Chelmer
Site Investigations
'Groundbreaking Services'

# Factual Report

| | |
|---|---|
| **Site** | Flats 3 |
| | 19 Woodchurch Road |
| | London |
| | NW6 3PL |
| **Client** | Wates |
| **Date** | 02.02.17 |
| **Our Ref** | [redacted] |

[redacted]

Chelmer
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'Groundbreaking Services'

# FACTUAL REPORT CONTENT

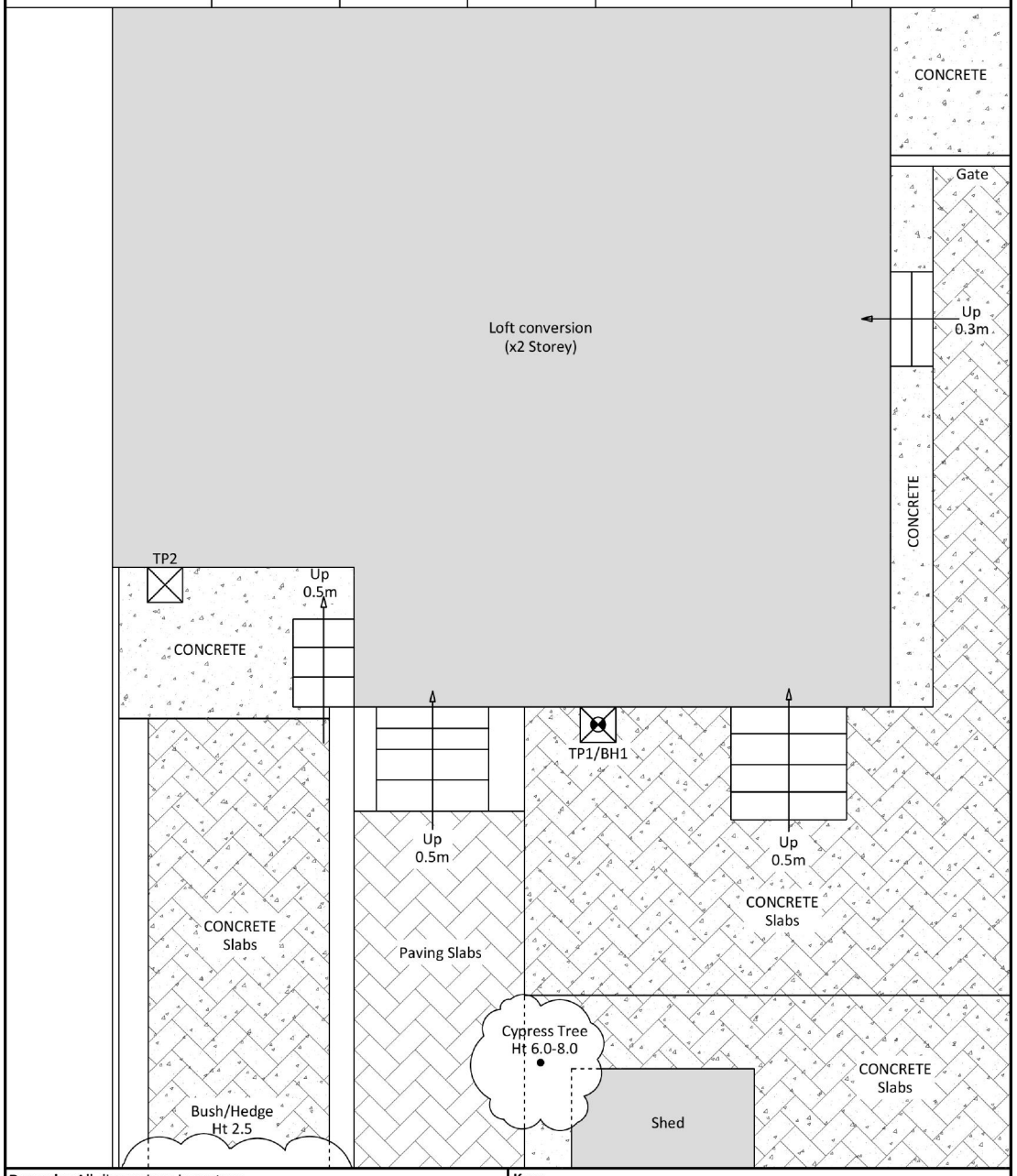


[redacted]

Chelmer Site Investigations
'Groundbreaking Services'

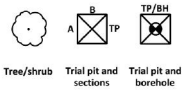
# Site Plan

| Site: | | Client: | | | Site Plan ID: |
|---|---|---|---|---|---|
| Flat 3 19 Woodchurch, London NW6 3PL | | Wates | | | SP |
| **Contract Number:** | **Date:** | **Logged By:** | **Checked by:** | **Weather:** | |
| [redacted] | 02/02/17 | D.B. | J.H. | Wet | Sheet 1 of 1 |
| **Easting:** | **Northing:** | **Ground Level:** | **Boring Method:** | | **Scale:** |
| N.D. | N.D. | N.D. | Hand Auger | | N.T.S. |




**Remarks:** All dimensions in metres.
On site tree identification for guidance only. Not authenticated.
Very large ash approx 11m away in neighboring rear property.
Ht approx 18-20m.

**Key:**




Tree/shrub | Trial pit and sections | Trial pit and borehole

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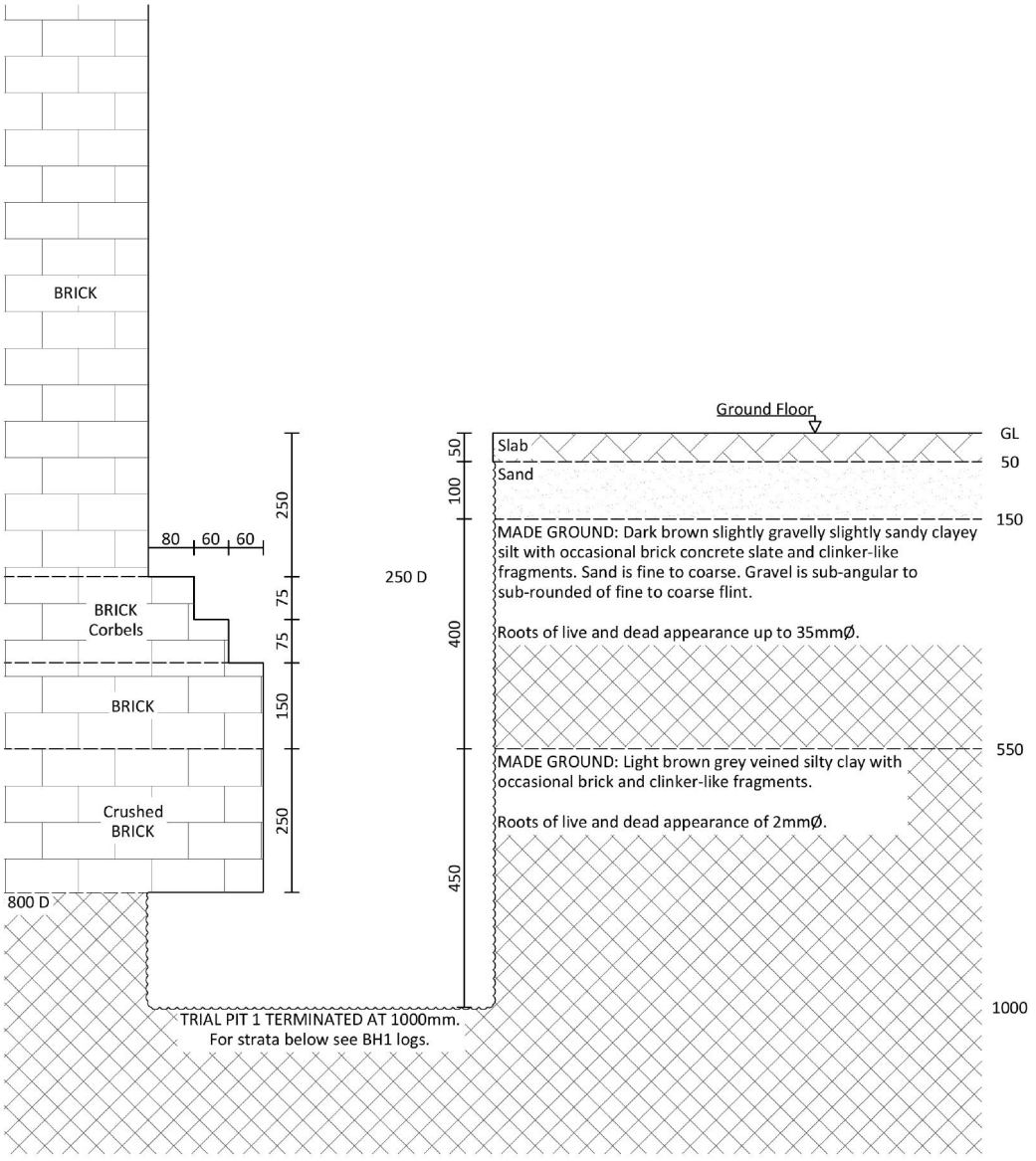
# Trial Pit Log

| Site: | | Client: | | | Trial Pit ID: |
|---|---|---|---|---|---|
| Flat 3 19 Woodchurch, London NW6 3PL | | Wates | | | TP1 |
| **Contract Number:** | **Date:** | **Logged By:** | **Checked by:** | **Weather:** | |
| [redacted] | 02/02/17 | D.B. | J.H. | Wet | Sheet 1 of 1 |
| **Easting:** | **Northing:** | **Ground Level:** | **Excavation Method:** | | **Scale:** |
| N.D. | N.D. | N.D. | Hand Tools | | N.T.S. |




| Remarks: | Key: |
|---|---|
| All dimensions in millimetres. | |

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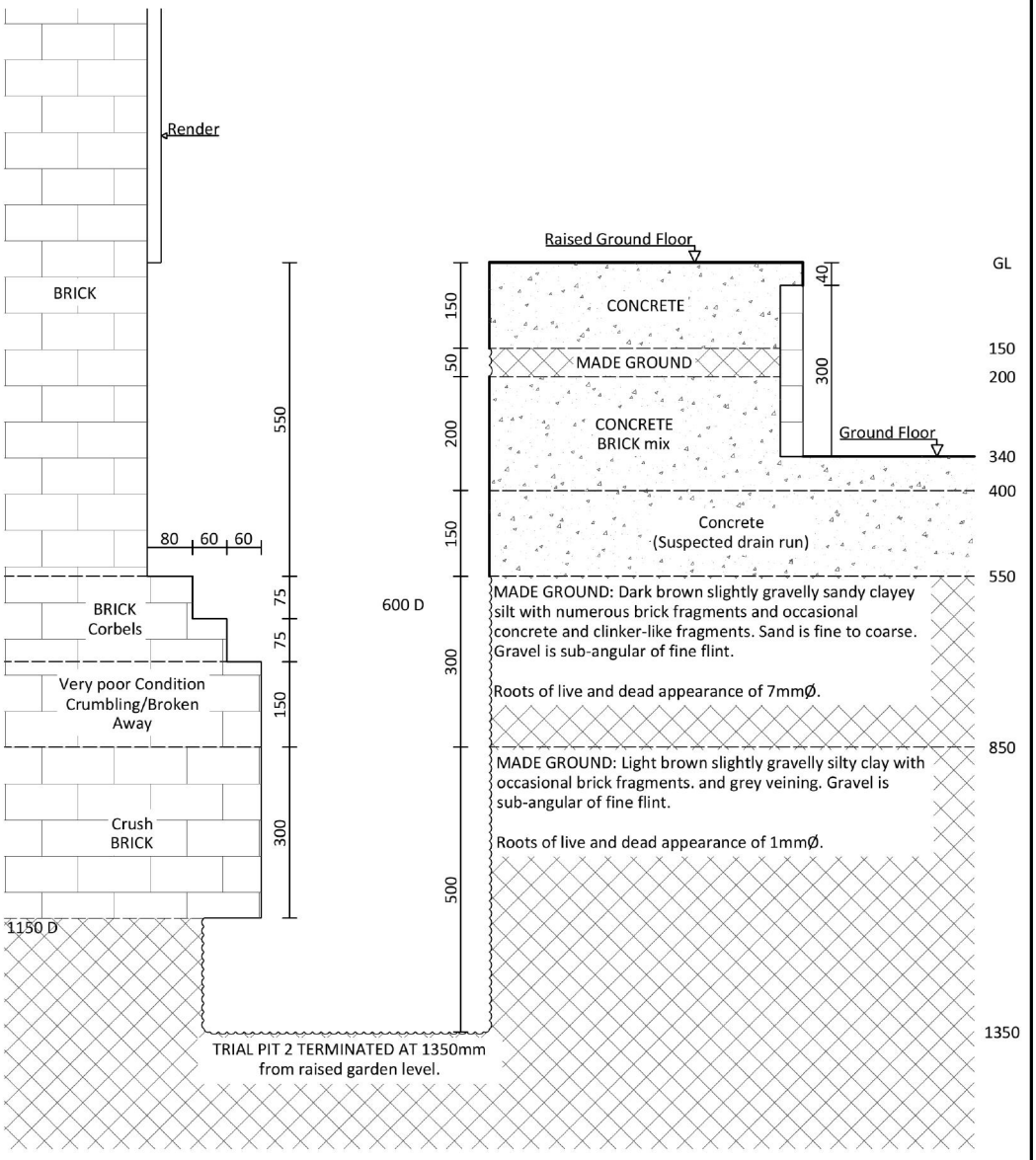
## Trial Pit Log

| Site: | | Client: | | | Trial Pit ID: |
|---|---|---|---|---|---|
| Flat 3 19 Woodchurch, London NW6 3PL | | Wates | | | TP2 |
| **Contract Number:** | **Date:** | **Logged By:** | **Checked by:** | **Weather:** | |
| [redacted] | 02/02/17 | D.B. | J.H. | Wet | Sheet 1 of 1 |
| **Easting:** | **Northing:** | **Ground Level:** | **Excavation Method:** | | **Scale:** |
| N.D. | N.D. | N.D. | Hand Tool | | N.T.S. |




| Remarks: | Key: |
|---|---|
| All dimensions in millimetres.<br>Suspected concrete drain run 200mm off main house. Coming in line with footing. Underside located by going through already poor foundation with steel bar/pin. | G.L. Ground Level<br>D Small Disturbed Sample |

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Groundbreaking Services

# Borehole Log

| Site: | Client: | Borehole ID: |
|---|---|---|
| Flat 3 19 Woodchurch, London NW6 3PL | Wates | BH1 |

| Contract Number: | Date: | Logged By: | Checked by: | Weather: | |
|---|---|---|---|---|---|
| [redacted] | 02/02/17 | D.B. | J.H. | Wet | Sheet 1 of 1 |
| **Easting:** | **Northing:** | **Ground Level:** | **Boring Method:** | | **Scale:** |
| N.D. | N.D. | N.D. | Hand Auger | | N.T.S. |

| Samples & In Situ Testing | | | Strata Details | | | | Roots and Groundwater | |
|---|---|---|---|---|---|---|---|---|
| Depth (m) | Sample | Test Result | Depth (m) | Thickness (m) | Legend | Strata Description | Roots Information | Groundwater (m) |
| GL | | | GL | 0.05 | | Slab | | |
| | | | 0.05 | 0.10 | | Sand | | |
| | | | 0.15 | 0.40 | | MADE GROUND: Dark brown slightly gravelly slightly sandy clayey silt with occasional brick concrete slate and clinker-like fragments. Sand is fine to coarse. Gravel is sub-angular to sub-rounded of fine to coarse flint. | | |
| | | | 0.55 | 0.45 | | MADE GROUND: Light brown grey veined silty clay with occasional brick and clinker-like fragments. | | |
| 1.00 | D | V 66<br>68 | 1.00 | | | Firm yellow-brown silty CLAY with rare pockets of fine orange sand and occasional grey veining. | Roots of live and dead appearance of 1mmØ to 2.0m. | |
| 1.50 | D | V 74<br>80 | | | | .....becoming stiff from 1.5m. | | |
| 2.00 | D | V 84<br>88 | | | | | Hair-like and Fibrous roots observed to 2.5m. | |
| 2.50 | D | V 98<br>104 | | | | | No roots observed below 2.5m. | |
| 3.00 | D | V 108<br>114 | | 4.00 | | | | |
| 3.50 | D | V 120<br>126 | | | | | | |
| 4.00 | D | V 130+<br>130+ | | | | | | |
| 4.50 | D | V 130+<br>130+ | | | | .....becoming stiff from 4.5m. | | |
| 5.00 | D | V 130+<br>130+ | 5.00 | | | BOREHOLE TERMINATED AD 5.1 | | |

**Remarks:**

*Borehole dry and open on completion.*
*Rare brick fragments observed in samples at 1.0m and 2.0m due to intermixing.*

**Key:**

| | |
|---|---|
| D | Small Disturbed Sample |
| GL | Ground Level |
| V | Pilcon Vane (kPa) |

# Richardson's Botanical Identifications

Root identification
Vegetation surveys
Tree/Building investigations
Plant taxonomy

**Dr Ian B K Richardson**
*BSc, PhD, CBiol, MiBiol, MiHort, FLS*
**James Richardson**
*BSc (Hons. Biology)*

**Chelmer Site Investigations**

[redacted]

[redacted]

21/03/2017

Dear Sirs

**19 Woodchurch Road, London**

The samples you sent in relation to the above have been examined. The structure was referable as follows:

TP/BH1, 800-2000mm

1 root: the family VITACEAE (Vitis (Grape-Vine), Parthenocissus (Virginia Creeper etc.)). Dead*.

1 root: FRAXINUS (Ash). 3 further samples, not examined in detail appeared similar under low magnification. Alive, recently*.

1 root: an unidentified SHRUB. Please send us twigs from nearby bushes if this is critical - we may be able to give you a match. A further sample, not examined in detail appeared similar under low magnification. Alive, recently*.

1 root: too DECAYED for identification.

2 samples: microscopic examination of both showed insufficient cells for recognition.

TP2, 1150mm

1 root: FRAXINUS (Ash). This was a very IMMATURE sample. A further sample, not examined in detail appeared similar under low magnification. Dead* (note this 'dead' result can be unreliable with such thin samples).

2 samples: microscopic examination of both showed insufficient cells for recognition.

I trust this is of help. Please call us if you have any queries; our Invoice is enclosed.

Yours faithfully

[redacted]

Dr Ian B K Richardson

* Based mainly on the Iodine test for starch. Starch is present in some cells of a living woody root, but is more or less rapidly broken down by soil micro-organisms on death of the root, sometimes before decay is evident. This result need not reflect the state of the parent tree.

Identified with no information on vegetation, on or off site.

Report commissioned by Chelmer

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Geotechnical Laboratories
'Groundbreaking Services'

# Laboratory Report

| | |
|---|---|
| **Site** | Flat 3 19 Woodchurch Road, London, NW6 3PL |
| **Client** | Wates |
| **Date** | 27-Feb-17 |

[redacted]

[redacted]

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Geotechnical Laboratories
'Groundbreaking Services'

## Content Summary

This report contains all test results as indicated on the test instruction/summary.

[redacted]

For the attention of : Wates

This report comprises of the following :



Notes :

**General**

Please refer to report summary notes for details pertaining to methods undertaken and their subsequent accreditations

Samples were supplied by Chelmer Site Investigations

All tests performed in-house unless otherwise stated

**Deviant Samples**

| | |
|---|---|
| Samples were received in suitable containers | Yes |
| A date and time of sampling was provided | Yes |
| Arrived damaged and/or denatured | No |

# Laboratory Testing Results

BS 1377 : 1990

Chelmer Geotechnical Laboratories

Job Number : [redacted]
Client : Wates
Client Reference : [redacted]
Site Name : Flat 3 19 Woodchurch Road, London, NW6 3PL

Date Received : 06/02/2017
Date Testing Started : 24/02/2017
Date Testing Completed : 27/02/2017
Laboratory Used : Chelmer Geotechnical, CM3 8AB

| Sample Ref | | | Sample Type | *Moisture Content (%) [ 1 ] | *Soil Faction > 0.425mm (%) [ 2 ] | *Liquid Limit (%) [ 3 ] | *Plastic Limit (%) [ 4 ] | *Plasticity Index (%) [ 5 ] | *Liquidity Index (%) [ 5 ] | *Modified Plasticity Index (%) [ 6 ] | *Soil Class [ 7 ] | Filter Paper Contact Time (h) [ 8 ] | *Soil Sample Suction (kPa) | Insitu Shear Vane Strength (kPa) [ 9 ] | Organic Content (%) [ 10 ] | *pH Value [ 11 ] | *Subphate Content (g/l) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BH/TP/WS | Depth (m) | UID | | | | | | | | | | | | | | | $SO_3$ [ 12 ] | $SO_4$ [ 13 ] | Class [ 14 ] |
| BH1 | 1.0 | 84398 | D | 32 | <5 | 80 | 20 | 60 | 0.20 | 57 | CV | 168 | 226 | 67 | | | | | |
| BH1 | 1.5 | 84399 | D | 34 | <5 | 80 | 21 | 59 | 0.22 | 56 | CV | | | 77 | | | | | |
| BH1 | 2.0 | 84400 | D | 32 | <5 | 78 | 24 | 54 | 0.15 | 51 | CV | 168 | 332 | 76 | | | | | |
| BH1 | 3.0 | 84402 | D | 27 | <5 | 68 | 21 | 47 | 0.12 | 44 | CH | 168 | 638 | 111 | | | | | |
| BH1 | 4.0 | 84404 | D | 27 | <5 | 66 | 22 | 44 | 0.11 | 41 | CH | 168 | 793 | 130+ | | | | | |
| BH1 | 5.0 | 84406 | D | 27 | <5 | 69 | 23 | 46 | 0.10 | 43 | CH | 168 | 853 | 130+ | | | | | |
| | | | | | | | | | | | | | | | | | | | |
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| | | | | | | | | | | | | | | | | | | | |

Notes :- *UKAS Accredited Tests

[1] BS 1377 : Part 2 : 1990, Test No 3.2
[2] Estimated if <5%, otherwise measured
[3] BS 1377 : Part 2 : 1990, Test No 4.4
[4] BS 1377 : Part 2 : 1990, Test No 5.3
[5] BS 1377 : Part 2 : 1990, Test No 5.4
[6] BRE Digest 240 : 1993
[7] BS 5930 : 1981 : Figure 31 - Plasticity Chart for the classification of fine soils
[8] In-house method S8a adapted from BRE IP 4/93
[9] Values of shear strength were determined in situ by Chelmer Site Investigations using a Pilcon hand vane or Geonor vane (GV).
[10] BS 1377 : Part 3 : 1990, Test No 4
[11] BS 1377 : Part 2 : 1990, Test No 9
[12] BS 1377 : Part 3 : 1990, Test No 5.6
[13] $SO_4 = 1.2 \times SO_3$
[14] BRE Special Digest One (Concrete in Aggressive Ground) 2005

Note that if the $SO_4$ content falls into the DS-4 or DS-5 class, it would be prudent to consider the sample as falling into the DS-4m or DS-5m class respectively unless water soluble magnesium testing is undertaken to prove otherwise

| Key |
|---|
| **D** - Disturbed sample |
| **B** - Bulk sample |
| **U** - U100 (undisturbed sample) |
| **W** - Water sample |
| **ENP** - Essentially Non-Plastic |
| **U/S** - Underside Foundation |

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Comments :-

Technician :- SC

Checked & Authorised By: [redacted] Martyn Graham **Senior Laboratory Manager**
**Chelmer Site Investigation Laboratories Ltd**

Date Checked :- 27/02/2017

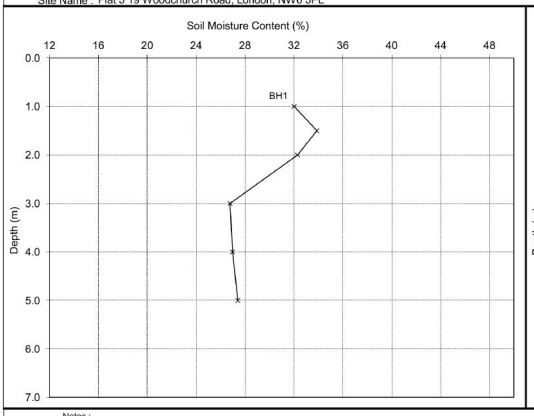
# Laboratory Testing Results

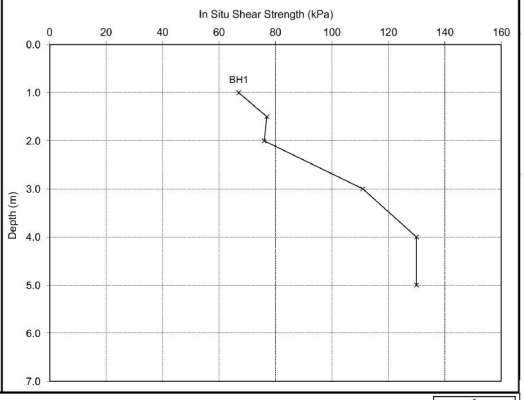
Moisture Content/Shear Strength Profile

Chelmer Geotechnical Laboratories "Groundbreaking Services"

Job Number : [redacted]
Client : Wates
Client Reference : [redacted]
Site Name : Flat 3 19 Woodchurch Road, London, NW6 3PL

Date Received : 06/02/2017
Date Testing Started : 24/02/2017
Date Testing Completed : 27/02/2017
Laboratory : Chelmer Geotechnical Laboratories, CM3 8AB




Notes :-

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder ( calculated in accordance with BS 1377: Part 2 : 1990, cl.3.2.4 note 1 ) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. If plotted, 0.4 LL and PL+2 ( after Driscoll, 1983 ) should only be applied to London Clay ( and similarly over consolidated clays ) at shallow depths.

Unless otherwise stated, values of Shear Strength were determined in situ by Chelmer Site Investigations using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa. (Not UKAS accredited)

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Comments :-

Checked & Authorised By [redacted] Martyn Graham **Senior Laboratory Manager**
**Chelmer Site Investigation Laboratories Ltd**

Date: 27/02/2017

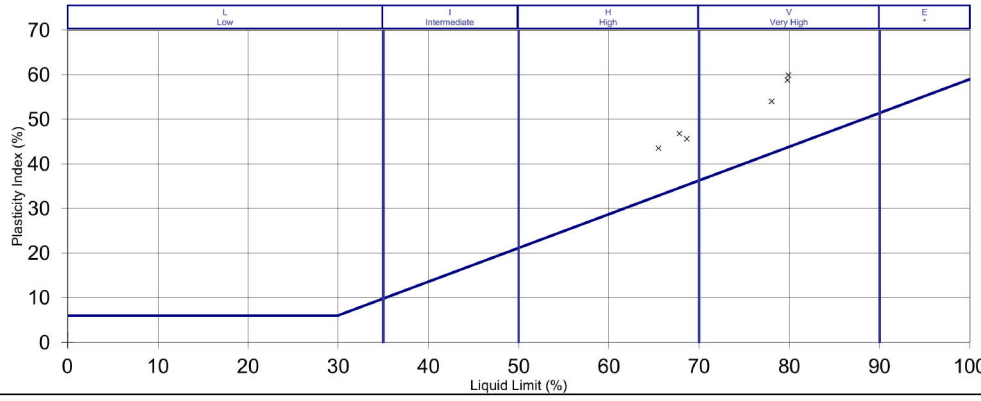
# Laboratory Testing Results

Plasticity Chart for the classification of fine soils and the finer part of coarse soils
In Compliance with BS5930 : 1999

Chelmer Geotechnical Laboratories "Groundbreaking Services"

Job Number : [redacted]
Client : Wates
Client Reference : [redacted]
Site Name : Flat 3 19 Woodchurch Road, London, NW6 3PL

Date Received : 06/02/2017
Date Testing Started : 24/02/2017
Date Testing Completed : 27/02/2017
Laboratory : Chelmer Geotechnical Laboratories, CM3 8AB




Notes :-
SILT (M-SOIL), M, plots below A-Line
CLAY, C, plots above A-Line )M and C may be combined as FINE SOIL, F.

Key :- BH1

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Comments :-

Checked & Authorised By: [redacted] Martyn Graham **Senior Laboratory Manager**
**Chelmer Site Investigation Laboratories Ltd**

Date: 27/02/2017

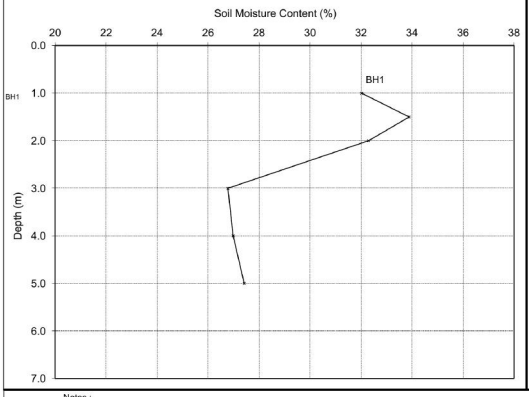
# Laboratory Testing Results

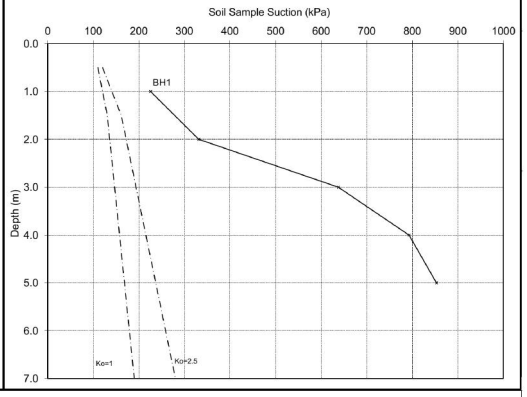
Moisture Content/Soil Suction Profile

Chelmer Geotechnical Laboratories
Groundbreaking Services

Job Number : [redacted]
Client : Wates
Client Reference : [redacted]
Site Name : Flat 3 19 Woodchurch Road, London, NW6 3PL

Date Recieved : 06/02/2017
Date Testing Started : 24/02/2017
Date Testing Completed : 27/02/2017
Laboratory : Chelmer Geotechnical Laboratories, CM3 8AB




Notes :-

1. If the Soil Fraction > 0.425mm exceeds 5% the Equivalent Moisture Content of the remainder ( calculated in accordance with BS 1377: Part 2 : 1990, cl.3.2.4 note 1 ) is also plotted and the alternative profile additionally shown as an appropriately coloured broken line.
2. If plotted, 0.4 LL and PL+2 ( after Driscoll, 1983 ) should only be applied to London Clay ( and similarly overconsolidated clays ) at shallow depths.

Unless otherwise stated, values of Shear Strength were determined in situ by Chelmer Site Investigations using a Pilcon Hand Vane the calibration of which is limited to a maximum reading of 140 kPa.

Comments :-

Checked & Authorised By [redacted] Martyn Graham **Senior Laboratory Manager**
**Chelmer Site Investigation Laboratories Ltd**

Date: 27/02/2017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'Groundbreaking Services'



Where our involvement consists exclusively of testing samples, the results and comments (if provided) relate only to the samples tested.

Any samples that are deemed to be subject to deviation will be recorded as such within the test summary.

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'Groundbreaking Services'

# REPORT NOTES

Equipment Used

Hand tools, Mechanical Concrete Breaker and Spade, Hand Augers, 100mm/150mm diameter Mechanical Flight Auger Rig, GEO205 Flight Auger Rig, Window Sampling Rig, and Large or Limited Access Shell & Auger Rig upon request and/or access permitting.

On Site Tests

By Pilcon Shear-Vane Tester ($kN/m^2$) in clay soils, and/or Mackintosh Probe in granular soils or made ground and/or upon request Continuous Dynamic Probe Testing and Standard Penetration Testing.

Note:

Details reported in trial-pits and boreholes relate to positions investigated only as instructed by the client or engineer on the date shown.

We are therefore unable to accept any responsibility for changes in soil conditions not investigated i.e. variations due to climate, season, vegetation and varying ground water levels.

Full terms and conditions are available upon request.