  
Stockport  
Cheshire  
SK6 8DX

i2 Analytical Ltd.  
7 Woodshots Meadow,  
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Business Park,  
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Herts,  
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**e:**

## **Analytical Report Number : 22-86316**

|                             |               |                                                        |            |
|-----------------------------|---------------|--------------------------------------------------------|------------|
| <b>Project / Site name:</b> | MSSHQ         | <b>Samples received on:</b>                            | 26/09/2022 |
| <b>Your job number:</b>     | SUB SOIL      | <b>Samples instructed on/<br/>Analysis started on:</b> | 26/09/2022 |
| <b>Your order number:</b>   | MSSHQ 23 9 22 | <b>Analysis completed by:</b>                          | 06/10/2022 |
| <b>Report Issue Number:</b> | 1             | <b>Report issued on:</b>                               | 06/10/2022 |
| <b>Samples Analysed:</b>    | 1 soil sample |                                                        |            |

**Signed:**

Dominika Warjan  
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.

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| Certificate of Analysis                                                                                                                                                                                                                     |                         |       |         |                                                                                               |                          |            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|-------|---------|-----------------------------------------------------------------------------------------------|--------------------------|------------|
| BS 8601:2013 Specification For Subsoil                                                                                                                                                                                                      |                         |       |         |                                                                                               |                          |            |
| Report No:                                                                                                                                                                                                                                  | 22-86316                |       |         | Marchington Stone Ltd<br><br>105 Buxton Road<br>High Lane<br>Stockport<br>Cheshire<br>SK6 8DX |                          |            |
| Location                                                                                                                                                                                                                                    | MSSHQ                   |       |         |                                                                                               |                          |            |
| Lab Reference (Sample Number)                                                                                                                                                                                                               | 2437389                 |       |         |                                                                                               |                          |            |
| Sampling Date                                                                                                                                                                                                                               | 23/09/2022              |       |         |                                                                                               |                          |            |
| Sample ID                                                                                                                                                                                                                                   | MSSHQ SUB SOIL          |       |         |                                                                                               |                          |            |
| Depth (m)                                                                                                                                                                                                                                   |                         |       |         |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             |                         | unit  | Result  | Compliant with range (Y/N)                                                                    |                          |            |
| Texture                                                                                                                                                                                                                                     | Clay                    | %w/w  | 6.00    | Multipurpose subsoil                                                                          | Specific purpose subsoil |            |
|                                                                                                                                                                                                                                             | Silt                    | %w/w  | 22.50   |                                                                                               | Acidic                   | Calcareous |
|                                                                                                                                                                                                                                             | Sand                    | %w/w  | 71.5    |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Texture Class           |       |         |                                                                                               | SANDY LOAM               | Y          |
| Mass Loss on Ignition                                                                                                                                                                                                                       |                         | %     | 1.85    | Y                                                                                             | Y                        | Y          |
| Coarse fragment content                                                                                                                                                                                                                     | >2mm                    | %w/w  | 29.00   | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | >20mm                   | %w/w  | 0.00    | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | >75mm                   | %w/w  | 0.00    | Y                                                                                             | Y                        | Y          |
| Soil pH                                                                                                                                                                                                                                     |                         | pH    | 8.00    | Y                                                                                             | N                        | Y          |
| Carbonate                                                                                                                                                                                                                                   |                         | %     | 3.20    | -                                                                                             | -                        | Y          |
| Exchangable Sodium Percentage                                                                                                                                                                                                               |                         | %     | 2.10    | Y                                                                                             | Y                        | Y          |
| Phytotoxic contaminants                                                                                                                                                                                                                     | Total Zinc              | mg/kg | 46.00   | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | Total Copper            | mg/kg | 7.70    | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | Total Nickel            | mg/kg | 18.00   | Y                                                                                             | Y                        | Y          |
| Visible contaminants                                                                                                                                                                                                                        | >2mm                    | %w/w  | 0.00    | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | Plastics                | %w/w  | 0.00    | Y                                                                                             | Y                        | Y          |
|                                                                                                                                                                                                                                             | Sharps                  | %w/w  | 0.00    | Y                                                                                             | Y                        | Y          |
| Available plant nutrients                                                                                                                                                                                                                   | Phosphorus              | mg/l  | 60.00   |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Potassium               | mg/l  | 145.00  |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Magnesium               | mg/l  | 340.00  |                                                                                               |                          |            |
| Additional analysis                                                                                                                                                                                                                         | Available Sodium        | mg/l  | 45.00   |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Available Calcium       | mg/l  | 1200.00 |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Conductivity            | uS/cm | 2300.00 |                                                                                               |                          |            |
|                                                                                                                                                                                                                                             | Conductivity CaSO4 Adj. | uS/cm | 390.00  |                                                                                               |                          |            |
| Compliance                                                                                                                                                                                                                                  |                         |       |         | Pass                                                                                          | Fail                     | Pass       |
| Pass BS 8601                                                                                                                                                                                                                                |                         |       |         |                                                                                               |                          |            |
| <small>Results are expressed on a dry weight basis, after correction for moisture content where applicable<br/>Stated limits are for guidance only and i2 cannot be held responsible for any discrepancies with current legislation</small> |                         |       |         |                                                                                               |                          |            |

\* = UKAS accredited

\*\* = MCERTS accredited

**Analytical Report Number : 22-86316**

**Project / Site name: MSSHQ**

\* 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 *                       |
|-------------------|------------------|---------------|---------------|--------------------------------------------|
| 2437389           | MSSHQ SUB SOIL   | None Supplied | None Supplied | Brown clay and loam with stones and gravel |

**Analytical Report Number : 22-86316**

**Project / Site name: MSSHQ**

**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 |
|----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------|--------------------|
| Geotechnical Testing in Soil                 | See attached geotechnical report                                                                                            | See attached geotechnical report                                                     |               | W                  |
| 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                  |
| 75 mm Coarse Fraction - BS8601 Subsoil       | Determination of > 75 mm fraction by gravimetry.                                                                            | BS8601:2013                                                                          |               | D                  |
| Carbonate - BS8601 Subsoil                   | Determination of soil carbonate content                                                                                     | BS8601:2013                                                                          | L034-PL       | D                  |
| Loss on Ignition - BS8601                    | Determination of Loss on Ignition as defined in BS8601                                                                      | BS8601:2013                                                                          |               | D                  |
| Moisture Content                             | Moisture content, determined gravimetrically. (30 oC)                                                                       | In house method.                                                                     | L019-UK/PL    | W                  |
| 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                  |
| Subsoil                                      | See attached report.                                                                                                        | BS 8601: 2013                                                                        | PL            | W                  |
| Textural Classification Diagram              | -                                                                                                                           | BS8601:2013                                                                          |               | D                  |
| Conductivity (BS3882/BS8601)                 | Determination of the conductivity of soil in accordance with BS 3882:2007 methodology                                       | BS3882:2007 & BS8601:2013                                                            | L099-PL       | D                  |
| pH (BS3882/BS8601)                           | Determination of the pH of soil in accordance with BS 3882:2007 methodology                                                 | BS3882:2007 & BS8601:2013                                                            | L099-PL       | D                  |
| Phosphorus (BS3882/BS8601)                   | Determination of the extractable phosphorus in soil, in accordance with BS3882:2007 methodology.                            | BS3882:2007 & BS8601:2013                                                            | L048-PL       | D                  |
| Extractable/Available Metals (BS3882/BS8601) | Determination of the extractable metals in soil, in accordance with BS3882:2007 methodology.                                | BS3882:2007 & BS8601:2013                                                            | L038-PL       | D                  |
| Sodium (exchangeable %)                      | Determination of exchangeable sodium (%) by calculation, in accordance with BS3882:2007 methodology.                        | BS3882:2007                                                                          | L038-PL       | D                  |
| Textural Classification (BS3882/BS8601)      | Determination of the textural classification of soil following BS3882:2007 methodology.                                     | BS3882:2007 & BS8601:2013                                                            | L01TS         | D                  |
| Coarse Fragment and Contaminant Analysis     | Determination of >2mm contaminants                                                                                          | BS3882:2007 & BS8601:2013 & PAS 100:2005                                             | L01TS         | D                  |

**For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.**

**For method numbers ending in 'PL' 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 correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.**

**Analytical Report Number : 22-86316**  
**Project / Site name: MSSHQ**

**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 |
|----------------------|-------------------------------|-----------------------------|---------------|--------------------|
|----------------------|-------------------------------|-----------------------------|---------------|--------------------|

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.

[illegible]

**moisture**

Accreditation  
Status



## Certificate of Analysis

**Client:** Marchington Stone Ltd  
(T283) 105 Buxton Road  
High Lane  
Stockport  
SK6 8DX

**Originator:** TOPSOIL  
SOIL

**Lab ID:** 51693 - 603031  
**Sample ID:** TOPSOIL A MSBH  
**Sample Weight:** 900g

**Date Received:** 11/01/2023  
**Date Reported:** 25/01/2023

### BS 3882 : 2015 SPECIFICATION FOR TOPSOIL Multipurpose Grade

|                                 |                   |       |             | Compliant with range (Y/N)          |      |      |       |               |               |
|---------------------------------|-------------------|-------|-------------|-------------------------------------|------|------|-------|---------------|---------------|
|                                 |                   |       |             | Multi-P                             | Acid | Calc | Low-F | Low-F<br>Acid | Low-F<br>Calc |
|                                 |                   | Unit  | Result      |                                     |      |      |       |               |               |
| Texture:                        | Clay              | % w/w | 10          |                                     |      |      |       |               |               |
|                                 | Silt              | % w/w | 6           | See area of permitted soil textural |      |      |       |               |               |
|                                 | Sand              | % w/w | 84          | classes in Fig. 1.                  |      |      |       |               |               |
|                                 | Textural Class    |       | Loamy Sand  | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Organic Matter:                 |                   | % w/w | 6.4         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Coarse                          | >2 mm             | % w/w | 1.2         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Fragment                        | >20 mm            | % w/w | 0.3         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Content:                        | >50 mm            | % w/w | 0.0         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Soil pH:                        |                   |       | 8.4         | Y                                   | N    | Y    | Y     | N             | Y             |
| Carbonate:                      |                   | % w/w | 1.9         |                                     |      | Y    |       |               | Y             |
| Available                       | Nitrogen          | % w/w | 0.470       | Y                                   | Y    | Y    |       |               |               |
| Plant                           | Phosphorus        | mg/l  | 55.4 (4)*   | Y                                   | Y    | Y    | N     | N             | N             |
| Nutrients:                      | Potassium         | mg/l  | 1340.5 (7)* | Y                                   | N    | N    |       |               |               |
|                                 | Magnesium         | mg/l  | 153.4 (3)*  | Y                                   | Y    | Y    |       |               |               |
| Carbon:Nitrogen Ratio:          |                   | :1    | 7.9         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Exchangeable Sodium Percentage: |                   | %     | 9.9         |                                     |      |      |       |               |               |
| Phytotoxic<br>Contaminants:     | Total Zinc        | mg/kg | 54.7        | Y                                   | Y    | Y    | Y     | Y             | Y             |
|                                 | Total Copper      | mg/kg | 14.3        | Y                                   | Y    | Y    | Y     | Y             | Y             |
|                                 | Total Nickel      | mg/kg | <10         | Y                                   | Y    | Y    | Y     | Y             | Y             |
| Visible<br>Contaminants:        | > 2mm             | % w/w | 0.10        | Y                                   | Y    | Y    | Y     | Y             | Y             |
|                                 | Plastics          | % w/w | 0.00        | Y                                   | Y    | Y    | Y     | Y             | Y             |
|                                 | Number of Sharps  |       | 0           | Y                                   | N    | N    | N     | N             | N             |
| Additional<br>Analysis:         | Available Sodium  | mg/l  | 263.4       |                                     |      |      |       |               |               |
|                                 | Available Calcium | mg/l  | 1019.5      |                                     |      |      |       |               |               |
|                                 | Conductivity      | uS/cm | 1624        | Y                                   |      |      |       |               |               |
| Compliance:                     |                   |       |             | Y                                   | N    | N    | N     | N             | N             |

Results are expressed on a dry matter basis.

\* Soil indices from RB209

**Released by:**

*Myles Nicholson*

**Date:** 25/01/2023

**DECLARATION:**

I certify that this sample has been analysed by NRM in accordance with BS 3882 Specification for Topsoil (2015).

**NRM** Coopers Bridge, Braziers Lane, Bracknell, Berkshire RG42 6NS

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## Analytical Report

**Client:** Marchington Stone Ltd  
(T283) 105 Buxton Road  
High Lane  
Stockport  
SK6 8DX

**Originator:** TOPSOIL  
SOIL

**Lab ID:** 51693 - 603031  
**Sample ID:** TOPSOIL A MSBH  
**Sample Weight:** 900g

**Date Received:** 11/01/2023  
**Date Reported:** 25/01/2023

**Fig. 1. Textural Class: Loamy Sand (compliant)**

