Our Ref: 2105014.002.01
Your Ref:

10 September 2021

The Old Chapel
35a Southover
Wells
Somerset
BA5 1UH

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**Carmel Hynes**
**London Borough of Hillingdon Council**
**Capital Programme Works Services**
Civic Centre
High Street
Uxbridge
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Dear Carmel

**ENDEAVOUR SEA SCOUT GROUP, COWLEY – SUPPLEMENTARY GEOTECHNICAL INVESTIGATION**

## Background

Further to instruction, TEC has undertaken supplementary geotechnical investigation at the above site. Works were undertaken in accordance with our proposal letter referenced CH.2105014.002 and dated 05 July 2021. Geotechnical laboratory testing was undertaken in accordance with the specification outlined within our original proposal referenced CH.2105014.001.

The site is located off Moorfield Road, Cowley. The site is approximately 0.05 hectares in size, with the centre of the site located at approximate National Grid Reference 505800, 181300. The nearest postcode to the site is UB8 3SJ.

It is understood the proposed development is to comprise the demolition of the existing hall to allow for the construction of a single storey structure to accommodate a new scout centre. Although no details have been provided to TEC, line loads of up to 50kN per metre run have been assumed for the assumed lightweight development at this preliminary stage and general recommendations with regards to the ground engineering have been made on this basis.

## Previous Investigation – June 2021

Previous intrusive works were undertaken on the site by TEC (Reference 2105014.001.01, dated July 2021). Reference should be made to the previous report for full information although, a summary of the pertinent information is provided below.

The works comprised the advancement of 9No. dynamic sample boreholes positioned within the approximate locations requested by London Borough of Hillingdon Council. All 9No. locations refused at shallow depths of between 1.0 and 1.6mbgl, on suspected concrete. The natural ground was not encountered during the previous intrusive works.

The previous works recorded the following general ground profile:

**Table 1: Previous Encountered Ground Conditions**

| Thickness | Geological Unit |
|---|---|
| | ***Made Ground:*** |
| 0.0 – 0.5/0.8 | Brown mottled light grey slightly sandy gravelly slightly clayey silt with frequent rootlets. Gravel of concrete, clinker, wood and brick. |
| 0.5/0.8 – 1.0/1.2 | Brown mottled reddish brown slightly sandy gravelly locally very gravelly slightly clayey silt. Gravel of chert, brick, concrete and mudstone. |
| 1.0/1.2 – 1.6 | Brown mottled dark brown and reddish brown slightly sandy gravelly very silty clay. Gravel of chert, brick, concrete and wood. |

No groundwater was encountered during the intrusive investigation.

**Supplementary Investigation – August 2021**

Supplementary investigation was undertaken on 10 August 2021 and comprised the advancement of 3No. trial pits within available locations on site to determine the extent of the suspected concrete slab previously recorded and the depth to natural ground across the development area.

All site works were undertaken in accordance with BS5930:2015+A1:2020, BS10175+A2:2017 and, where appropriate, Eurocode 7. Works were supervised by a suitably experienced geoenvironmental consultant from TEC.

*Sampling*

Samples were collected in accordance with the following guidance;

- BS5930:2015+A1:2020 – Code of practice for ground investigations;
- BS-EN 1997-2:2007 - Eurocode 7 — Geotechnical design —Part 2: Ground investigation and testing
- BS ISO 10175:2011+A2:2017 - Investigation of potentially contaminated sites – Code of practice;
- BS ISO 18400-105 Soil quality – Sampling - Packaging, transport, storage and preservation of samples; and
- BS ISO 18400-106 Soil quality – Sampling - Quality control and quality assurance.

*Geotechnical Testing*

Selected soil samples were submitted for geotechnical analysis at K4 Soils Ltd. Laboratory testing was scheduled on the basis of field observations for a selection of the following:

- Atterberg limit tests – natural moisture content, liquid limit and plastic limit;
- Particle size distribution (PSD) tests; and
- BRE SD1 Suite B – Water soluble and acid soluble sulphates, total sulphur and pH.

Soil geotechnical certificates of analysis are presented in Appendix C.

*Encountered Ground Conditions*

Exploratory hole locations are presented in Figure 1, with exploratory hole logs presented in Appendix A. Photographs of the materials encountered are presented in Appendix B. A summary of the encountered ground conditions is provided in Table 2, below:

**Table 2: Encountered Ground Conditions**

| Thickness | Geological Unit |
|---|---|
| | ***Made Ground:*** |
| 0.1 – 0.2/1.0 | Brown slightly sandy gravelly slightly clayey silt with frequent rootlets. Gravel of concrete, clinker, wood and brick. |
| 0.2/0.6 – 0.4/1.0 | Brown mottled orangish brown slightly sandy gravelly slightly clayey silt. Gravel of chert, brick, concrete and sandstone. (TP02 and TP03 only) |
| 0.4 – 1.2 | Grey locally blueish grey slightly sandy gravel of igneous lithologies, concrete, rare brick and sandstone. (TP03 only) |
| | **Superficial Deposits: Langley Silt Member:** |
| 1.0 – 1.6 | [Dense] brown mottled orangish brown slightly silty gravelly sand / sandy angular to subrounded fine to coarse gravel of chert, sandstone and mudstone. |
| 1.6 – 1.9 | Stiff slightly gravelly slightly sandy silty clay. Gravel of angular to subrounded fine and medium chert and sandstone (TP01 only) |

No groundwater or perched water was encountered during the current phase of works.

**Geotechnical Test Data Summary**

Laboratory test data are presented in Appendix C.

*Plasticity*

Atterberg Limit tests were undertaken on 2no. cohesive samples, summarised in Table 3 overleaf:

**Table 3: Summary of Laboratory Test Results**

| Moisture Content (%) | Plasticity Index (%) | % passing 425µm sieve | Modified Plasticity Index[1] (%) | Volume Change Potential[1] |
|---|---|---|---|---|
| 7.5 – 9.3 | 18 – 27 | 24 – 39 | 6.48 – 7.02 | Non-plastic |

Note 1: Based on recommendation provided in the NHBC Standard

*Particle Size Distribution*

Particle Size Distribution tests were undertaken on 2No. granular samples, summarised in Table 4 below:

**Table 4: Summary of Laboratory Test Results**

| Clay (%) | Silt (%) | Sand (%) | Gravel (%) | Cobbles and Boulders (%) |
|---|---|---|---|---|
| 4.0 – 5.5 | 4.3 – 21.3 | 17.6 – 18.2 | 55.0 – 74.1 | - |

## Foundations

It is considered that conventional foundations may be suitable for the proposed development. The underlying soils have been recorded to be non-plastic, requiring a minimum founding depth of 0.75mbgl to be adopted within the design, where foundations are judged to be beyond the influence of proposed, existing, or historic planting (NHBC/ LABC), although foundations would need to taken to the natural ground materials (dense granular deposits / stiff gravelly, sandy, silty clay) encountered on site below a depth of 1.0mbgl.

When founding within this material, an allowable bearing resistance in the region of 75kN/m$^2$ would be considered appropriate, with total settlements of less than 25mm anticipated at the assumed pressures.

## Ground Floor Slabs

Made ground greater than 600mm below current ground level has been recorded at the site. NHBC Standards (2021) require floor slabs to be suspended where the depth of made ground exceeds 600mm.

## Excavations

Excavations at the site for conventional foundations may be achievable using conventional equipment, although it is anticipated that breakers may be required at relatively shallow depth where the existing concrete slab is encountered or excavation within the very dense sand and gravel at depth be required.

Groundwater was not recorded in any of the intrusive locations on site. Based on observations made during the ground investigations, groundwater ingress into excavations is considered unlikely to be significantly problematic although some dewatering may be required, particularly where excavations are left open for any length of time. It would be recommended that formation levels are protected to mitigate against softening associated with any such water ingress.

It should be noted that groundwater levels might fluctuate according to the season and from year to year. This may have implications on recommendations, including those for foundations and excavations. Accordingly, a careful watch should be maintained during any future groundworks and the recommendations presented in this report may be subject to amendment should additional information becoming available.

It is recommended that appropriate shoring/temporary works are used in accordance with current Health and Safety requirements where access for personnel is required into excavations.

## Protection of Buried Concrete

BRE SD1 Suite B testing was undertaken on 3No. samples of the encountered ground materials.

The results of the testing, together with the resulting Aggressive Chemical Environment for Concrete (ACEC) Class and Design Sulphate (DS) Class, as derived in accordance with BRE Special Digest 1, are presented in Table 5. The full laboratory results are presented in Appendix C.

**Table 5: Summary of ACEC**

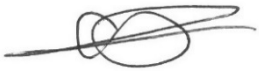
| Stratum | No. of tests | pH | Water Soluble Sulphate (mg/l) | Oxidisable Sulphides (%) | Total Potential Sulphates (%) | ACEC | DS Class |
|---|---|---|---|---|---|---|---|
| Langley Silt Member | 4 | 7.7 – 8.1 | <20 – 101 | <0.01 – 0.61 | 0.03 – 0.75 | AC-3 | DS-3 |

## Closure

We hope you find the above to your satisfaction. Should you have any queries please do not hesitate to contact us.

Yours sincerely

**James Naylor**
Geoenvironmental Consultant



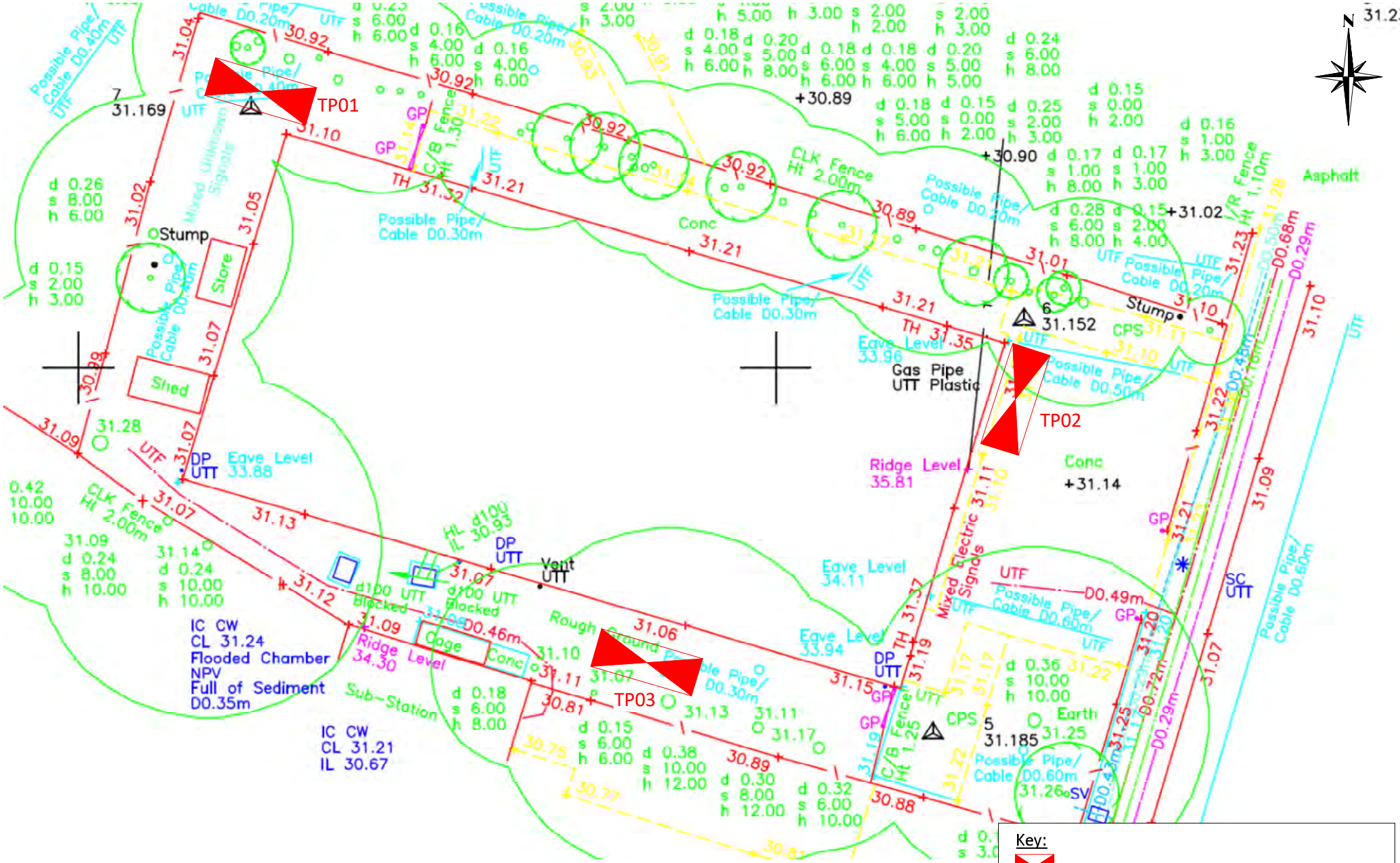
**Claire Hooley**
Director

For and on behalf of
**TEC**

**Enclosed**

Figure 1 – Exploratory Hole Location Plan
Appendix A – Exploratory Hole Logs
Appendix B – Site Photographs
Appendix C –Geotechnical Laboratory Results (K4 Report No. 30569 and ELAB Report No. 21-35452)

Figure




Extract of Client Drawing L10397-1-ENDEAVOUR, Dated May 2021

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| tec | TEC<br>The Old Chapel<br>35a Southover<br>Wells, Somerset<br>BA5 1UH | Tel: 01749 677760<br>Email: info@tecon.co.uk<br>Web: www.tecon.co.uk | Site Name:<br>Endeavour Sea Scout Group, Cowley | Drawing Name:<br>Exploratory Hole Location Plan | Client Name:<br>London Borough of Hillingdon Council | Project No:<br>2105014.002 | Figure No:<br>1 | Date:<br>September 2021 | Scale:<br>NTS |

# Appendix A

## Exploratory Hole Logs

# Trial Pit Log

Trialpit No **TP01** FINAL Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Endeavour Sea Scout Group, Cowley | Project No. 2105014.002 | Co-ords: - Level: mbgl |
| Location: | Cowley | | Dimensions: 2.67m × 0.89m Inclination: ° Orientation: ° Depth: 1.9m |
| Client: | London Borough of Hillingdon Council | | |

Date 10/08/2021 | Scale 1:25 | Logged JN

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Information | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | | | | 0.10 | | | MADE GROUND: Dark brown sandy slightly gravelly slightly clayey silt with frequent roots and rootlets. Gravel of wood, chert and brick. |
| | | | | | | | | MADE GROUND: Brown sandy slightly gravelly slightly clayey silt with frequent rootlets. Gravel of chert, brick, sandstone and rare concrete. |
| | 1.00 - 1.10 | 2D | | | 1.00 | | | [Dense locally very dense] brown mottled orangish brown slightly silty sandy angular to subrounded fine to coarse GRAVEL of chert, sandstone and mudstone. |
| | 1.10 - 1.20 | 1B | | | | | | |
| | 1.50 - 1.60 | 4D | | | 1.60 | | | Stiff locally very stiff brown mottled orangish brown slightly gravelly slightly sandy silty CLAY. Gravel of angular to subrounded fine and medium chert and sandstone. |
| | 1.80 - 1.90 | 3B | | | 1.90 | | | End of pit at 1.9 m |

Remarks: Terminated upon refusal.
Densities based upon field observations only.
Groundwater not encountered.

Stability: Stable

# Trial Pit Log

Trialpit No **TP02** FINAL Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Endeavour Sea Scout Group, Cowley | Project No. 2105014.002 | Co-ords: - Level: mbgl |
| Location: | Cowley | | Dimensions: m Inclination: ° Orientation: ° Depth: 1.6m |
| Client: | London Borough of Hillingdon Council | | |

Date 10/08/2021

Scale 1:25

Logged JN

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Information | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | | | | 0.10 | | | MADE GROUND: Light grey concrete. |
| | | | | | | | | MADE GROUND: Brown slightly sandy gravelly slightly clayey silt with frequent rootlets. Gravel of concrete, clinker, wood and brick. |
| | | | | | 0.60 | | | MADE GROUND: Brown mottled orangish brown slightly sandy gravelly slightly clayey silt. Gravel of chert, brick, concrete and sandstone. |
| | 1.00 - 1.10 | 1B | | | 1.00 | | | [Dense becoming very dense] brown mottled orangish brown slightly clayey sandy angular to subrounded fine to coarse GRAVEL of chert. |
| | 1.20 - 1.30 | 2D | | | | | | |
| | 1.40 - 1.50 | 3D | | | | | | |
| | 1.50 - 1.60 | 4B | | | | | | |
| | | | | | 1.60 | | | End of pit at 1.6 m |

Remarks: Terminated upon refusal.
Densities based upon field observations only.
Groundwater not encountered.

Stability:

# Trial Pit Log

Trialpit No **TP03** FINAL Sheet 1 of 1

| | | | |
|---|---|---|---|
| Project Name: | Endeavour Sea Scout Group, Cowley | Project No. 2105014.002 | Co-ords: - Level: mbgl |
| Location: | Cowley | | Dimensions: 1.89m × 1.00m Inclination: ° Orientation: ° Depth: 1.3m |
| Client: | London Borough of Hillingdon Council | | |

Date 10/08/2021 | Scale 1:25 | Logged JN

| Water Strike | Samples and In Situ Testing: Depth | Type | Results | Information | Depth (m) | Level (m) | Legend | Stratum Description |
|---|---|---|---|---|---|---|---|---|
| | | | | | 0.10 | | | MADE GROUND: Brown mottled orangish brown slightly sandy slightly silty gravel of chert, tile and brick. |
| | | | | | 0.20 | | | MADE GROUND: Dark brown sandy slightly gravelly slightly clayey silt with frequent roots and rootlets. Gravel of chert, wood, brick and concrete. |
| | | | | | 0.40 | | | MADE GROUND: Brown sandy gravelly silt with occasional rootlets. Gravel of chert, concrete, sandstone and brick. |
| | | | | | | | | MADE GROUND: Grey locally blueish grey slightly sandy gravel of igneous lithologies, concrete, rare brick and sandstone. |
| | 1.10 - 1.20 | 1D | | | | | | |
| | | | | | 1.25 | | | *Light grey concrete pad throughout base of pit.* End of pit at 1.3 m |

Remarks: Terminated on concrete slab within base of pit. Groundwater not encountered.

Stability: Stable

Appendix B

Site Photographs

Photograph 1: Encountered ground materials, TP01. 0.0 - 1.9mbgl

Photograph 2: Encountered ground materials. Base of TP01 1.5 – 1.9mbgl.

Photograph 3: Encountered spoil materials. TP01 0.0 – 1.9mbgl.

Photograph 4: Encountered ground materials. TP02 0.0 – 1.6mbgl.

Photograph 5: Encountered spoil materials. TP02 0.0 – 1.6mbgl.

Photograph 6: Encountered ground materials. TP03 0.0 – 1.3mbgl.


Photograph 7: Close view of concrete within base of TP03. 1.25mbgl.

# Appendix C

## Geotechnical Laboratory Results

# Summary of Natural Moisture Content, Liquid Limit and Plastic Limit Results

| Job No. | Project Name | Programme | |
|---|---|---|---|
| 30569 | Endeavour Sea Scout Group, Hillingdon | Samples received | 13/08/2021 |
| | | Schedule received | 16/08/2021 |
| Project No. | Client | Project started | 16/08/2021 |
| 2105014.002 | TEC | Testing Started | 25/08/2021 |

| Hole No. | Sample | | | | Soil Description | NMC | Passing 425µm | LL | PL | PI | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ref | Top m | Base m | Type | | % | % | % | % | % | |
| TP01 | - | 1.80 | 1.90 | B | Brown sandy silty clayey GRAVEL (gravel is fmc and angular to rounded) | 9.3 | 39 | 31 | 13 | 18 | Sample washed to obtain test fraction |
| TP02 | - | 1.00 | 1.10 | B | Brown sandy silty clayey GRAVEL (gravel is fmc and angular to rounded) | 7.5 | 24 | 41 | 14 | 27 | Sample washed to obtain test fraction |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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UKAS TESTING
2519

**Test Methods: BS1377: Part 2: 1990:**
Natural Moisture Content : clause 3.2
Atterberg Limits: clause 4.3, 4.4 and 5.0

**Test Report by K4 SOILS LABORATORY**
**Unit 8 Olds Close Olds Approach**
**Watford Herts WD18 9RU**

**Tel: 01923 711 288**
**Email: James@k4soils.com**

**Checked and Approved**

**Initials** **J.P**

**Date:** 06/09/2021

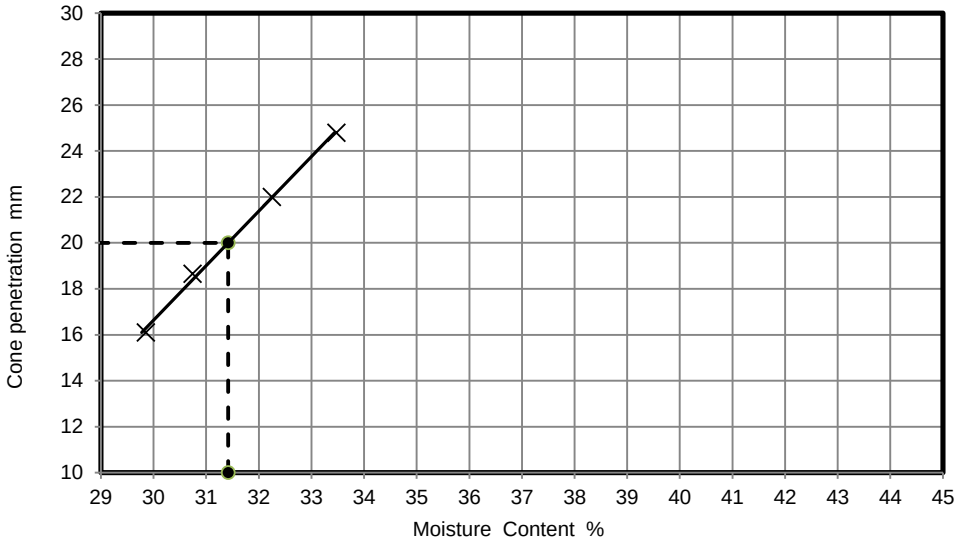
Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

# LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX

| | | | | | |
|---|---|---|---|---|---|
| Site Name | Endeavour Sea Scout Group, Hillingdon | | | Sample No. | - |
| Project No. | 2105014.002 | Client | TEC | Depth Top | 1.80 m |
| Soil Description | Brown sandy silty clayey GRAVEL (gravel is fmc and angular to rounded) | | | Depth Base | 1.90 m |
| | | | | Sample Type | B |
| | | | | Samples received | 13/08/2021 |
| | | | | Schedules received | 16/08/2021 |
| | | | | Project Started | 16/08/2021 |
| | | | | Date Tested | 25/08/2021 |

Job No. 30569

Borehole/Pit No. TP01

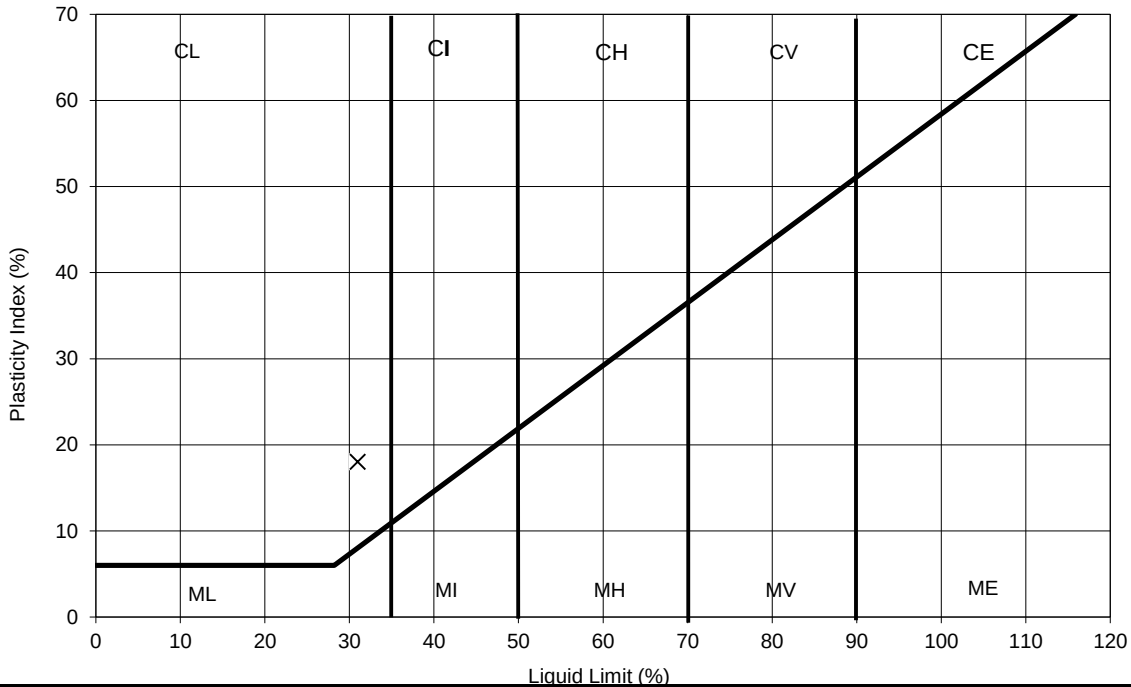



| | | |
|---|---|---|
| **NATURAL MOISTURE CONTENT** | **9.3** | **%** |
| **% PASSING 425µm SIEVE** | **39** | **%** |
| **LIQUID LIMIT** | **31** | **%** |
| **PLASTIC LIMIT** | **13** | **%** |
| **PLASTICITY INDEX** | **18** | **%** |

**Remarks**

Sample washed to obtain test fraction

## PLASTICITY INDEX




**TEST METHOD**

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

**Checked and Approved**

Initials: J.P

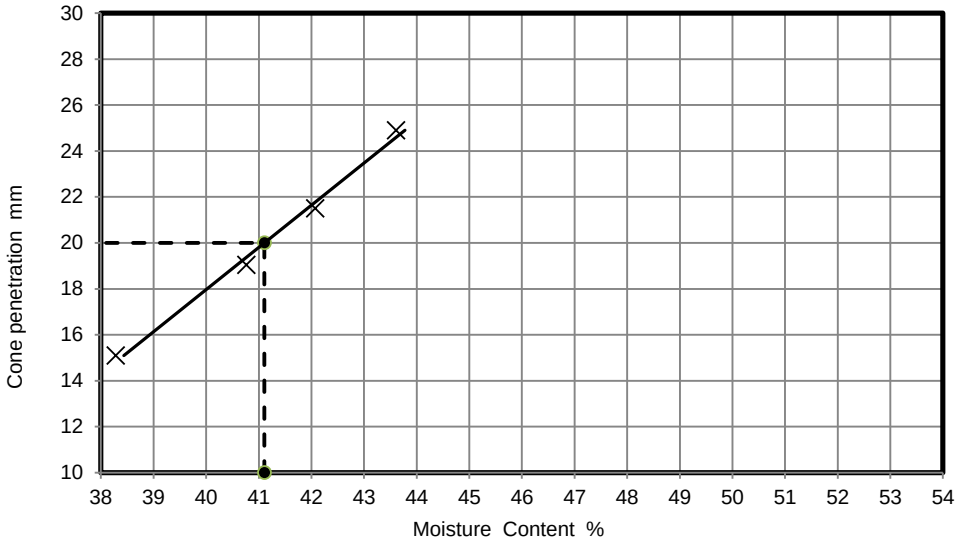
Date: 06/09/2021


Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com


2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

| | | | | | |
|---|---|---|---|---|---|
| | **LIQUID LIMIT, PLASTIC LIMIT AND PLASTICITY INDEX** | | | Job No. | 30569 |
| | | | | Borehole/Pit No. | TP02 |
| Site Name | Endeavour Sea Scout Group, Hillingdon | | | Sample No. | - |
| Project No. | 2105014.002 | Client | TEC | Depth Top | 1.00 m |
| Soil Description | Brown sandy silty clayey GRAVEL (gravel is fmc and angular to rounded) | | | Depth Base | 1.10 m |
| | | | | Sample Type | B |
| | | | | Samples received | 13/08/2021 |
| | | | | Schedules received | 16/08/2021 |
| | | | | Project Started | 16/08/2021 |
| | | | | Date Tested | 25/08/2021 |

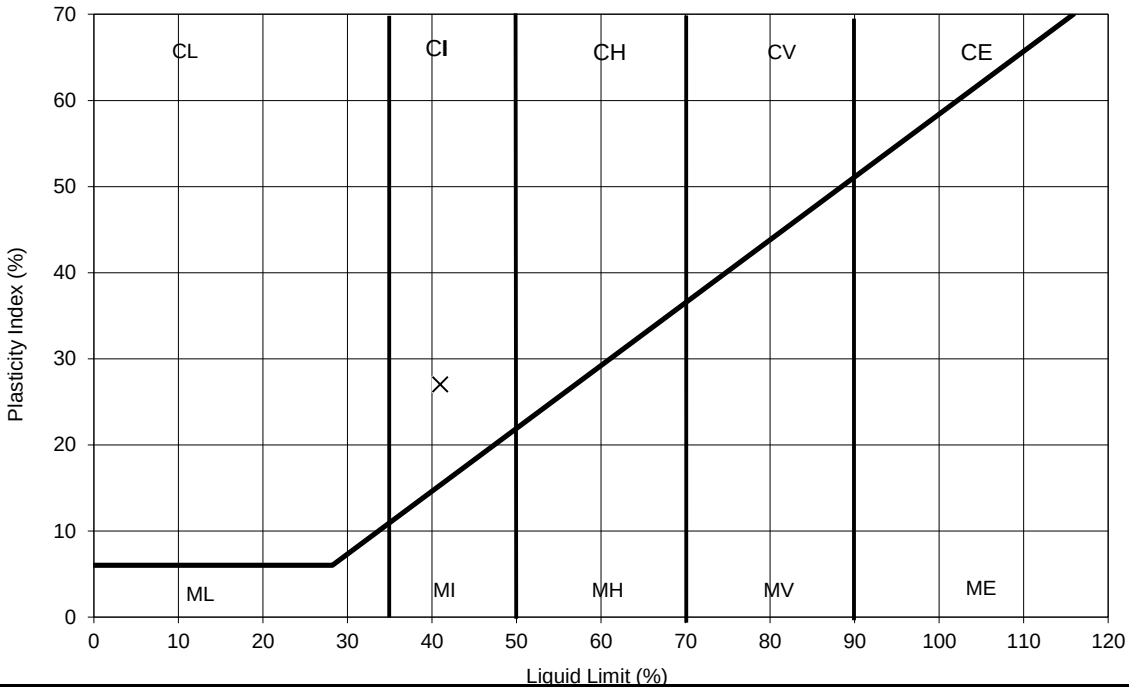



| | | |
|---|---|---|
| **NATURAL MOISTURE CONTENT** | **7.5** | **%** |
| **% PASSING 425µm SIEVE** | **24** | **%** |
| **LIQUID LIMIT** | **41** | **%** |
| **PLASTIC LIMIT** | **14** | **%** |
| **PLASTICITY INDEX** | **27** | **%** |

**Remarks**

Sample washed to obtain test fraction

**PLASTICITY INDEX**




**TEST METHOD**

BS1377: Part 2 :Clause 4.3 : 1990 Determination of the liquid limit by the cone penetrometer method
BS1377: Part 2 :Clause 5.0 : 1990: Determination of the plastic limit and plasticity index
BS1377: Part 2 :Clause 3.2 : 1990:Determination of the moisture content by the oven drying method

**Checked and Approved**

Initials: J.P
Date: 06/09/2021

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford Herts WD18 9RU
Tel: 01923 711 288 Email: James@k4soils.com

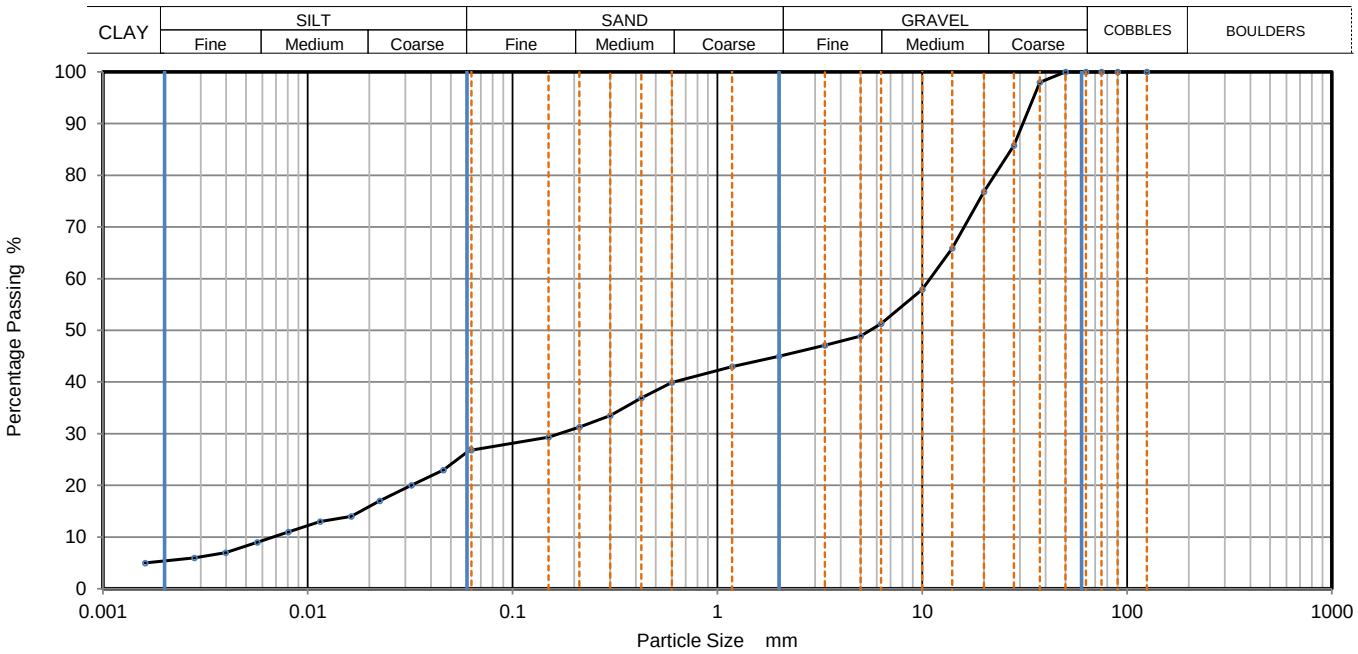
2519

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

MSF-5 R2

# PARTICLE SIZE DISTRIBUTION

| | | | | | |
|---|---|---|---|---|---|
| Site Name | Endeavour Sea Scout Group, Hillingdon | | | Job Ref | 30569 |
| | | | | Borehole/Pit No. | TP01 |
| | | | | Sample No. | - |
| Project No. | 2105014.002 | Client | TEC | Depth Top | 1.10 m |
| Soil Description | Brown clayey sandy very silty GRAVEL (gravel is fmc and sub-angular to sub-rounded) | | | Depth Base | 1.20 m |
| | | | | Sample Type | B |
| | | | | Samples received | 13/08/2021 |
| | | | | Schedules received | 16/08/2021 |
| Test Method | BS1377:Part 2: 1990, clause 9.0 | | | Project started | 16/08/2021 |
| *These results only apply to the items tested* | | | | Date tested | 27/08/2021 |




| Sieving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.0625 | 27 |
| 90 | 100 | 0.0459 | 23 |
| 75 | 100 | 0.0321 | 20 |
| 63 | 100 | 0.0225 | 17 |
| 50 | 100 | 0.0163 | 14 |
| 37.5 | 98 | 0.0115 | 13 |
| 28 | 86 | 0.0081 | 11 |
| 20 | 77 | 0.0057 | 9 |
| 14 | 66 | 0.0040 | 7 |
| 10 | 58 | 0.0028 | 6 |
| 6.3 | 51 | 0.0016 | 5 |
| 5 | 49 | | |
| 3.35 | 47 | | |
| 2 | 45 | | |
| 1.18 | 43 | | |
| 0.6 | 40 | Particle density | (assumed) |
| 0.425 | 37 | 2.70 | Mg/m3 |
| 0.3 | 34 | | |
| 0.212 | 31 | | |
| 0.15 | 29 | | |
| 0.063 | 27 | | |

| Sample Proportions | % dry mass |
|---|---|
| Very coarse | 0.0 |
| Gravel | 55.0 |
| Sand | 18.2 |
| Silt | 21.3 |
| Clay | 5.5 |

| Grading Analysis | | |
|---|---|---|
| D100 | mm | |
| D60 | mm | 10.9 |
| D30 | mm | 0.169 |
| D10 | mm | 0.00639 |
| Uniformity Coefficient | | 1700 |
| Curvature Coefficient | | 0.41 |

Remarks

Preparation and testing in accordance with BS1377 unless noted below



**K4 Soils Laboratory**

**Unit 8, Olds Close, Watford, Herts, WD18 9RU**
**Email: james@k4soils.com**
**Tel: 01923 711288**

UKAS TESTING 2519

**Checked and Approved**

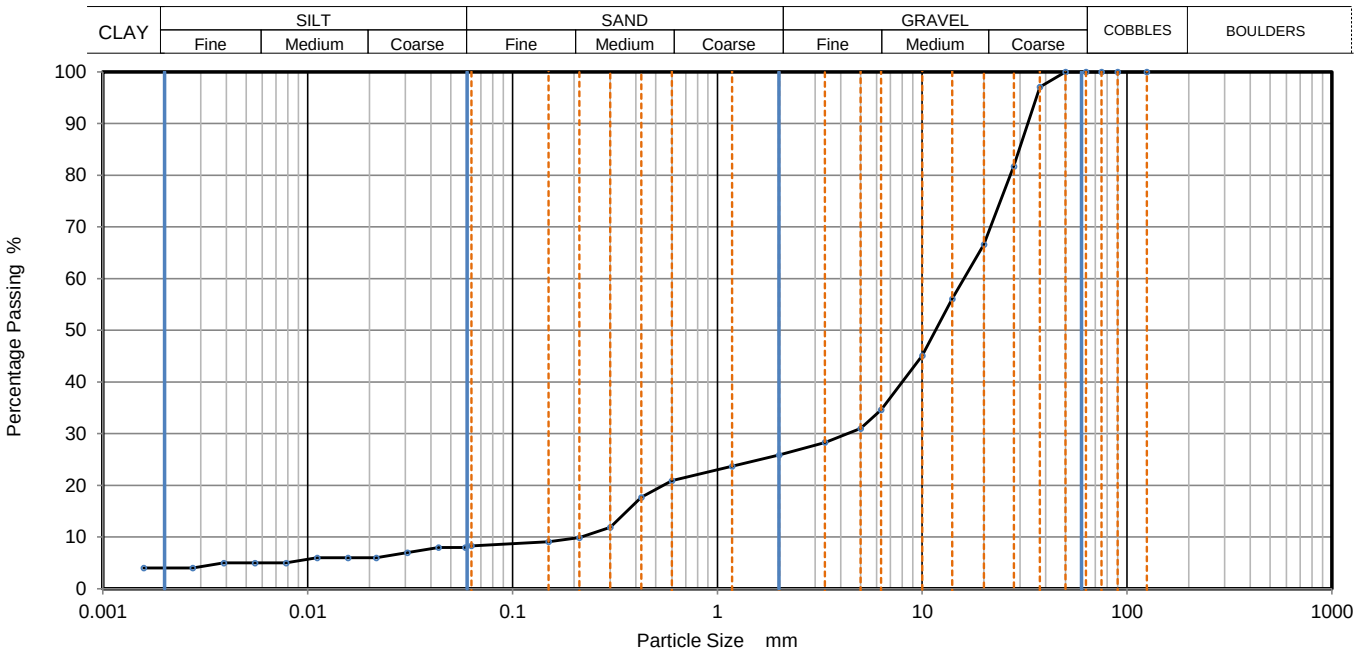
**Initials:** **J.P**

**Date:** 06/09/2021

Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

# PARTICLE SIZE DISTRIBUTION

| | | | | | |
|---|---|---|---|---|---|
| Site Name | Endeavour Sea Scout Group, Hillingdon | | | Job Ref | 30569 |
| | | | | Borehole/Pit No. | TP02 |
| Project No. | 2105014.002 | Client | TEC | Sample No. | - |
| | | | | Depth Top | 1.50 m |
| Soil Description | Reddish brown slightly clayey slightly silty sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded) | | | Depth Base | 1.60 m |
| | | | | Sample Type | B |
| | | | | Samples received | 13/08/2021 |
| | | | | Schedules received | 16/08/2021 |
| Test Method | BS1377:Part 2: 1990, clause 9.0 | | | Project started | 16/08/2021 |
| *These results only apply to the items tested* | | | | Date tested | 27/08/2021 |




| Sieving | | Sedimentation | |
|---|---|---|---|
| Particle Size mm | % Passing | Particle Size mm | % Passing |
| 125 | 100 | 0.0588 | 8 |
| 90 | 100 | 0.0435 | 8 |
| 75 | 100 | 0.0307 | 7 |
| 63 | 100 | 0.0216 | 6 |
| 50 | 100 | 0.0157 | 6 |
| 37.5 | 97 | 0.0111 | 6 |
| 28 | 82 | 0.0078 | 5 |
| 20 | 67 | 0.0055 | 5 |
| 14 | 56 | 0.0039 | 5 |
| 10 | 45 | 0.0027 | 4 |
| 6.3 | 35 | 0.0016 | 4 |
| 5 | 31 | | |
| 3.35 | 28 | | |
| 2 | 26 | | |
| 1.18 | 24 | | |
| 0.6 | 21 | Particle density | (assumed) |
| 0.425 | 18 | 2.70 | Mg/m3 |
| 0.3 | 12 | | |
| 0.212 | 10 | | |
| 0.15 | 9 | | |
| 0.063 | 8 | | |

| Sample Proportions | % dry mass |
|---|---|
| Very coarse | 0.0 |
| Gravel | 74.1 |
| Sand | 17.6 |
| Silt | 4.3 |
| Clay | 4.0 |

| Grading Analysis | | |
|---|---|---|
| D100 | mm | |
| D60 | mm | 16 |
| D30 | mm | 4.33 |
| D10 | mm | 0.214 |
| Uniformity Coefficient | | 75 |
| Curvature Coefficient | | 5.5 |

Remarks

Preparation and testing in accordance with BS1377 unless noted below



**K4 Soils Laboratory**

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**Checked and Approved**

**Initials:** **J.P**

**Date:** 06/09/2021

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## THE ENVIRONMENTAL LABORATORY LTD

| | |
|---|---|
| **Analytical Report Number:** | 21-35452 |
| **Issue:** | 1 |
| **Date of Issue:** | 19/08/2021 |
| **Contact:** | James Naylor |
| **Customer Details:** | TEC<br>The Old Chapel<br>35A Southover<br>Wells<br>SomersetBA5 1UH |
| **Quotation No:** | Q21-02200 |
| **Order No:** | 2105014.002 |
| **Customer Reference:** | 2105014.002 |
| **Date Received:** | 13/08/2021 |
| **Date Approved:** | 19/08/2021 |
| **Details:** | Endeavour Sea Scout Group, Cowley |
| **Approved by:** | |

Mike Varley, Technical Manager

## Sample Summary

**Report No.: 21-35452, issue number 1**

| Elab No. | Client's Ref. | Date Sampled | Date Scheduled | Description | Deviations |
|---|---|---|---|---|---|
| 248045 | TP01 1.50 - 1.60 | 10/08/2021 | 13/08/2021 | Silty loam | |
| 248046 | TP02 1.20 - 1.30 | 10/08/2021 | 13/08/2021 | Silty loam | |
| 248047 | TP02 1.40 - 1.50 | 10/08/2021 | 13/08/2021 | Sandy silty loam | |
| 248048 | TP02 1.10 - 1.20 | 10/08/2021 | 13/08/2021 | Silty loam | |

# Results Summary

**Report No.: 21-35452, issue number 1**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | ELAB Reference | 248045 | 248046 | 248047 | 248048 |
| | | | | Customer Reference | | | | |
| | | | | Sample ID | | | | |
| | | | | Sample Type | DISTURBED | DISTURBED | DISTURBED | DISTURBED |
| | | | | Sample Location | TP01 | TP02 | TP02 | TP02 |
| | | | | Sample Depth (m) | 1.50 - 1.60 | 1.20 - 1.30 | 1.40 - 1.50 | 1.10 - 1.20 |
| | | | | Sampling Date | 10/08/2021 | 10/08/2021 | 10/08/2021 | 10/08/2021 |
| **Determinand** | **Codes** | **Units** | **LOD** | | | | | |
| **Soil sample preparation parameters** | | | | | | | | |
| Material removed | N | % | 0.1 | | 36.1 | 46.9 | 56.9 | 72.0 |
| Description of Inert material removed | N | | 0 | | Stones | Stones | Stones | Stones,clinker |
| **Anions** | | | | | | | | |
| Water Soluble Sulphate | M | mg/l | 20 | | < 20 | < 20 | < 20 | 101 |
| **Inorganics** | | | | | | | | |
| Total Sulphur | N | % | 0.01 | | 0.04 | 0.02 | 0.01 | 0.25 |
| Acid Soluble Sulphate (SO4) | U | % | 0.02 | | 0.03 | < 0.02 | < 0.02 | 0.14 |
| **Miscellaneous** | | | | | | | | |
| pH | M | pH units | 0.1 | | 8.1 | 7.9 | 7.9 | 7.7 |

Tests marked N are not UKAS accredited.

# Method Summary

**Report No.: 21-35452, issue number 1**

| Parameter | Codes | Analysis Undertaken On | Date Tested | Method Number | Technique |
|---|---|---|---|---|---|
| **Soil** | | | | | |
| pH | M | Air dried sample | 19/08/2021 | 113 | Electromeric |
| Acid Soluble Sulphate | U | Air dried sample | 19/08/2021 | 115 | Ion Chromatography |
| Water soluble anions | M | Air dried sample | 18/08/2021 | 172 | Ion Chromatography |
| Total organic carbon/Total sulphur | N | Air dried sample | 18/08/2021 | 216 | IR |

Tests marked N are not UKAS accredited

# Report Information

**Report No.: 21-35452, issue number 1**

**Key**

| | |
|---|---|
| U | hold UKAS accreditation |
| M | hold MCERTS and UKAS accreditation |
| N | do not currently hold UKAS accreditation |
| ^ | MCERTS accreditation not applicable for sample matrix |
| * | UKAS accreditation not applicable for sample matrix |
| S | Subcontracted to approved laboratory UKAS Accredited for the test |
| SM | Subcontracted to approved laboratory MCERTS/UKAS Accredited for the test |
| NS | Subcontracted to approved laboratory. UKAS accreditation is not applicable. |
| I/S | Insufficient Sample |
| U/S | Unsuitable sample |
| n/t | Not tested |
| < | means "less than" |
| > | means "greater than" |
| LOD | LOD refers to limit of detection, except in the case of pH soils and pH waters where it means limit of discrimination. |

Soil sample results are expressed on an air dried basis (dried at < 30°C), and are uncorrected for inert material removed.

ELAB are unable to provide an interpretation or opinion on the content of this report.

The results relate only to the sample received.

PCB congener results may include any coeluting PCBs

Uncertainty of measurement for the determinands tested are available upon request

Unless otherwise stated, sample information has been provided by the client. This may affect the validity of the results.

**Deviation Codes**

| | |
|---|---|
| a | No date of sampling supplied |
| b | No time of sampling supplied (Waters Only) |
| c | Sample not received in appropriate containers |
| d | Sample not received in cooled condition |
| e | The container has been incorrectly filled |
| f | Sample age exceeds stability time (sampling to receipt) |
| g | Sample age exceeds stability time (sampling to analysis) |

Where a sample has a deviation code, the applicable test result may be invalid.

**Sample Retention and Disposal**

All soil samples will be retained for a period of one month

All water samples will be retained for 7 days following the date of the test report

Charges may apply to extended sample storage