Compass Geotechnical
Geotechnical, Geoenvironmental and Civil Engineering Consultants

13 Willow Park, Upton Lane, Stoke Golding, Nuneaton, Warwickshire CV13 6EU

Our Ref: 253172L-1

11th August 2025

FAO Alan Cantes
108 Leicester Road
Hinckley
LE10 1LU

Dear Alan

**108 Leicester Road, Hinckley, LE10 1LU**

Further to your recent instruction we have undertaken a series of four boreholes at the above named site to assess the ground conditions and advise on foundations for your proposed replacement dwelling. It is understood the proposed house is to be of Frame construction of Structural Insulated Panels (SIPs) with reinforced raft foundation accommodating relatively light loads. The new house is to be constructed over the footprint of the existing house at the site which is to be demolished.

In order to investigate the ground, a series of four boreholes (WS1 to WS4) were drilled by windowless sampling techniques to a maximum 4.45m depth bgl. Continuous samples were recovered from the full depth of the boreholes and standard penetration tests (SPTs) undertaken at regular intervals. The continuous samples were logged and sub-sampled by an experienced geologist.

Published geological information suggests that the site is underlain by superficial deposits of the Oadby Member - Diamicton overlying solid strata of the Mercia Mudstone Group. There are a number of other superficial deposits locally which include the Dunsmore Gravel, Wolston Sand and Gravel, and the Bosworth Clay Member. The superficial deposits in this part of Hinckley change rapidly both laterally and vertically.

The window sample holes generally encountered topsoil to depths between 0.40 to 0.53m bgl. However, localised made ground was present in WS1 extending to around 1.09m bgl; WS1 was located below a former patio immediately to the rear of the existing house. The made ground comprised an organic clay overlying around 800mm of brick rubble infilled with sand.

Underlying the topsoil or made ground, natural strata were present thought to represent the Dunsmore Gravel. These deposits comprised a slightly gravelly to gravelly clay which extended to around 2.19 to 2.53m bgl and were assessed to be of generally firm consistency. Pockets of red brown sand were noted within the clays. A summary of the geotechnical parameters for the Dunsmore Gravel is presented below in Table 1.

**Table 1 Summary of Geotechnical Parameters – Dunsmore Gravel**

| Parameter (units) | Results | Classification | Comments |
|---|---|---|---|
| Undrained Shear Strength Cu (kPa) Cohesive deposits | Typically 55 to 100 kPa based on SPT N values | Medium to high strength | Generally firm becoming stiff based on examination. |
| SPT N Value Cohesive Deposits | Typically 11 to 20 | | SPT N value of 3 at 1m bgl in WS1 |
| Water Content (%) | 16.0 – 22.1 | | |
| Liquid Limit (%) | 24 – 64 | CL to CH Soils Low and Medium Shrinkability | |
| Plastic Limit (%) | 12 – 25 | | |
| Plasticity Index (%) | 12 – 39 | | |
| Modified Plasticity Index (%) | 10 - 22 | | |
| Soluble Sulphate Content $SO_4$ (g/l) | 0.02 – 0.07 | AC-1 | |
| pH Value | 7.6 – 7.7 | | |

Beneath these upper gravelly clays were strata thought to represent the Oadby Member - Diamicton. These deposits comprised a dark grey slightly gravelly clay of generally stiff consistency. The Oadby Member was proved to the full depth of WS3 (4.45m bgl) but extended to depths of 3.65m (WS1), 2.77m (WS2) and 3.63m (WS4).

A summary of the geotechnical parameters for the Oadby Member is given in Table 2 below.

**Table 2 Summary of Geotechnical Parameters – Oadby Member**

| Parameter (units) | Results | Classification | Comments |
|---|---|---|---|
| Undrained Shear Strength Cu (kPa) Cohesive deposits | Typically 65 to 200 kPa based on SPT N values | Medium to high strength | Generally firm becoming stiff based on examination. |
| SPT N Value Cohesive Deposits | 13 to 43 | | |
| Water Content (%) | 10.2 – 14.5 | | |
| Liquid Limit (%) | 34 – 37 | CL to CI Soils Low Shrinkability and Non-Shrinkable | |
| Plastic Limit (%) | 14 – 15 | | |
| Plasticity Index (%) | 20 – 22 | | |
| Modified Plasticity Index (%) | 8 - 17 | | |
| Soluble Sulphate Content $SO_4$ (g/l) | 0.55 | AC-2 | |
| pH Value | 7.2 | | |

Underlying the deposits of the Oadby Member were strata thought to represent the Wolston Sand and Gravel consisting of gravelly sandy clays of stiff and very stiff consistency. Given the depth to these deposits only insitu testing was carried out which indicated uncorrected SPT N values of 44 to 76 confirming the stiff nature of the materials. Where present, these deposits were proved to the full depth of the investigation.

Groundwater seepages were encountered in WS1, WS2 and WS4 at depths between 2.62m and 3.90m bgl. A shallowest standing water level of 1.87m bgl was recorded in WS2 during the investigation. No long term monitoring of groundwater levels has been carried out as part of this investigation. It should be borne in mind that groundwater conditions can vary seasonally and thus may differ from the conditions observed at the time of the investigation.

It is believed that a reinforced raft foundation is proposed for the new dwelling which would be considered acceptable though the form of the raft is uncertain and dependent on the proposed loading and factors outlined below. For a light raft with edge beams and thickenings and tied-in floor slab (possibly bearing on a compacted stone layer), or for more traditional strip footings, the firm clays of the Dunsmore Gravel at around 1.0m depth should be an acceptable bearing stratum though the influence of surrounding trees needs assessment. However, as the existing house is to be removed from the footprint of the new dwelling and some deeper, made ground and soft materials were encountered in WS1 at the rear of the property, care should be exercised to ensure that existing below ground construction is grubbed out away from new construction and footings are not detrimentally influenced by made and disturbed ground. A characteristic undrained shear strength of 55kPa has been adopted based on the SPT results in the upper 1m. Calculations suggest that a preliminary design bearing resistance of around 100kPa would be acceptable for a strip foundation or raft down beams, 0.6m wide, bearing on the firm clays at around 1.0m depth. Under these conditions the footing would have an adequate factor of safety against shear failure and settlements should be limited to less than 25mm. The calculations accompany this letter report. For a more rigid flat raft foundation on a compacted stone bed, a preliminary design bearing resistance of around 60 to 80 kPa would be considered appropriate. If extensive pockets of made ground, sand or soft clay are encountered at formation level the influence of these on the proposed foundation should be assessed further.

There are a number of trees at the site, some of which, it is believed, are to be retained. On cohesive soils within influencing distance of trees consideration should be given to the effect on proposed foundations and the appropriate depth of founding. The soils of the Dunsmore Gravel, which is likely to form the bearing stratum, are of low to medium shrinkability (Table 1). For raft foundations Chapter 4.2 of the NHBC Standards normally recommends removal of the upper clays to around 1m and replacement with an adequately compacted stone blanket. With more traditional footings, a suspended floor slab over a void may be appropriate.

Laboratory determinations of soluble sulphate content have been undertaken on samples of the natural clay soils present at the site. Reported concentrations were between 0.02 and 0.55g/l $SO_4$ in association with slightly alkaline pH values.

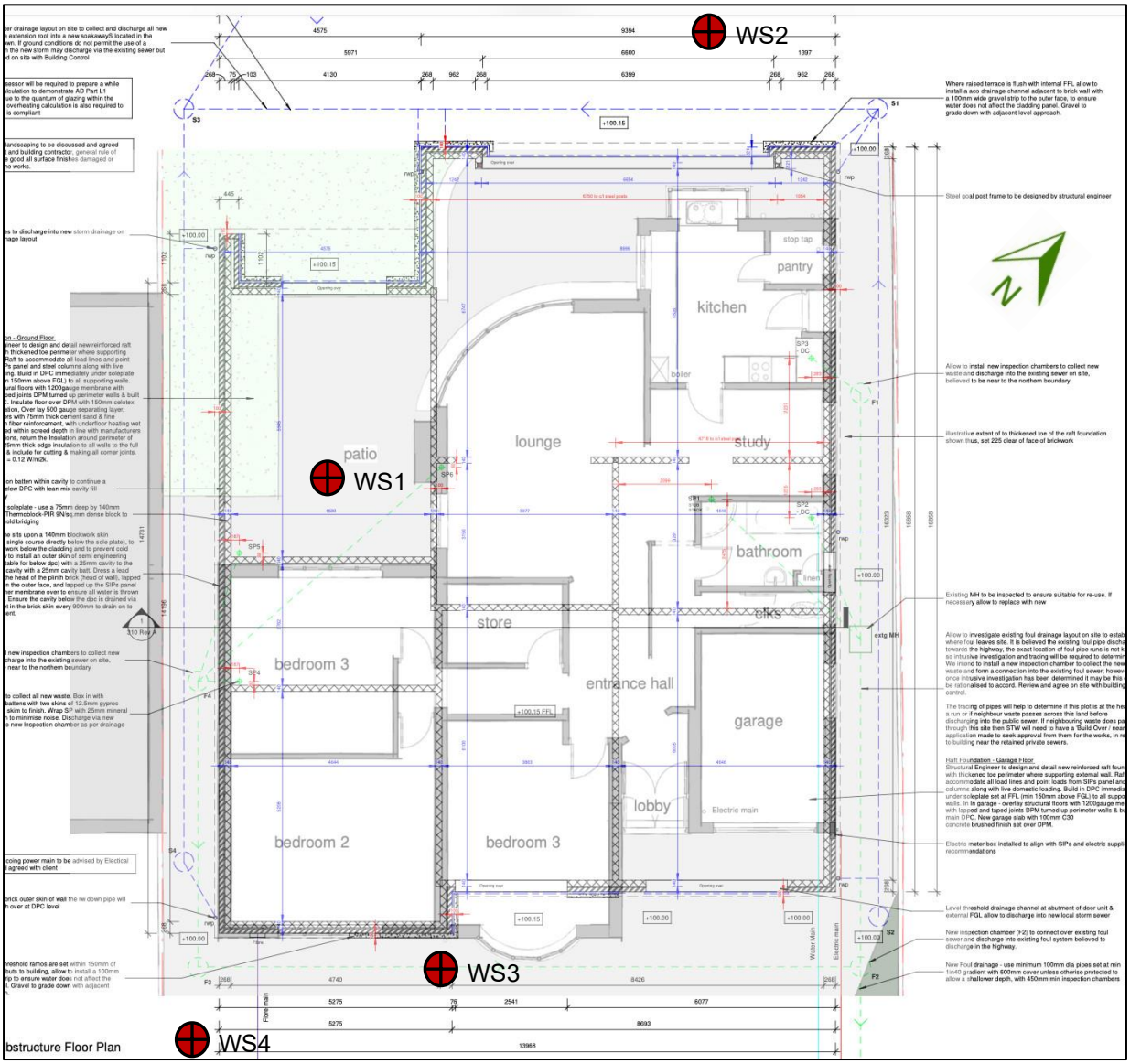
In accordance with BRE Special Digest 1 the site has been classed as 'natural ground' the groundwater regime is considered 'mobile' as groundwater seepages were noted, although relatively low permeability clays are present.

Comparison of the characteristic sulphate contents for the soil (based on the highest result in the Dunsmore Gravel – likely formation) and pH concentrations with Table C1 of BRE SD1 suggests the ACEC class for the site is AC-1. If foundations bear within any other strata the ACEC class may need to be revised.

If we can provide any further assistance at this stage please contact the undersigned.

Yours faithfully

Rachel Foord BSc (Hons), MSc, MCSM, CGeol, FGS
Director
**Compass Geotechnical Limited**




Exploratory holes positioned to avoid existing services. WS4 located in flower bed to south of existing house.

| | | |
|---|---|---|
| Extract from plan provided by Structural Innovation Design Ltd | **Figure 1** | Site Plan with Exploratory Hole Positions |
| | **Date** | August 2025 |
| | Not to Scale | |

**Compass Geotechnical**
13 Willow Park, Stoke Golding
CV13 6EU
www.compassgeotechnical.co.uk

# Windowless Sample Borehole Log

| Project ID | Borehole No. |
|---|---|
| 253172 | WS1 |
| | Sheet 1 of 1 |
| | Scale: 1:25 |

| Project Title: | Location: | Client: | Date Drilled |
|---|---|---|---|
| 108 Leicester Road, Hinckley | 108 Leicester Road, Hinckley, LE10 1LU | Alan Cantes | 23/07/2025 |
| | | | Rig Crew: GE |
| | | | Logged: TF |
| Easting: | Northing: | Level (mAOD): | Checked: |

| Samples & In Situ Testing | | | Strata Details | | | | Groundwater | | |
|---|---|---|---|---|---|---|---|---|---|
| Depth (mBGL) | Sample / Test ID | Test Result | Level (mAOD) | Depth (mBGL) | Legend | Strata Description | Depth (mBGL) | Water Strike | Backfill/ Installation |
| 0.00 - 1.00 | L | | | 0.26 | | MADE GROUND: Very dark brown slightly gravelly slightly sandy slightly organic clay with rare yellowish brown clay pockets. Gravel is rare brown fine to coarse angular to rounded chert with rare white fine sub rounded quarts, concrete, asphalt planings and very rare coal fragments of fine to coarse gravel size.(0.26m) | | | |
| | | | | | | MADE GROUND: Red brick (whole and part bricks) rarely infilled with brown fine to coarse sand.(0.83m) | | | |
| 1.00 - 1.45 | SPT(C) | N=3 (1/1,0,1,1) | | | | | 1 | | |
| 1.00 - 2.00 | L | | | 1.09 | | Soft yellowish brown slightly gravelly locally gravelly slightly sandy silty CLAY. Gravel is white and black fine to coarse angular to sub angular chert with very rare dark red brown sandstone of fine to coarse gravel size, light greenish grey siltstone, yellowish brown sandstone, pale brown siltstone, brown silty fine calcareous sandstone, white chalk, light grey quartzose sandstone, very rare dark reddish brown ferruginous sandstone of fine to coarse gravel size. [Dunsmore Gravel]. (1.39m) | | | |
| 1.50 - 1.80 | D | | | | | | | | |
| 2.00 - 2.45 | SPT(C) | N=20 (7/3,4,6,7) | | | | | 2 | | |
| 2.00 - 3.00 | L | | | | | | | | |
| | | | | 2.48 | | Stiff grey gravelly becoming slightly gravelly CLAY. Gravel is white fine to coarse sub rounded to rounded chalk and occasional brown black white fine to coarse angular to sub angular chert, grey fine to coarse sub angular siltstone, very dark grey shale/mustone of fine gravel size, silty fine sandstone, and red brown silty mudstone of fine gravel size. [Oadby Member].(1.17m) | | | |
| 2.80 - 3.00 | D | | | | | | | | |
| 3.00 - 3.45 | SPT(C) | N=19 (6/4,4,6,5) | | | | | 3 | | |
| 3.00 - 4.00 | L | | | | | | | | |
| | | | | 3.65 | | Stiff dark brownish grey gravelly sandy CLAY. Gravel is rare white fine to coarse sub rounded to rounded chalk, grey quartzose sandstone, dark grey limestone, dark grey siltstone, red brown slightly sandy siltstone, light grey slightly calcareous siltstone, light grey sandstone, white quartz, grey quartz, yellowish brown sandstone, and rare fossil shell fragments. Sand is fine to coarse. [Wolston Sand and Gravel].(0.80m) | | | |
| 4.00 - 4.45 | SPT(C) | N=44 (15/9,11,12,12) | | | | | 4 | | |
| | | | | 4.45 | | Borehole Completed at 4.450m | | | |
| | | | | | | | 5 | | |

| Borehole Diameter | | Casing Diameter | | Chiselling & Pits | | | | Water Strikes | | | Observations | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | Diameter | Depth (m) | Diameter | Depth Top | To (m) | Duration | Remarks | Strike at (m) | Casing at (m) | Sealed at (m) | Time Mins | Rose to (m) | Remarks |
| 4.45 | 115 | 1.00 | 115 | | | | | 3.90 | 1.00 | | | | Water standing at 2.20m bgl on completion. |

| Installation | | | |
|---|---|---|---|
| Top (m) | Base (m) | Type | Dia (mm) |
| | | | |

**Remarks:**

**Compass Geotechnical**
13 Willow Park, Stoke Golding
CV13 6EU
www.compassgeotechnical.co.uk

# Windowless Sample Borehole Log

| Project ID | Borehole No. |
|---|---|
| 253172 | WS2 |
| | Sheet 1 of 1 |
| | Scale: 1:25 |

| Project Title: | Location: | Client: | Date Drilled |
|---|---|---|---|
| 108 Leicester Road, Hinckley | 108 Leicester Road, Hinckley, LE10 1LU | Alan Cantes | 23/07/2025 |
| | | | Rig Crew: GE |
| | | | Logged: TF |
| Easting: | Northing: | Level (mAOD): | Checked: |

| Samples & In Situ Testing | | | Strata Details | | | | Groundwater | | |
|---|---|---|---|---|---|---|---|---|---|
| Depth (mBGL) | Sample / Test ID | Test Result | Level (mAOD) | Depth (mBGL) | Legend | Strata Description | Depth (mBGL) | Water Strike | Backfill/ Installation |
| 0.00 - 1.00 | L | | | | | Turf over dark brown slightly gravelly slightly sandy Topsoil with occasional recently active roots.(0.40m) | | | |
| | | | | 0.40 | | Dry friable yellowish brown slightly gravelly slightly silty CLAY with occasional recently active roots.(0.23m) | | | |
| | | | | 0.63 | | Firm yellowish brown slightly gravelly locally gravelly slightly sandy silty CLAY. Gravel is white and black fine to coarse angular to sub angular chert with very rare dark red brown sandstone of fine to coarse gravel size, light greenish grey siltstone, yellowish brown sandstone, pale brown siltstone, brown silty fine calcareous sandstone, white chalk, light grey quartzose sandstone, very rare dark reddish brown ferruginous sandstone of fine to coarse gravel size. [Dunsmore Gravel]. (1.56m) | | | |
| 1.00 - 1.45<br>1.00 - 1.50<br>1.00 - 2.00 | SPT(C)<br>D<br>L | N=11 (3/2,3,3,3) | | | | | 1 | | |
| 2.00 - 2.45<br>2.00 - 3.00 | SPT(C)<br>L | N=11 (3/2,2,3,4) | | | | | 2 | | |
| | | | | 2.19 | | Stiff grey gravelly becoming slightly gravelly CLAY. Gravel is white fine to coarse sub rounded to rounded chalk and occasional brown black white fine to coarse angular to sub angular chert, grey fine to coarse sub angular siltstone, very dark grey shale/mustone of fine gravel size, silty fine sandstone, and red brown silty mudstone of fine gravel size. [Oadby Member].(0.58m) | | ▼ | |
| | | | | 2.77 | | Stiff dark brownish grey gravelly sandy locally very sandy very gravelly CLAY. Gravel is rare white fine to coarse sub rounded to rounded chalk, grey quartzose sandstone, dark grey limestone, dark grey siltstone, red brown slightly sandy siltstone, light grey slightly calcareous siltstone, light grey sandstone, white quartz, grey quartz, yellowish brown sandstone, and rare fossil shell fragments. Sand is fine to coarse. [Wolston Sand and Gravel]. (1.68m) | | | |
| 3.00 - 3.45<br>3.00 - 4.00 | SPT(C)<br>L | N=52<br>(14/9,12,15,16) | | | | | 3 | | |
| 4.00 - 4.45 | SPT(C) | N=74<br>(14/13,17,22,22) | | | | | 4 | | |
| | | | | 4.45 | | Borehole Completed at 4.450m | 5 | | |

| Borehole Diameter | | Casing Diameter | | Chiselling & Pits | | | | Water Strikes | | | Observations | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | Diameter | Depth (m) | Diameter | Depth Top | To (m) | Duration | Remarks | Strike at (m) | Casing at (m) | Sealed at (m) | Time Mins | Rose to (m) | Remarks |
| 4.45 | 115 | 1.00 | 115 | | | | | 2.62 | 1.00 | | | | Water standing at 1.87m bgl on conpletion. |

| Installation | | | |
|---|---|---|---|
| Top (m) | Base (m) | Type | Dia (mm) |
| | | | |

**Remarks:**

**Compass Geotechnical**
13 Willow Park, Stoke Golding
CV13 6EU
www.compassgeotechnical.co.uk

# Windowless Sample Borehole Log

| Project ID | Borehole No. |
|---|---|
| 253172 | WS3 |
| | Sheet 1 of 1 |
| | Scale: 1:25 |

| Project Title: | Location: | Client: | Date Drilled |
|---|---|---|---|
| 108 Leicester Road, Hinckley | 108 Leicester Road, Hinckley, LE10 1LU | Alan Cantes | 23/07/2025 |
| | | | Rig Crew: GE |
| | | | Logged: TF |
| Easting: | Northing: | Level (mAOD): | Checked: |

| Samples & In Situ Testing | | | Strata Details | | | | Groundwater | | |
|---|---|---|---|---|---|---|---|---|---|
| Depth (mBGL) | Sample / Test ID | Test Result | Level (mAOD) | Depth (mBGL) | Legend | Strata Description | Depth (mBGL) | Water Strike | Backfill/ Installation |
| 0.00 - 1.00 | L | | | | | Dark brown, very dark brown and black slightly gravelly silty Topsoil.(0.40m) | | | |
| | | | | 0.40 | | Greyish brown slightly gravelly slightly silty CLAY with rare black carbonaceous matter.(0.28m) | | | |
| | | | | 0.68 | | Firm yellowish brown slightly gravelly locally gravelly slightly sandy silty CLAY. Gravel is white and black fine to coarse angular to sub angular chert with very rare dark red brown sandstone of fine to coarse gravel size, light greenish grey siltstone, yellowish brown sandstone, pale brown siltstone, brown silty fine calcareous sandstone, white chalk, light grey quartzose sandstone, very rare dark reddish brown ferruginous sandstone of fine to coarse gravel size. [Dunsmore Gravel].(1.85m) | | | |
| 1.00 - 1.70 | D | | | | | | 1 | | |
| 1.70 - 2.00 | L | | | | | | | | |
| 2.00 - 2.45 | SPT(C) | N=13 (4/2,4,4,3) | | | | | 2 | | |
| 2.00 - 3.00 | L | | | | | | | | |
| | | | | 2.53 | | Stiff grey gravelly becoming slightly gravelly CLAY. Gravel is white fine to coarse sub rounded to rounded chalk and occasional brown black white fine to coarse angular to sub angular chert, grey fine to coarse sub angular siltstone, very dark grey shale/mustone of fine gravel size, silty fine sandstone, and red brown silty mudstone of fine gravel size. [Oadby Member].(1.92m) | | | |
| 3.00 - 3.45 | SPT(C) | N=43 | | | | | 3 | | |
| 3.00 - 4.00 | L | (18/8,12,11,12) | | | | | | | |
| 4.00 - 4.45 | SPT(C) | N=26 (7/5,6,7,8) | | | | | 4 | | |
| | | | | 4.45 | | Borehole Completed at 4.450m | | | |
| | | | | | | | 5 | | |

| Borehole Diameter | | Casing Diameter | | Chiselling & Pits | | | | Water Strikes | | | Observations | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | Diameter | Depth (m) | Diameter | Depth Top | To (m) | Duration | Remarks | Strike at (m) | Casing at (m) | Sealed at (m) | Time Mins | Rose to (m) | Remarks |
| 4.45 | 115 | 1.00 | 115 | | | | | | | | | | |

| Installation | | | |
|---|---|---|---|
| Top (m) | Base (m) | Type | Dia (mm) |
| | | | |

**Remarks:**
No groundwater seepages encountered.

**Compass Geotechnical**
13 Willow Park, Stoke Golding
CV13 6EU
www.compassgeotechnical.co.uk

# Windowless Sample Borehole Log

| Project ID | Borehole No. |
|---|---|
| 253172 | WS4 |
| | Sheet 1 of 1 |
| | Scale: 1:25 |

| Project Title: | Location: | Client: | Date Drilled |
|---|---|---|---|
| 108 Leicester Road, Hinckley | 108 Leicester Road, Hinckley, LE10 1LU | Alan Cantes | 23/07/2025 |
| | | | Rig Crew: GE |
| | | | Logged: TF |
| Easting: | Northing: | Level (mAOD): | Checked: |

| Samples & In Situ Testing | | | Strata Details | | | | Groundwater | | |
|---|---|---|---|---|---|---|---|---|---|
| Depth (mBGL) | Sample / Test ID | Test Result | Level (mAOD) | Depth (mBGL) | Legend | Strata Description | Depth (mBGL) | Water Strike | Backfill/ Installation |
| 0.00 - 1.00 | L | | | | | Dark brown grey Topsoil.(0.53m) | | | |
| | | | | 0.53 | | Firm yellowish brown slightly gravelly locally gravelly slightly sandy CLAY. Gravel is white and black fine to coarse angular to sub angular chert with very rare dark red brown sandstone of fine to coarse gravel size, light greenish grey siltstone, yellowish brown sandstone, pale brown siltstone, brown silty fine calcareous sandstone, white chalk, light grey quartzose sandstone, very rare dark reddish brown ferruginous sandstone of fine to coarse gravel size. [Dunsmore Gravel]. (1.79m) | | | |
| 1.00 - 1.45 | SPT(C) | N=19 (6/5,4,5,5) | | | | | 1 | | |
| 1.00 - 2.00 | L | | | | | *Becoming gravelly with depth* | | | |
| 1.70 - 2.00 | D | | | | | | | | |
| 2.00 - 2.45 | SPT(C) | N=11 (4/2,2,3,4) | | | | | 2 | | |
| 2.00 - 3.00 | L | | | | | | | | |
| | | | | 2.32 | | Stiff grey gravelly becoming slightly gravelly CLAY. Gravel is white fine to coarse sub rounded to rounded chalk and occasional brown black white fine to coarse angular to sub angular chert, grey fine to coarse sub angular siltstone, very dark grey shale/mustone of fine gravel size, silty fine sandstone, and red brown silty mudstone of fine gravel size. [Oadby Member].(1.31m) | | | |
| 3.00 - 3.45 | SPT(C) | N=13 (4/2,2,3,6) | | | | | 3 | | |
| 3.00 - 4.00 | L | | | | | | | | |
| | | | | 3.63 | | Stiff dark brownish grey gravelly sandy CLAY. Gravel is rare white fine to coarse sub rounded to rounded chalk, grey quartzose sandstone, dark grey limestone, dark grey siltstone, red brown slightly sandy siltstone, light grey slightly calcareous siltstone, light grey sandstone, white quartz, grey quartz, yellowish brown sandstone, and rare fossil shell fragments. Sand is fine to coarse. [Wolston Sand and Gravel].(0.82m) | | ▼ | |
| 4.00 - 4.45 | SPT(C) | N=76 (19/12,16,23,25) | | | | | 4 | | |
| | | | | 4.45 | | Borehole Completed at 4.450m | | | |
| | | | | | | | 5 | | |

| Borehole Diameter | | Casing Diameter | | Chiselling & Pits | | | | Water Strikes | | | Observations | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Depth (m) | Diameter | Depth (m) | Diameter | Depth Top | To (m) | Duration | Remarks | Strike at (m) | Casing at (m) | Sealed at (m) | Time Mins | Rose to (m) | Remarks |
| 4.45 | 115 | 1.00 | 115 | | | | | 3.70 | 1.00 | | | | Water standing at 2.35m bgl on completion |

| Installation | | | |
|---|---|---|---|
| Top (m) | Base (m) | Type | Dia (mm) |
| | | | |

**Remarks:**

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

**Client:**

Compass Geotechnical Limited

13 Willow Park
Upton Lane
Stoke Golding
Nuneaton
Warwickshire
CV13 6EU


***Soil Property Testing Ltd***

**15, 16, 18 Halcyon Court, St Margaret's Way,**
**Stukeley Meadows, Huntingdon,**
**Cambridgeshire, PE29 6DG**

**Tel: 01480 455579**
**Email:** enquiries@soilpropertytesting.com
**Website:** www.soilpropertytesting.com


**Samples Submitted By:**

Compass Geotechnical Limited

**Samples Labelled:**

Hinckley

**Approved Signatories:**

☑ **J.C. Garner B.Eng (Hons) FGS**
Technical Director & Quality Manager

☐ **W. Johnstone**
Materials Lab Manager

**Date Received:** 30/07/2025

**Samples Tested Between:** 30/07/2025 **and** 08/08/2025

**Remarks:**

For the attention of Rachel Foord
Your Order No: 253172-1

**Notes:**

1. All remaining samples or remnants from this contract will be disposed of after 21 days from today, unless we are notified to the contrary.
2. Opinions and interpretations expressed herein are outside the scope of UKAS accreditation.
3. Tests marked "NOT UKAS ACCREDITED" in this test report are not included in the UKAS Accreditation Schedule for this testing laboratory.
4. This test report may not be reproduced other than in full except with the prior written approval of the issuing laboratory.
5. The results within this report only relate to the items tested or sampled.

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

UKAS TESTING 0998

| | | | |
|---|---|---|---|
| **Contract** | **Hinckley** | | |
| **Serial No.** | **48169_1** | **Target Date** | 13/08/2025 |
| **Scheduled By** | Compass Geotechnical Limited | | |
| | | | |
| **Schedule Remarks** | | | |

| Bore Hole No. | Type | Sample Ref. | Top Depth | Water Content (BSEN) | Liquid/Plastic Limits | Wet Sieve Preparation | Sulphate Content/pH Value | | | | | | | | | | | | | | | Sample Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WS1 | D | - | 1.50 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | |
| WS1 | D | - | 2.80 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| WS2 | D | - | 1.00 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| WS3 | D | - | 1.00 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | |
| WS3 | D | - | 2.55 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | |
| WS4 | D | - | 1.70 | 1 | 1 | 1 | | | | | | | | | | | | | | | | |
| **Totals** | | | | **6** | **6** | **6** | **3** | | | | | | | | | | | | | | | **End of Schedule** |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## SUMMARY OF WATER CONTENT

| Borehole /Pit No. | Depth (m) | Type | Ref. | Water Content (%) | Description | Remarks |
|---|---|---|---|---|---|---|
| WS1 | 1.50 - 1.80 | D | - | **19.4** | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black, white and orangish brown fine to coarse angular to sub rounded chert, chalk, ferruginous sandstone and ironstone. | |
| WS1 | 2.80 - 3.00 | D | - | **14.5** | Very stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | |
| WS2 | 1.00 - 1.50 | D | - | **16.0** | Orangish brown and soft olive yellow lumps slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is brown, black, white fine to coarse angular to sub rounded flint, chalk and quartz. | |
| WS3 | 1.00 - 1.70 | D | - | **22.1** | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | |
| WS3 | 2.55 - 3.00 | D | - | **10.2** | Very stiff dark grey slightly sandy gravelly silty CLAY. Gravel is brown, black and white, fine to coarse angular to sub rounded flint, chalk and quartz. | |
| WS4 | 1.70 - 2.00 | D | - | **21.3** | Soft yellowish brown slightly sandy gravelly silty CLAY. Gravel is brown black, white and orangish brown fine to coarse angular sub rounded flint, chalk, ferruginous sandstone and ironstone. | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Method Of Preparation: BS EN ISO: 17892-1: 2014+A1:2022

Method of Test: BS EN ISO: 17892-1: 2014+A1:2022

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments:

Remarks to Include: Sample disturbance, loss of moisture, variation from test procedure, location and origin of test specimen within original sample, oven drying temperature if not 105-110C

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## SUMMARY OF WATER CONTENT, LIQUID LIMIT, PLASTIC LIMIT, PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole /Pit No. | Depth (m) | Type | Ref. | Water Content (%) | Liquid Limit (%) | Plastic Limit (%) | Plasti-city Index (%) | Liquid-ity Index | Sample Preparation | | | | Description | Class |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Method | Ret'd 0.425mm (%) | Corr'd W/C <0.425mm | Curing Time (hrs) | | |
| WS1 | 1.50 - 1.80 | D | - | **19.4** | 44 | 19 | 25 | 0.02 | Wet Sieved | 42 (M) | N/R* | 25 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black, white and orangish brown fine to coarse angular to sub rounded chert, chalk, ferruginous sandstone and ironstone. | CI |
| WS1 | 2.80 - 3.00 | D | - | **14.5** | 37 | 15 | 22 | -0.02 | Wet Sieved | 23 (M) | N/R* | 25 | Very stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | CI |
| WS2 | 1.00 - 1.50 | D | - | **16.0** | 24 | 12 | 12 | 0.33 | Wet Sieved | 15 (M) | N/R* | 24 | Orangish brown and soft olive yellow lumps slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is brown, black, white fine to coarse angular to sub rounded flint, chalk and quartz. | CL |
| WS3 | 1.00 - 1.70 | D | - | **22.1** | 45 | 19 | 26 | 0.12 | Wet Sieved | 33 (M) | N/R* | 25 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | CI |
| WS3 | 2.55 - 3.00 | D | - | **10.2** | 34 | 14 | 20 | -0.19 | Wet Sieved | 58 (M) | N/R* | 24 | Very stiff dark grey slightly sandy gravelly silty CLAY. Gravel is brown, black and white, fine to coarse angular to sub rounded flint, chalk and quartz. | CL |
| WS4 | 1.70 - 2.00 | D | - | **21.3** | 64 | 25 | 39 | -0.09 | Wet Sieved | 43 (M) | N/R* | 26 | Soft yellowish brown slightly sandy gravelly silty CLAY. Gravel is brown black, white and orangish brown fine to coarse angular sub rounded flint, chalk, ferruginous sandstone and ironstone. | CH |
| | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | |

Method Of Preparation: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:4.2

Method of Test: BS EN ISO: 17892-1: 2014+A1:2022 & BS 1377: Part 2:1990:3.2, 4.4, 5.3, 5.4

Type of Sample Key: U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter

Comments: *Corrected water content assume material greater than 0.425mm is non-porous. See BS1377: Part 2: 1990 Clause 3 Note 1. Where N/R, corrected water content is not reported due to material type.

Table Notation: Ret'd 0.425mm: (A) = Assumed, (M) = Measured

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

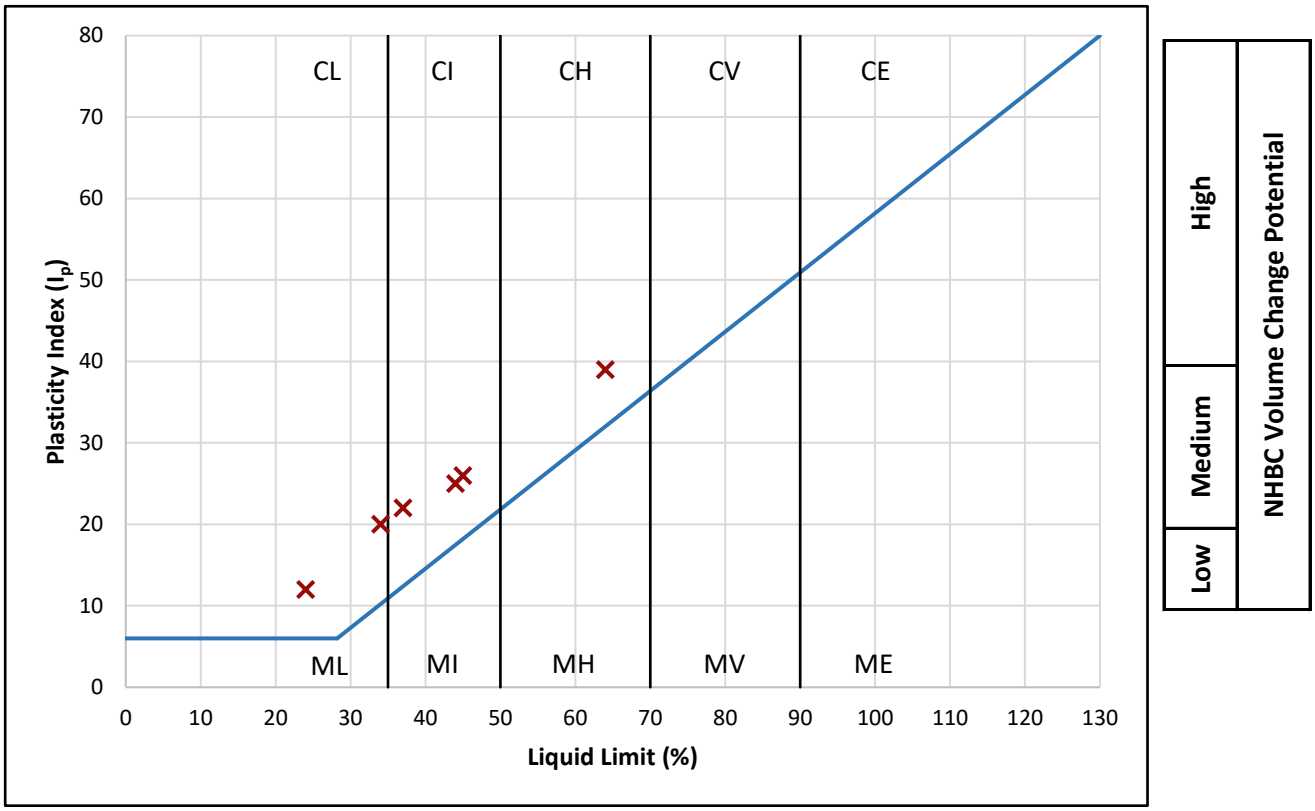
**DATE ISSUED: 08/08/2025**

UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## PLOT OF PLASTICITY INDEX AGAINST LIQUID LIMIT USING CASAGRANDE CLASSIFICATION CHART

| Plasticity | | | | |
|---|---|---|---|---|
| Low | Medium | High | Very High | Extremely High |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS1377: Part 2: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U = Undisturbed, B = Bulk, D = Disturbed, J = Jar, W = Water, SPT = Split Spoon Sample, C = Core Cutter |
| Comments: | Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

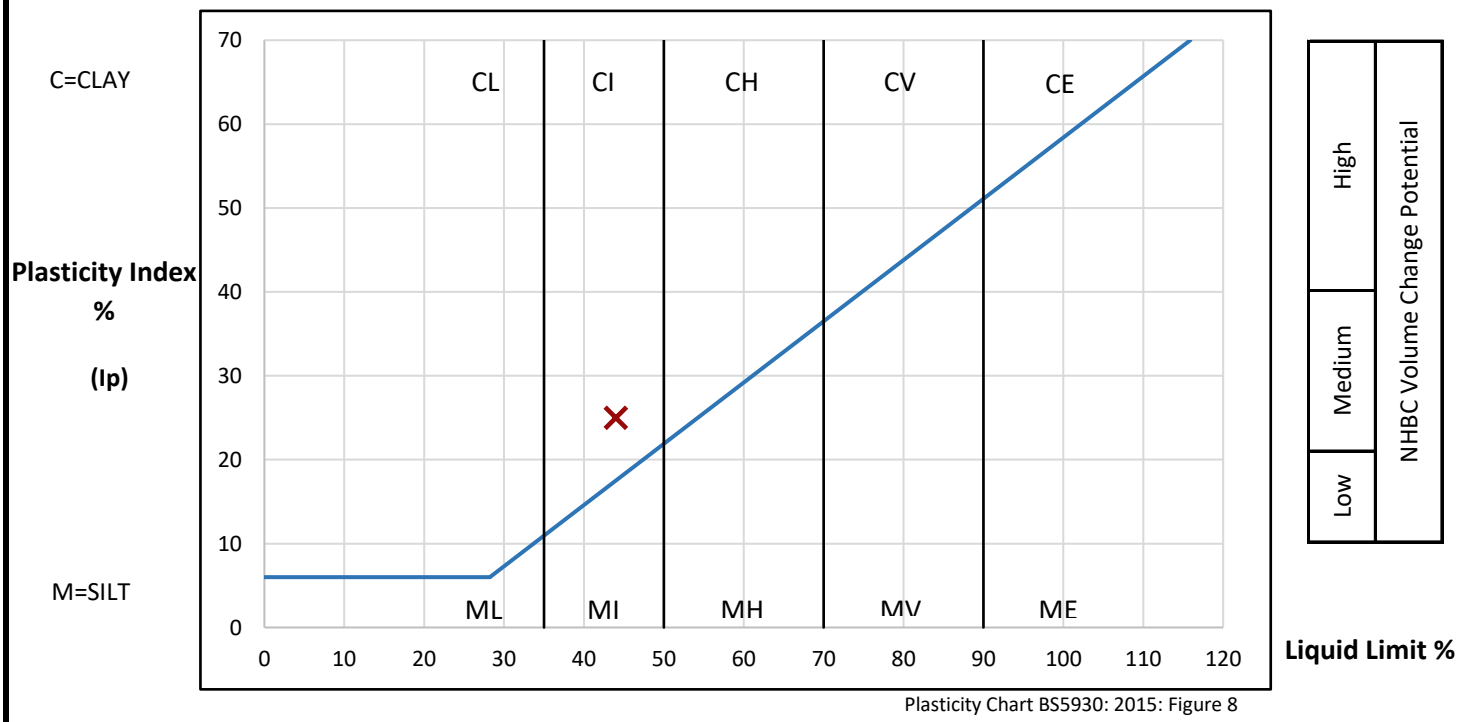
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS1 | 1.50 - 1.80 | D | - | 19.4 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black, white and orangish brown fine to coarse angular to sub rounded chert, chalk, ferruginous sandstone and ironstone. | |

| PREPARATION | | | | Liquid Limit | 44 % |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Plastic Limit | 19 % |
| Sample retained 0.425mm sieve | (Measured) | 42 % | | Plasticity Index | 25 % |
| Corrected water content for material passing 0.425mm | Not reported | | | Liquidity Index | 0.02 |
| Sample retained 2mm sieve | (Measured) | 34 % | | NHBC Modified (I'p) | 15 % |
| Curing time | 25 hrs | Clay Content | Not analysed | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

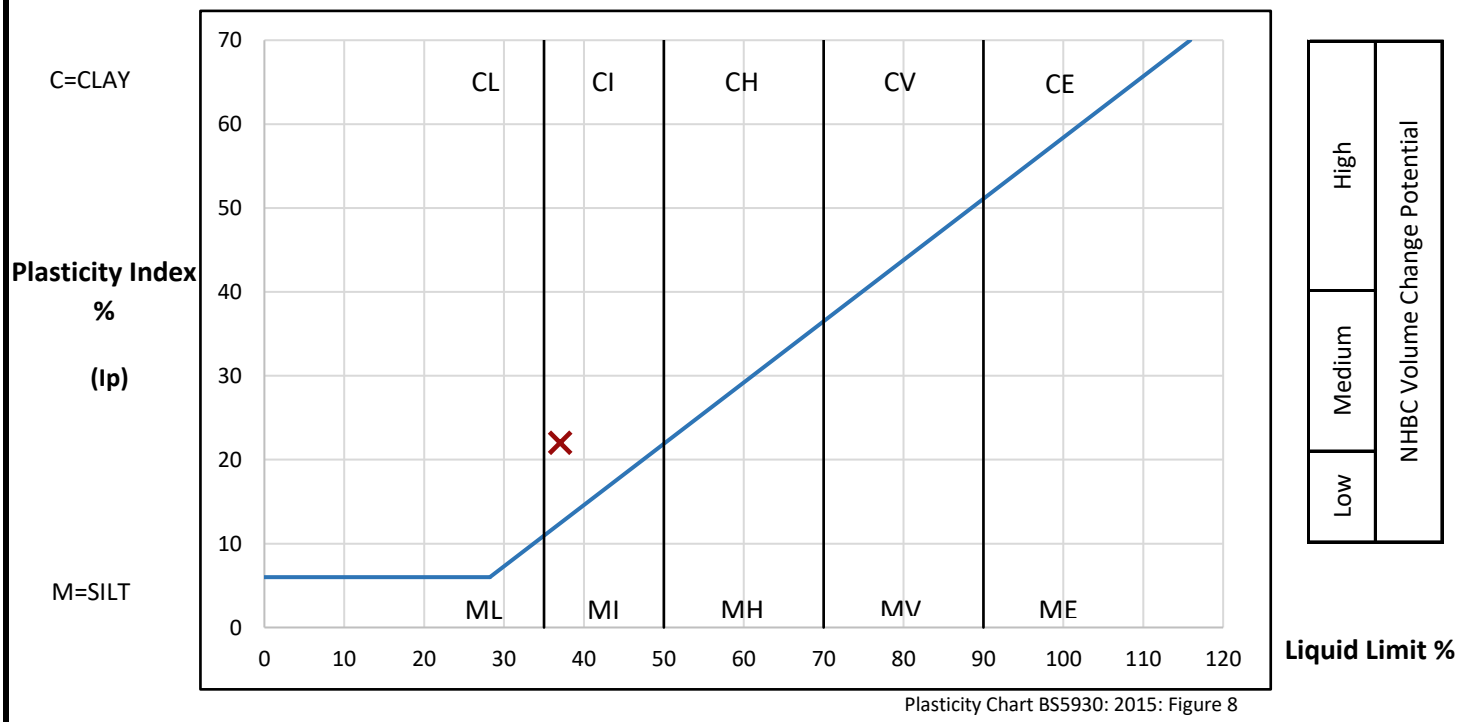
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS1 | 2.80 - 3.00 | D | - | 14.5 | Very stiff dark grey slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | |

| PREPARATION | | | | Liquid Limit | 37 % |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Plastic Limit | 15 % |
| Sample retained 0.425mm sieve | (Measured) | 23 % | | Plasticity Index | 22 % |
| Corrected water content for material passing 0.425mm | Not reported | | | Liquidity Index | -0.02 |
| Sample retained 2mm sieve | (Measured) | 16 % | | NHBC Modified (I'p) | 17 % |
| Curing time | 25 hrs | Clay Content | Not analysed | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

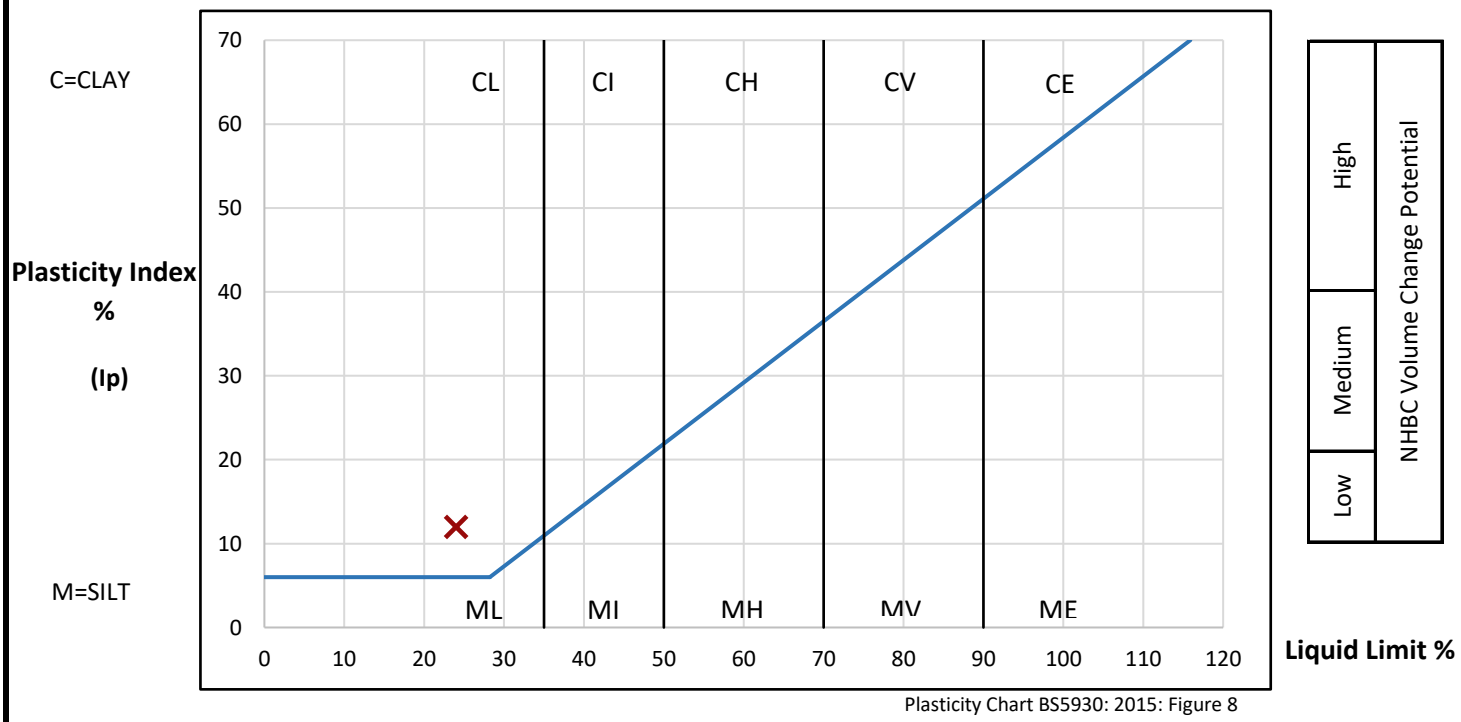
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS2 | 1.00 - 1.50 | D | - | 16.0 | Orangish brown and soft olive yellow lumps slightly gravelly slightly sandy silty CLAY with rare recently active roots. Gravel is brown, black, white fine to coarse angular to sub rounded flint, chalk and quartz. | |

| PREPARATION | | | | Liquid Limit | 24 % |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Plastic Limit | 12 % |
| Sample retained 0.425mm sieve | (Measured) | 15 % | | Plasticity Index | 12 % |
| Corrected water content for material passing 0.425mm | Not reported | | | Liquidity Index | 0.33 |
| Sample retained 2mm sieve | (Measured) | 10 % | | NHBC Modified (I'p) | 10 % |
| Curing time | 24 hrs | Clay Content | Not analysed | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

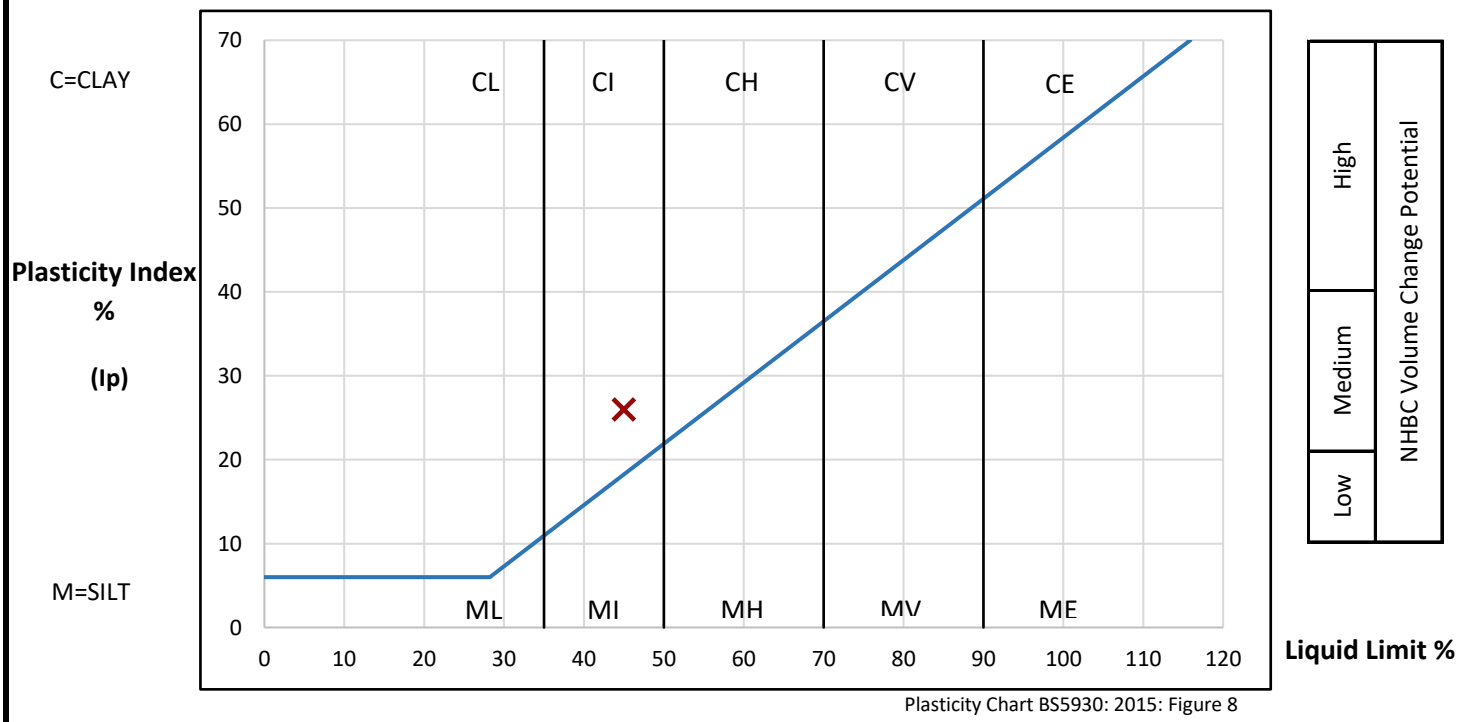
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS3 | 1.00 - 1.70 | D | - | 22.1 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | |

| PREPARATION | | | | Liquid Limit | 45 % |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Plastic Limit | 19 % |
| Sample retained 0.425mm sieve | (Measured) | 33 % | | Plasticity Index | 26 % |
| Corrected water content for material passing 0.425mm | Not reported | | | Liquidity Index | 0.12 |
| Sample retained 2mm sieve | (Measured) | 25 % | | NHBC Modified (I'p) | 17 % |
| Curing time | 25 hrs | Clay Content | Not analysed | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

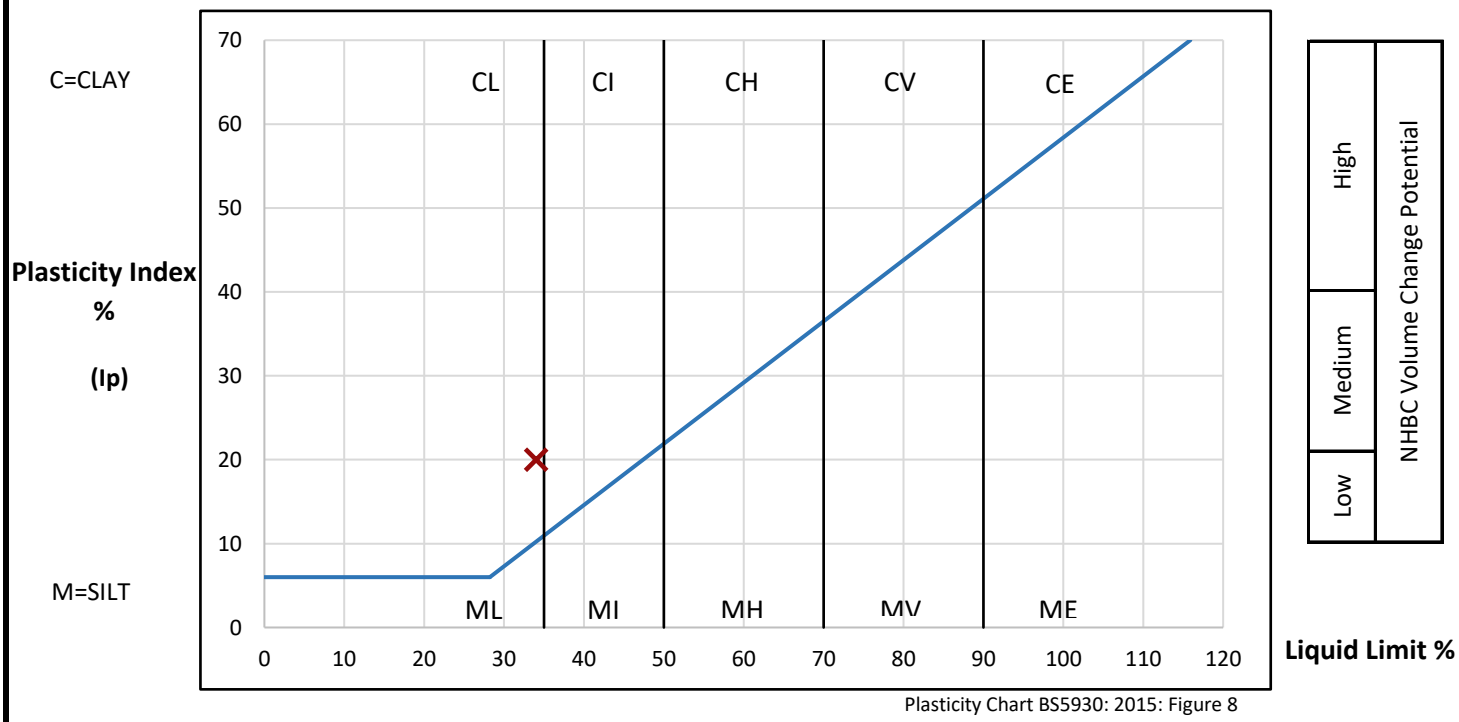
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS3 | 2.55 - 3.00 | D | - | 10.2 | Very stiff dark grey slightly sandy gravelly silty CLAY. Gravel is brown, black and white, fine to coarse angular to sub rounded flint, chalk and quartz. | |

| PREPARATION | | | | Liquid Limit | 34 % |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Plastic Limit | 14 % |
| Sample retained 0.425mm sieve | (Measured) | 58 % | | Plasticity Index | 20 % |
| Corrected water content for material passing 0.425mm | Not reported | | | Liquidity Index | -0.19 |
| Sample retained 2mm sieve | (Measured) | 52 % | | NHBC Modified (I'p) | 8 % |
| Curing time | 24 hrs | Clay Content | Not analysed | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

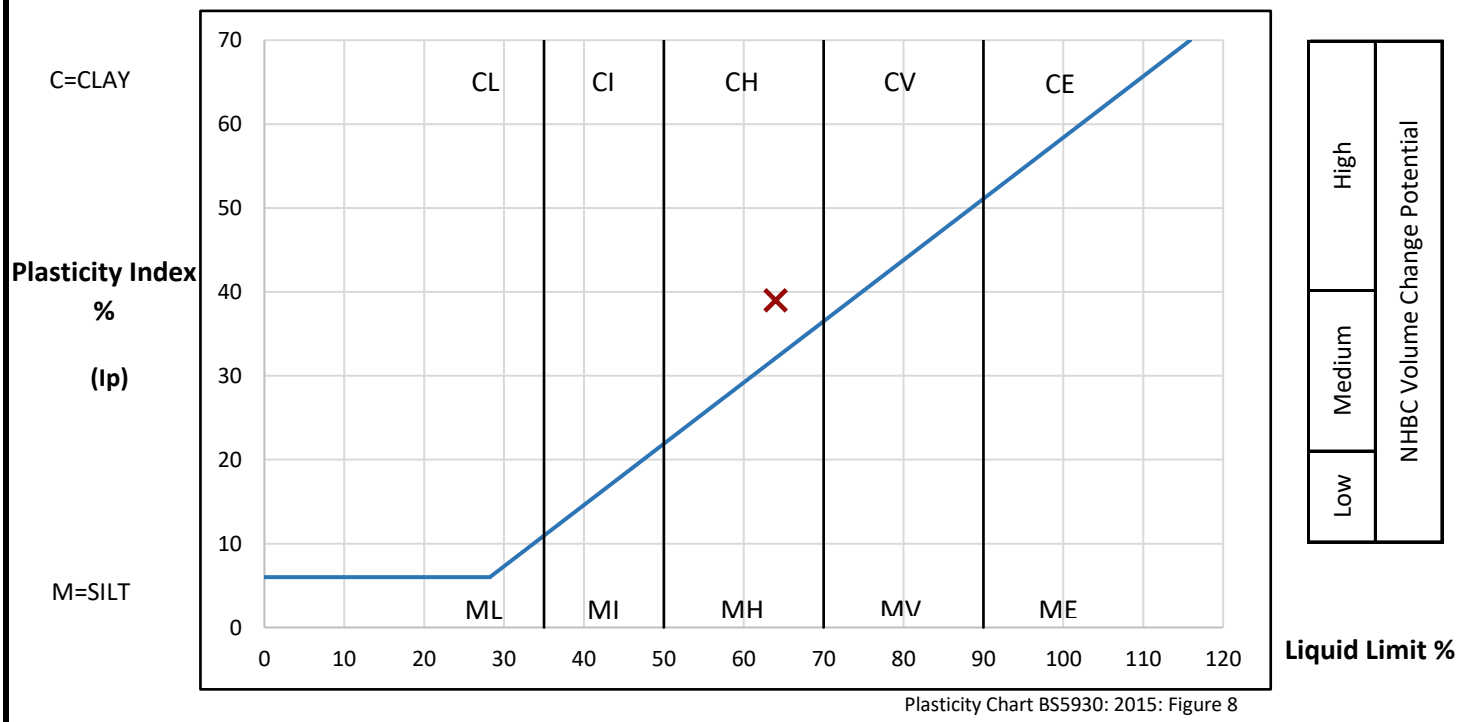
UKAS TESTING 0998

| | |
|---|---|
| **Contract** | **Hinckley** |
| **Serial No.** | **48169_1** |

## DETERMINATION OF WATER CONTENT, LIQUID LIMIT AND PLASTIC LIMIT AND DERIVATION OF PLASTICITY INDEX AND LIQUIDITY INDEX

| Borehole / Pit No. | Depth m | Sample Type | Sample Reference | Water Content (W) % | Description | Remarks |
|---|---|---|---|---|---|---|
| WS4 | 1.70 - 2.00 | D | - | 21.3 | Soft yellowish brown slightly sandy gravelly silty CLAY. Gravel is brown black, white and orangish brown fine to coarse angular sub rounded flint, chalk, ferruginous sandstone and ironstone. | |

| PREPARATION | | | | | |
|---|---|---|---|---|---|
| Method of preparation | Wet sieved over 0.425mm sieve | | | Liquid Limit | 64 % |
| Sample retained 0.425mm sieve | (Measured) | 43 % | | Plastic Limit | 25 % |
| Corrected water content for material passing 0.425mm | | Not reported | | Plasticity Index | 39 % |
| Sample retained 2mm sieve | (Measured) | 40 % | | Liquidity Index | -0.09 |
| Curing time | 26 hrs | Clay Content | Not analysed | NHBC Modified (I'p) | 22 % |
| | | | | Derived Activity | Not analysed |




Plasticity Chart BS5930: 2015: Figure 8

| | |
|---|---|
| Method of Preparation: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 4.2 |
| Method of Test: | BS EN ISO: 17892-1: 2014 & BS 1377: Part 2: 1990: 3.2, 4.4, 5.3, 5.4 |
| Type of Sample Key: | U=Undisturbed, B=Bulk, D=Disturbed, J=Jar, W=Water, SPT=Split Spoon Sample, C=Core Cutter |
| Comments: | Corrected water content not reported due to material type.<br>Corrected water content assume material greater than 0.425mm non-porous. See BS1377: Part2: 1990 Clause 3 Note 1<br>Volume Change Potential: NHBC Standards Chapter 4.2 Unmodified Plasticity Index<br>Note: Modified Plasticity Index I'p = Ip x (% less than 425microns/100) |

# TEST REPORT

**ISSUED BY SOIL PROPERTY TESTING LTD**

**DATE ISSUED: 08/08/2025**

| | |
|---|---|
| **Contract:** | **Hinckley** |
| **Serial No:** | **48169_1** |

## DETERMINATION OF THE SULPHATE CONTENT AND pH OF SOIL AND GROUNDWATER

| Borehole / Pit No. | Depth (m) | Sample | | Conc. of Soluble SO3 | | Calc'd Conc. Of SO4 (g/L) | pH Value | % Sample Passing 2mm Sieve | Description | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Type | Ref. | Water Soluble 2:1 (g/L) | Ground Water (g/L) | | | | | |
| WS1 | 1.50 - 1.80 | D | - | 0.01 | | 0.02 | 7.7 | 66 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is brown, black, white and orangish brown fine to coarse angular to sub rounded chert, chalk, ferruginous sandstone and ironstone. | |
| WS3 | 1.00 - 1.70 | D | - | 0.06 | | 0.07 | 7.6 | 75 | Soft yellowish brown slightly gravelly slightly sandy silty CLAY. Gravel is fine to medium angular to sub rounded chalk and flint. | |
| WS3 | 2.55 - 3.00 | D | - | 0.45 | | 0.55 | 7.2 | 48 | Very stiff dark grey slightly sandy gravelly silty CLAY. Gravel is brown, black and white, fine to coarse angular to sub rounded flint, chalk and quartz. | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

| | |
|---|---|
| Method of Preparation: | BS1377: Part 1: 2016: 8.5, BS1377: Part 3: 1990: 5.3 Soil/Water Extract, 5.4 Groundwater |
| Method of Test: | BS1377: Part 3: 1990: 5.5 |
| Type of Sample Key: | U= Undisturbed, B= Bulk, D= Disturbed, J= Jar, W= Water, SPT= Split Spoon Sample, C= Core Cutter |
| Comments: | **Test not UKAS accredited** |
| Remarks to Include: | Sample disturbance, loss of moisture, variation from test procedure, location, and origin of test specimen within original sample. Oven drying temperature if not 105-110C. |

**Calculation of Preliminary Bearing Pressure - Strip Foundation on Clays**

For undrained conditions using $^{R}/_{A} = (\pi + 2)Cu + q$

**Input Parameters**

| Term | Symbol | Value | Units |
|---|---|---|---|
| Width of rising wall | d | 0.3 | m |
| Height of concrete foundation | h | 0.3 | m |
| Depth below ground level | D | 1 | m |
| Breadth of foundation | B | 0.6 | m |
| density of soil | $\Upsilon_{s;k}$ | 20 | kN/m$^3$ |
| density of concrete | $\Upsilon_{c;k}$ | 24 | kN/m$^3$ |
| density of brick and infill | $\Upsilon_{b;k}$ | 22 | kN/m$^3$ |
| Undrained shear strength | Cu | 55 | kPa |
| Assumed imposed vertical load | | 80 | kN/mrun |
| **Permanent characteristic vertical load** | | | |
| Weight of rising wall | | 4.62 | kN/mrun |
| Weight of foundation | | 4.32 | kN/mrun |
| Weight of backfill | | 4.2 | kN/mrun |
| Total characteristic vertical load | $V_k$ | 93.14 | kN/mrun |

**Design Approach 1**

Undrained Conditions simplified for the case of a vertical load action at the centre of strip

| | | | |
|---|---|---|---|
| Area of footing | A | 0.6 | m2/mrun |
| **Combination 1 (A1, M1, R1)** | | | |
| Design Load (A1) | $V_{d1}$ | 125.74 | kN/mrun |
| Design Strength (M1) | $C_{ud1}$ | 55 | kPa |
| Soil Surcharge adj to footing | $q_{d1}$ | 20 | kPa |
| Design Bearing Resistance (R1) | $R_{d1}$ | 181.69 | kPa |

Check if $V_{d1} \leq R_{d1}$ acceptable for Design Approach 1 Combination 1

| Term | Symbol | Value | Units | |
|---|---|---|---|---|
| **Combination 2 (A2, M2, R1)** | | | | |
| Design Load (A2) | $V_{d2}$ | 93.14 | kN/mrun | |
| Design Strength (M2) | $C_{ud2}$ | 39.3 | kPa | |
| Soil surcharge adj to footing | $q_{d2}$ | 20 | kPa | |
| Design Bearing Resistance (R1) | $R_{d2}$ | 133.2 | kPa | |
| Check if $V_{d2} \leq R_{d2}$ | | acceptable for Design Approach 1 Combination 2 | | |
| Critical Combination Check | | | | |
| Combination 1 | $R_{d1}/V_{d1}$ | 1.4449 | | |
| Combination 2 | $R_{d2}/V_{d2}$ | 1.4302 | | Combination 2 is more critical |
| **Settlements (SLS Limit State)** | | | | |
| Limit to settlements by $V_k = R_k/3$ | using unfactored values | | | |
| Vertical Load | $V_k$ | 93.14 | kN/mrun | |
| Bearing Resistance | $R_k$ | 181.69 | kN/mrun | |
| | $R_k/V_k$ | 1.9507 | | Less than 3<br>consider increasing foundation size or reducing load |
| To give $V_k$ for $R_k/3$ | $V_k$ | 60.562 | kN/mrun | |
| **Preliminary design bearing resistance** | | 100.94 | kPa | |
| Imposed wall loading | | 47.422 | kN/mrun | |