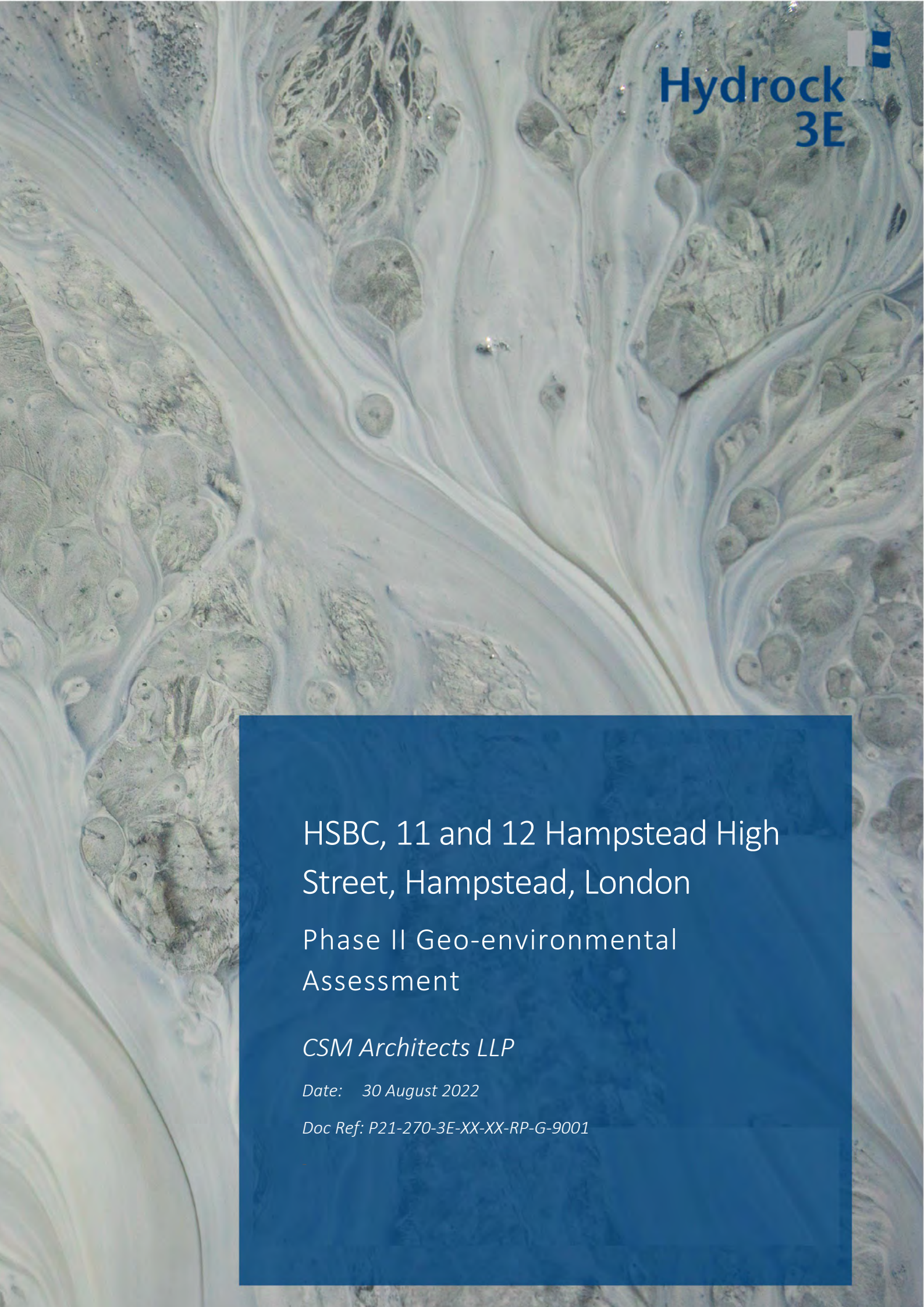

HSBC, 11 and 12 Hampstead High Street, Hampstead, London

Phase II Geo-environmental Assessment

CSM Architects LLP

Date: 30 August 2022

Doc Ref: P21-270-3E-XX-XX-RP-G-9001

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Executive Summary

SITE INFORMATION AND SETTING	
Report title	Geo-environmental Assessment
Client	CSM Architects LLP
Site name	11 and 12 Hampstead High Street
Location	Hampstead, London
Proposed Development	Two storey extension and alterations to the lower ground floor and ground floor of the existing building to allow for the construction of two residential flats and alterations to the existing HSBC bank.
GEO-ENVIRONMENTAL ASSESSMENT	
Ground Conditions	Within hand excavated trial pits (HDFP01 and HDFP02) made ground was encountered to depths of between 0.50m and 1.40m (base of pit positions) and comprised dark brown sand, clay and occasional gravel with paving slabs, wood, concrete and polystyrene. At the location of HHWS01, situated approximately 2-3m lower than the adjacent car parking, paving slabs were identified with a thickness of 0.05m, underlain by bedding sand to a depth of 0.15m. Beneath the surfacing and bedding sand, concrete was encountered which is understood to extend to a depth of at least 0.45m and restricted the progression of the intrusive works at this location. Within the rear car park, at the location of R01, tarmacadam surfacing was identified to a depth of 0.10m, underlain by yellow sandstone sub base within a black clay and sand matrix to a depth of 0.55m. Natural superficial deposits were encountered from a depth of 0.55m and extending to 5.60m below current site levels. These deposits were recorded as firm brown and orange mottled clay. Bedrock deposits of the London Clay Formation were also recorded to a depth of at least 24.80m.
Groundwater	During the investigation works no significant groundwater was recorded. However during ground water monitoring standing groundwater levels were recorded at depths of between 4.45m and 4.54m at the location of RO1, which is considered to be attributable to localised perched water as opposed to representing a continuous groundwater surface (table).
Contamination	From the results of the laboratory chemical testing, no significant concentrations of potential contaminants have been recorded which are considered to represent a potential risk to human health (i.e. future end users and construction workers). In addition, when considering the very low levels of potential contaminants there is no significant risk considered to controlled waters.
Ground Gas	Radon protection measures are not required for the proposed development. From the results of the monitoring no gas protection measures are considered necessary for this site.
Foundations	Due to the location of the proposed extension, and the close proximity of surrounding buildings and infrastructure, it is understood that piled foundations are being considered for the development and any associated retaining walls (likely contiguous piles). If a piled foundation design is to be considered for this site, the advice of a specialist contractor should be sought to determine and appropriate design and method of installation. In addition, it is also recommended that a review of foundation options be completed following confirmation of the proposed foundation solution.
Disposal of Materials	From the results of the chemical testing, it is considered that made ground could potentially be characterised as Non-Hazardous for disposal due to levels of TOC exceeding 3% threshold for acceptance at an Inert landfill site at the location of R01. It is likely natural deposits beneath the site will be suitable for disposal at an Inert landfill. Where offsite disposal of waste soils is required, the results of the investigation should be made available to the waste carrier/receiver in order to determine the waste classification, costs for disposal and the requirement for further testing. Sufficient time should be allowed in the site programme to effectively segregate soils based on material type, including the time allowed for any further laboratory classification analysis as required.

Sulphate Attack on Buried Concrete	The results of the chemical analyses indicate a BRE Special Digest 1:2005 Design Sulphate Class DS-2 with an ACEC classification AC-2.
Excavations and Dewatering	The use of support to excavation sides will be required in line with health and safety guidelines. It is also recommended that an allowance be included for appropriate water control measures (i.e. pumping) during any future excavation works and particularly during wetter periods of the year.

This Executive Summary forms part of Hydrock 3E report number P21-270-3E-XX-XX-RP-G-9001 and should not be used as a separate document.

1. INTRODUCTION

1.1 Commission

Hydrock 3e was commissioned by CSM Architects to carry out a Phase II Geo-Environmental assessment for land located at 11 and 12 Hampstead High Street, London. This report highlights ground related environmental and geotechnical considerations in relation to the proposed development, which it is understood is to include a two storey extension and alterations to the lower ground floor and ground floor of the existing building to allow for the construction of two residential flats and alterations to the existing HSBC bank, details of which are provided on the proposed site layout plan included as Appendix A.

1.2 Objectives

This assessment has been produced to provide an assessment of ground conditions and potential geotechnical conditions and constraints at the site.

The primary objectives of this assessment were:

- To investigate near surface soil and groundwater conditions.
- To provide a preliminary assessment on the potential risks posed by any ground or groundwater contamination, and provide recommendations on remedial measures to manage such risks.
- To provide advice relating to geotechnical issues associated with the site.

1.3 Scope

Fieldwork was undertaken between the 27th and 29th June 2022 and comprised one rotary open hole borehole (referenced as R01), one hand held mini percussive borehole (referenced as HHWS01) and two hand excavated trial pits (referenced as HDFP01 and HDFP02).

This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the scope of works outlined above. For the purpose of this report a residential without home grown produce end use has been adopted.

The comments and opinions presented in this report are based on the findings of the intrusive investigation carried out by Hydrock 3E. Responsibility cannot be accepted for any conditions not revealed by these reports and which have not been taken into account by this report.

This assessment has been produced to provide an initial assessment of potential geotechnical and geo-environmental conditions and constraints at the site to support a planning application.

Where appropriate, relevant information pertinent to this report has been extracted from the Phase I Geo-environmental Assessment report completed by 3e Consulting Engineers Limited in December 2021 which should also be read in conjunction with this report. A summary of the Phase report is provided within section 3.

1.4 Uncertainties and Limitations

The report has been prepared by Hydrock 3E (which is a trading style of 3E Consulting Engineers Ltd) for the use of Fastned UK Limited.

Any third parties who use the information contained herein do so at their own risk. Hydrock 3E shall not be responsible for any use of the report or its contents for any purpose other than that for which it was prepared or for use of the report by any parties not defined in Hydrock 3E's appointment. If any

unauthorised third party comes into possession of this report, they rely on it entirely at their own risk and Hydrock 3E do not owe them any Duty of Care or Skill.

This report presents the factual information available during this appraisal, interpretation of the data obtained and recommendations relevant to the outlined scope of works. It has been assumed in the production of this report that given the site is to be developed as a two storey extension with alterations to the lower ground floor and ground floor of the existing building to allow for the construction of two residential flats and alterations to the existing HSBC. As a result, for the purpose of this report a residential without home grown produce end use has been adopted.

This report provides the findings of the assessment carried out in August 2022. The report has been prepared by Hydrock 3E on the basis of available information obtained during the investigation period. Although every reasonable effort has been made to gather all relevant information, not all potential environmental constraints or liabilities associated with the site may have been revealed. Responsibility cannot be accepted for any conditions not revealed and which have not been taken into account by this report.

Any diagram or opinion relating to site geology, contamination or other spatially variable features between or beyond investigation positions is conjectural and provided for guidance only. Confirmation of ground conditions between exploratory holes should be undertaken if deemed necessary.

References to possible asbestos containing material made within this report do not constitute an asbestos survey. 3e are not asbestos specialists and cannot provide specific asbestos risk assessment advice, it is recommended that the Client appoints an asbestos consultant to advise on any matters relating to asbestos.

This assessment has been carried out in general accordance with recognised best practice. Unless otherwise stated, no assessment has been made for the presence of radioactive substances or unexploded ordnance. Where the phrase 'suitable for use' is used in this report, it is in keeping with the terminology used in planning control and does not imply any specific warranty or guarantee offered by Hydrock 3E.

Please note that notwithstanding any site observations concerning the presence or otherwise of archaeological sites, asbestos-containing materials or invasive weeds, this report does not constitute a formal survey of these potential constraints and specialist advice should be sought.

Information provided by third parties has been used in good faith and is taken at face value; however, Hydrock 3E cannot guarantee its accuracy or completeness. Where the existing report(s) prepared by others have been provided by the Client, it is assumed that these have been either commissioned by the Client, or can be assigned to the Client, and can be relied upon by Hydrock 3E. Should this not be the case Hydrock 3E should be informed immediately as additional work may be required. Hydrock 3E is not responsible for any factual errors or omissions in the supplied data, or for the opinions and recommendations of others. It is possible that the conditions described may have since changed through natural processes or later activities.

Any site boundary line depicted on plans does not imply legal ownership of land.

2. THE SITE

2.1 Location and Description

The site, is located at 11 and 12 Hampstead High Street, London. A site location plan is included as **Drawing G0001**.

The site is approximately 0.1Ha (Hectares) in size and irregular in shape. HSBC bank occupies the southern site area which fronts onto Hampstead High Street. Residential flats (3 stories) overlie the HSBC building with the flats set back slightly from the bank frontage. The existing HSBC building also has a basement / lower ground floor which is visible to the rear of the property.

Immediately to the north of the HSBC building is a small paved area containing air conditioning units which is set at or close to the lower ground floor level of the building. To the north of this area lies car parking which is set at an elevated level to the previously mentioned paved area and is connected via a stairwell and a sloped area containing paving slabs (which was also noted to be slightly retained at the base). Access to the rear of the bank building can be obtained via a walkway located across the western extent of the site.

The adjacent land use is generally as follows:

- North: Area of private parking with residential properties recorded beyond.
- South: Hampstead High Street with commercial premises and Greenhill apartment block beyond.
- East: Old Brewery Mews and mixed commercial and residential properties.
- West: Mixed commercial and residential properties.

3. SUMMARY OF AVAILABLE REPORTS

3.1 General

A Phase I Geo-Environmental Assessment was completed for the site by 3e Consulting Engineers Limited in December 2021 (report ref: P21-270/P1, Issue 1). It is recommended that this report is read in conjunction with this assessment. Relevant information from this report is summarised in the following section.

3.2 Phase I Geo-environmental Assessment (3e Consulting Engineers; November 2020)

The following provides a summary of the Phase I report produced for this site by 3e Consulting Engineers in December 2021 as referenced above.

3.2.1 Site History

From earliest published town plans dated 1850 the site is recorded an undeveloped. By 1971 a large unnamed building occupies the southern extent of the site (existing HSBC building), with a further small structure recorded across the western extent of the site. By 1936, the structure located across the western site area has been demolished. Little to no significant change has occurred on the site until the 1960's when two small structures were constructed across the eastern and western extents of the site, with the structure occupying the western site area demolished by c.1973.

3.2.2 Environmental Setting

- From BGS data no made ground is recorded on or within close proximity to the site. However, it was considered that made ground should be anticipated associated with previous site history and current hard standing surfacing.
- BGS plans indicate an absence of natural superficial deposits beneath the site.
- Bedrock deposits of Claygate Member (forming part of the London Clay Formation) are recorded beneath the site with nearby BGS borehole records indicating firm clay and loose sand deposits to a depth of 10.5m which is in turn underlain by firm to stiff silty clay to a depth of approximately 12m.
- Bedrock deposits are classified as a Secondary A Aquifer.
- The nearest surface water feature is recorded 592m east of the site.
- There are no discharge consents recorded within 1km of the site.
- There are no pollution incidents recorded within 1km of the site.
- The site is not located within a source protection zone.
- There are no surface or groundwater abstractions recorded within 1km of the site.
- There are no landfill sites or waste management facilitates recorded within 1km of the site.
- From BGS data the site to lies within an area of limited potential for groundwater flooding to occur.

3.2.3 Unexploded Ordnance

A Preliminary UXO (Unexploded Ordnance) Risk Assessment was undertaken for the site by 1st Line Defence (report ref: PA14671-00A, dated 26th November 2021). From the findings of the assessment, it was indicated that the risk of UXO's to the site is not higher than the 'background risk' of encountering UXO within this area of London and therefore it was not recommended that any further action is taken for the site.

3.2.4 *Underground Lines*

As part of the Phase I report recourse was made with Transport of London regarding underground infrastructure to the south of the site understood to be located below Hampstead High Street. Following correspondence with Transport for London regarding the proposed development works, there was no objection to the proposed piling works for the proposed retaining wall required to facilitate the proposed development and therefore no further action is considered necessary in this regard

3.2.5 *Radon*

Inspection of the BRE publication BR211 (2007), 'Radon: Guidance on protective measures for new buildings' indicates that the site lies in an area where radon protection measures are not required.

3.2.6 *Coal Mining*

The site is not located within a coal mining area and as such no risk is considered to the site.

3.2.7 *Preliminary Ground Gas Risk Assessment*

Radon protection measures are not required in the construction of new buildings.

The preliminary ground gas risk assessment completed as part of the Phase I report identified a very low risk to the development from ground gas, with the primary sources considered to be made ground. It was considered that a ground gas assessment would need to be completed as part of any future investigation works to confirm the level of potential risk to the development from ground gases.

3.2.8 *Conceptual Site Model*

Based on the information reviewed as part of the Phase I report potential sources of contamination identified for this site included the following:

Sources

- Contamination linked to made ground associated with the construction and demolition of former and existing buildings on the site.
- Potential for ground gas production associated with made ground beneath the site.

When considering the environmental site setting and nature of the proposed development to following potential pollution pathways and receptors were also identified for this site:

Potential Pollutant Pathways

- Human health – direct contact, soil ingestion and dust inhalation.
- Secondary A Aquifer - leaching and vertical migration of contamination.
- Lateral migration into watercourses. Considered to be very low risk given there are no surface water features recorded within plausible migration distance of the site.
- Vertical and lateral migration, ingress and accumulation of ground gases into buildings and service entries (manholes).
- Direct contact of aggressive soils with foundations and floor slabs.

Receptors

- Human Health (site end users).
- Human Health (construction workers).
- Controlled Waters (Secondary A Aquifer Bedrock Deposits).
- Buildings, foundations and floor slabs.

When considering the potential risk to human health the preliminary assessment, completed as part of the Phase I report, indicates that the risk to human health from any residual contamination can be largely mitigated by use of appropriate PPE during construction and by the use of hardstanding or soil capping throughout the proposed development, if necessary.

Overall the assessment indicates a very low to low environmental risk and as a result it was recommended that appropriate chemical testing of soils and groundwater be undertaken as part of any future investigation works, followed by the completion of associated risk assessments.

4. METHOD OF INVESTIGATION

4.1 Scope of Works

Fieldwork was undertaken between the 27th and 29th June 2022 and comprised one rotary open hole borehole (referenced as R01), one hand held mini percussive borehole (referenced as HHWS01) and two hand excavated trial pits (referenced as HDFP01 and HDFP02). All depths recorded are taken from below existing ground level. Detailed descriptions of strata and groundwater observations made during investigation works, together with samples recovered, are presented on the exploratory hole records in Appendix B and the exploratory hole locations are shown on Drawing G0002.

Fieldwork and soil descriptions were carried out in general accordance with BS5930:2015+A1:2020 Code of Practice for Ground Investigations and BS10175:2011+A2:2017: Investigation of Potentially Contaminated Sites – Code of Practice. In addition, where applicable reference has also been to CIRIA Publication C733 'Asbestos in soil and made ground: a guide to understanding and managing risks'.

4.2 Investigation Rationale

The boreholes were sunk in order to determine the soil profile. Disturbed samples were recovered as appropriate for soil descriptions and laboratory testing. In situ hand shear vanes (HSV) and standard penetration tests (SPT) were carried out to provide an assessment of the in situ strength and density of the natural deposits present below the site. The hand excavated trial pits were undertaken adjacent to boundary retaining walls in order to determine the foundation composition in order to facilitate the design of the future development.

A gas and groundwater monitoring well, comprising slotted 50mm diameter HDPE pipe set within a granular filter, were also installed in borehole R01. This well was sealed at the surface using bentonite and a flush lockable cover was fitted.

4.3 Laboratory Chemical Testing

The results of the chemical analysis are included as Appendix C. The analyses were carried out at an MCERTS registered and UKAS accredited laboratory. In order to provide an assessment of potential contamination, representative soil samples recovered as part of the investigation works, were screened for the following range of determinands:

- 2 no. samples screened for Metals: Arsenic, Boron, Copper, Cadmium, Chromium (total), Chromium (VI), Lead, Mercury, Nickel, Selenium, Zinc and TOC.
- 2 no. samples screened for the presence of Asbestos.

In addition, 2no. samples of the made ground and 2no. samples of the natural deposits were scheduled for water soluble sulphate and pH determinations to assess the potential for sulphate attack on buried concrete.

4.4 Laboratory Geotechnical Testing

To aid in determining potential geotechnical properties of the clay deposits representative samples were scheduled for the following tests:

- 6 no. Atterberg limits determinations to classify the underlying superficial cohesive soils.
- 4 no. single stage undrained triaxial tests.
- 1 no. one dimensional consolidation test.

The results of the geotechnical testing are presented in Appendix C.

5. RESULTS OF THE INVESTIGATION

5.1 Ground Conditions

Detailed descriptions of the materials encountered together with observations of groundwater, the results of in situ testing and sampling information are given on the exploratory hole records included as Appendix B with locations of the boreholes also shown on Drawing G0002.

A generalised succession of the ground profile encountered during the investigation works is summarised below. However, it should be noted that there is a potential for some local variation across the site and reference should be made to individual exploratory hole records.

5.2 Made Ground

Within hand excavated trial pits (HDFP01 and HDFP02) made ground was encountered to depths of between 0.50m and 1.40m (base of pit positions) and comprised dark brown sand, clay and occasional gravel with paving slabs, wood, concrete and polystyrene.

At the location of HHWS01, situated approximately 2-3m lower than the adjacent car parking, an initial surfacing of paving slabs were identified with a thickness of 0.05m, underlain by bedding sand to a depth of 0.15m. Beneath the initial surfacing and bedding sand, concrete was encountered which is understood to extend to a depth of at least 0.45m and restricted the progression of the intrusive works at this location.

Within the rear car park at the location of R01, an initial tarmacadam surfacing was identified to a depth of 0.10m, underlain by yellow sandstone sub base within a black clay and sand matrix with brick to a depth of 0.55m.

5.3 Superficial (Drift) Deposits

Natural superficial deposits were encountered immediately beneath the made ground materials at a depth of 0.55m and extending to 5.60m below current site levels. These deposits were recorded as firm brown and orange mottled clay.

5.4 Bedrock Deposits

Bedrock deposits of the London Clay Formation were recorded to extend below the site to a depth of at least 24.80m (terminal depth of borehole).

5.5 Retaining Wall Inspection Pits

HDFP01 and HDFP02 were positioned against the retaining wall which bounds the eastern section of the site in order to confirm the retaining wall structure details. From an external observation, the retaining wall comprises of three separate components, the first being the brick facade that forms the external boundary wall for the neighbouring properties, the second which forms as a concrete foundation to the boundary wall, though this is only present along half of the wall face, and a concrete batter which is shown adjacent to the boundary wall and extends towards the reduced fire escape level adjacent to the rear of the property.

HDFP01 exposed the northern most section of the retaining wall, recording brickwork does not extend below existing ground levels with concrete continuing as the foundation. The foundation projected by 0.075m and extended to a depth of at least 1.40m (terminal depth of trial pit). In addition to the above, the foundation was lined by a black correx fluted polypropylene.

HDFP02 was positioned at the mid-section of the retaining wall, where all three components intersect. The wall and foundation layout remain the same as HDFP01, however the concrete foundation begins to recede beneath the boundary wall. It is also apparent that the external batter does not join to the boundary wall.

A photographic record showing the intersection of each retaining wall component (HDFP02) is included within Drawing G0002.

5.6 Visual and / or Olfactory Evidence of Potential Contamination

There was no significant visual and / or olfactory evidence of potential contamination noted during the ground investigation works.

5.7 Remnant Infrastructure and Sub-surface Obstructions

There were no remnant infrastructure was identified during the ground investigations (i.e. foundations, floor slabs, etc.).

5.8 Groundwater

During the investigation works no significant groundwater was recorded within each of the borehole locations. However during ground water monitoring standing groundwater levels were recorded at depths of between 4.45m and 4.54m at the location of RO1, which is considered to be attributable to localised perched water as opposed to representing a continuous groundwater surface (table).

5.9 In situ Test Results

5.9.1 Standard Penetration Tests (SPT's)

The SPT's undertaken within the natural superficial (drift) deposits recorded 'N' values of between 6 and 12 with an average of 9. Within the London clay bedrock deposits, SPT 'N' values of between 19 and 42 with an average of 25 were recorded.

5.9.2 Hand Shear Vane Tests

Hand shear vane (HSV) readings carried out on undisturbed samples of the natural London Clay deposits varied between 40kPa and 120kPa. These results are indicative of low, medium to high strength cohesive deposits.

5.10 Gas Monitoring

From the Phase I Geo-environmental assessment limited plausible sources of ground gas were identified, with limited thicknesses of made ground being the sole potential source with the gas generation potential at the site determined as very low. Therefore, in consideration of the proposed residential end use, a number of ground gas monitoring visits were completed in order to confirm the absence of a ground gas risk.

To aid in assessing the gas regime below the site, 1 no. monitoring well, comprising slotted 50mm diameter HDPE pipe set within a granular filter, was installed within R01 to a depth of between 24.40 below current ground levels.

In total the well has been monitored on two occasions (26th July and 28th July 2022), with the results of the monitoring presented in Appendix D . The results of the monitoring are summarised in the table on the following page:

Table 5.1: Gas Monitoring Results

Location	CH4 (% v/v)	CO2 (% v/v)	O2 (% v/v)	Maximum Flow (l/hr)	Barometric Pressure (mb)	Maximum GSV* (l/hr)	
						CO2	CH4
R01	0.0	0.60-0.70	17.80-18.20	<0.1	1008-1010	<0.07	<0.07

** CIRIA 665 Gas Screening Value*

During the monitoring no Methane (CH4) was detected whilst Carbon Dioxide (CO_2) was recorded up to a maximum concentration of 0.70% v/v. Negligible flow rates were also recorded during the monitoring period to a maximum of 0.1l/hr.

During the monitoring period occasional slightly depleted Oxygen levels were also recorded to a minimum value of 17.80% v/v. However, when considering existing ground conditions this is considered to be associated with aerobic breakdown by bacteria accumulating in water contained within the well, and as such no risk is anticipated in this regard.

When considering the above, for the purposes of this assessment the risk to the site from ground gases has been evaluated by converting the results in the table above to a gas screening value (GSV), which is calculated by multiplying the typical maximum gas concentrations with the recorded maximum positive steady flow rate. As negligible concentrations of Methane were recorded during the monitoring period, only the GSV for Carbon Dioxide has been calculated, using the maximum recorded value of 4.4% v/v with a flow rate taken as 0.1l/hr.

The GSV has be calculated as follows:

- Carbon Dioxide GSV = 0.007 (0.7%) x 0.1 = 0.0007l/hr

From these results the GSV's for Carbon Dioxide and Methane do not exceed the GSV minimum assessment values for a Characteristic Situation 1 (CS1) as outlined in BS8485:2015+A1:2019 and CIRIA C665. As a result no gas protection measures are considered necessary for this site.

5.11 Geotechnical Related Testing

5.11.1 Atterberg Limit Determinations

The results of the geotechnical testing are presented in **Appendix C**.

The samples tested were recorded to have a modified plasticity indices of between 12.18% and 38%, which indicates a low to moderate volume change potential material.

5.11.2 Undrained Triaxial Tests

Two undisturbed (U100) samples of the natural superficial (drift) clay and two London Clay deposits recovered from R01 at depths of between 2.20m and 10.20m, were scheduled for undrained Triaxial compression tests.

The results of testing undertaken on the natural superficial (drift) clay deposits recorded undrained shear strengths of 53kN/m^2 and 56kN/m^2 which is indicative of medium strength deposits.

Testing completed on the London Clay deposits recorded undrained shear strengths of between 9kN/m^2 and 106kN/m^2, which are indicative of extremely low to high strength deposits.

In view of the reduced strength recorded at a depth of 8.20m, it is possible this represents a local soft spot attributable to a higher moisture content. However this cannot be fully discounted as partially representative of a band contained within the London Clay deposits beneath the site.

5.11.3 One Dimensional Consolidation Tests

1 no. one dimensional consolidation test was undertaken on samples of the London Clay from R01 at depth of 8.20m, with relevant information and calculations in the following table.

Table 5.2: One Dimensional Consolidation Tests

Strata	Location and Depth Below Ground Level (m)	Coefficient of volume compressibility (m2/MN)*	Compressibility
London Clay.	R01 (8.20-8.70)	0.35	Medium-High

* For a pressure range of overburden pressure (σ_{v0}) to σ_{v0} + 100kN/m^2

For a pressure range of overburden pressure (σ_{v0}) to σ_{v0} + 100kN/m^2, a coefficient of volume compressibility (m_v) of 0.35m^2/MN has been calculated indicating deposits of medium to high compressibility.

5.11.4 Sulphate and pH Determinations

Within the made ground and natural soils, water soluble sulphate concentrations were recorded between <10mg/l and 510mg/l with pH values between 7.3 and 8.0. This indicates a BRE Design Special Digest 1:2005 Design Sulphate Class DS-2 with an ACEC site classification AC-2.

6. CONTAMINATION RISK ASSESSMENT

6.1 Methodology

The results of the contamination related testing undertaken on samples of made ground are included as Appendix C. Generally, the results have been assessed using the LQM/CIEH Suitable for Use Levels (S4UL's) for Human Health Risk Assessment (Copyright Land Quality Management Limited reproduced with permission; Publication Number S4UL3170; All rights reserved). Where no S4UL is available, reference is made to published CLEA Soil Guidelines Values (SGVs) for standard land uses, or generic levels derived using the CLEA model (v1.06). For the purpose of this report, all S4ULs or C4SL's will be referred to as Generic Assessment Criteria (GAC).

With respect to the assessment of the site proposals include the construction of two residential flats. When considering the potential receptors, a conservative assessment has been undertaken utilising the GAC's for a residential without home grown produce end use. Based on the laboratory results, an SOM of 1% has been used in the assessment. A summary of the contamination related testing is presented the following table.

Table 6.1: Soil Analysis

Determinand	Maximum Concentration (mg/kg)	No. of Samples Tested	Generic Assessment Criteria (GAC)[1] mg/kg	No. of Samples Exceeding GAC
Metals and Metalloids				
Arsenic	29	2	40	0
Boron	0.88	2	11000	0
Cadmium	0.25	2	85	0
Chromium (III)	35	2	910	0
Chromium (VI)	<0.50	2	6	0
Lead	280	2	310[2]	0
Mercury	0.71	2	56	0
Selenium	1.2	2	430	0
Copper	60	2	7100	0
Nickel	23	2	2400	0
Zinc	92	2	180	0
Polycyclic Aromatic Hydrocarbons (USEPA 16)				
Naphthalene	<0.10	2	2.3	0
Acenaphthylene	<0.10	2	2900	0
Acenaphthene	<0.10	2	3000	0
Fluorene	<0.10	2	2800	0
Phenanthrene	<0.10	2	1300	0
Anthracene	<0.10	2	31000	0
Fluoranthene	<0.10	2	1500	0
Pyrene	<0.10	2	3700	0
Benzo(a)anthracene	<0.10	2	11	0
Chrysene	<0.10	2	30	0
Benzo(b)fluoranthene	<0.10	2	3.9	0
Benzo(k)fluoranthene	<0.10	2	110	0
Benzo(a)pyrene	<0.10	2	3.2	0
Indeno(1,2,3-cd)pyrene	<0.10	2	45	0
Dibenz(a,h)anthracene	<0.10	2	0.31	0
Benzo(g,h,i)perylene	<0.10	2	360	0

Notes:

1. LQM/CIEH S4UL for Residential without home grown produce end use.
2. Category 4 Screening Level (C4SL) for residential end use.

From the results of the laboratory chemical analysis, none of the determinands tested were elevated above the generic assessment criteria for a residential without home grown produce end use.

6.2 Asbestos

Two samples of made ground screened for asbestos fibres; none were identified.

7. DISCUSSION

Development proposals include two storey extension and alterations to the lower ground floor and ground floor of the existing building to allow for the construction of two residential flats and alterations to the existing HSBC bank. This investigation was carried out primarily to provide geotechnical information with respect to foundations for the proposed development and contamination related testing to provide an assessment of potential constraints to the development.

7.1 Contamination Assessment

From the results of the laboratory chemical testing, no significant concentrations of potential contaminants have been recorded which are considered to represent a potential risk to human health (i.e. future end users and construction workers).

Based on the lack of significant contamination identified during the ground investigation, there is no requirement for any formal remediation to facilitate the proposed development.

7.2 Disposal of Materials

The results of the chemical analysis allows for a preliminary off-site disposal assessment to be made. From the results of the chemical testing, it is considered that made ground could potentially be characterised as Non-Hazardous for disposal due to levels of TOC exceeding 3% threshold for acceptance at an Inert landfill site at the location of R01.

It is likely natural deposits beneath the site will be suitable for disposal at an Inert landfill.

Where offsite disposal of waste soils is required, the results of the investigation should be made available to the waste carrier/receiver in order to determine the waste classification, costs for disposal and the requirement for further testing. Sufficient time should be allowed in the site programme to effectively segregate soils based on material type, including the time allowed for any further laboratory classification analysis as required.

7.3 Gas Protection Measures

Radon protection measures are not required for the proposed development.

From the results of the gas monitoring no elevated levels of CO_2 or CH_4 have been recorded resulting in the site falling within a CIRIA C665 and BS8485:2015+A1:2019 Characteristic Situation 1 (CS1). As a result no gas protection measures are considered necessary for this site.

7.4 Foundations

From provided information it is understood that the proposed development includes the construction of a two storey extension to the rear of the existing HSBC building, which is to be built within an existing external basement area.

Due to the location of the proposed extension, and the close proximity of surrounding buildings and infrastructure, it is understood that piled foundations are being considered for the development and any associated retaining walls (likely contiguous piles). If a piled foundation design is to be considered for this site, the advice of a specialist contractor should also be sought to determine and appropriate design and method of installation. In addition, it is recommended that a review of foundation options be completed following confirmation of the proposed foundation solution.

7.5 External Works

Based on the findings of the investigation works it is recommended that a CBR value of 2% be adopted at this stage for the design of any new hardstanding. This should be reviewed following the completion of in-situ plate load (CBR) tests during the initial development works when the final formation level has been confirmed.

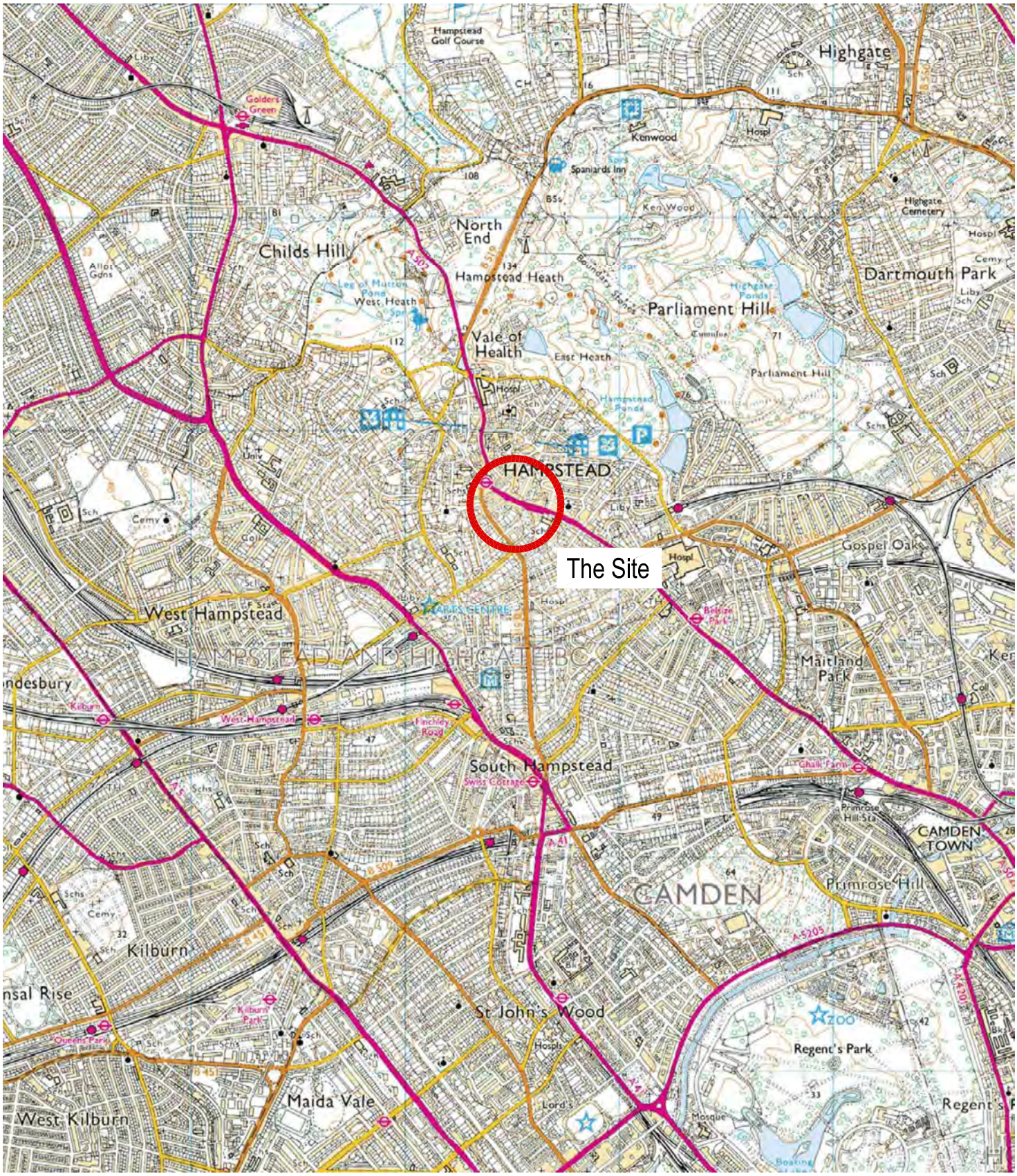
7.6 Excavations and Dewatering

Due to the proximity of existing buildings the use of support to excavation sides will be required, in line with health and safety guidelines. In addition, it is also recommended that an allowance be included for appropriate water control measures (i.e. pumping) during any future excavation works and particularly during wetter periods of the year.

7.7 Sulphate Attack on Buried Concrete

The results of the chemical analyses indicate a BRE Special Digest 1:2005 Design Sulphate Class DS-2 with an ACEC classification AC-2.

Drawings



Date	Revision	Checked	Rev.

Hydrock 3E

2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

tel: 0191 230 2993

www.3econsult.com

Project	11 and 12 Hampstead High Street for CSM Architects		
Title	Site Location Plan		
Scale 1:25,000 at A4	Drawn AM	Checked NW	Date Aug 22
Job No P21-270	Drawing No. G0001		Rev 1

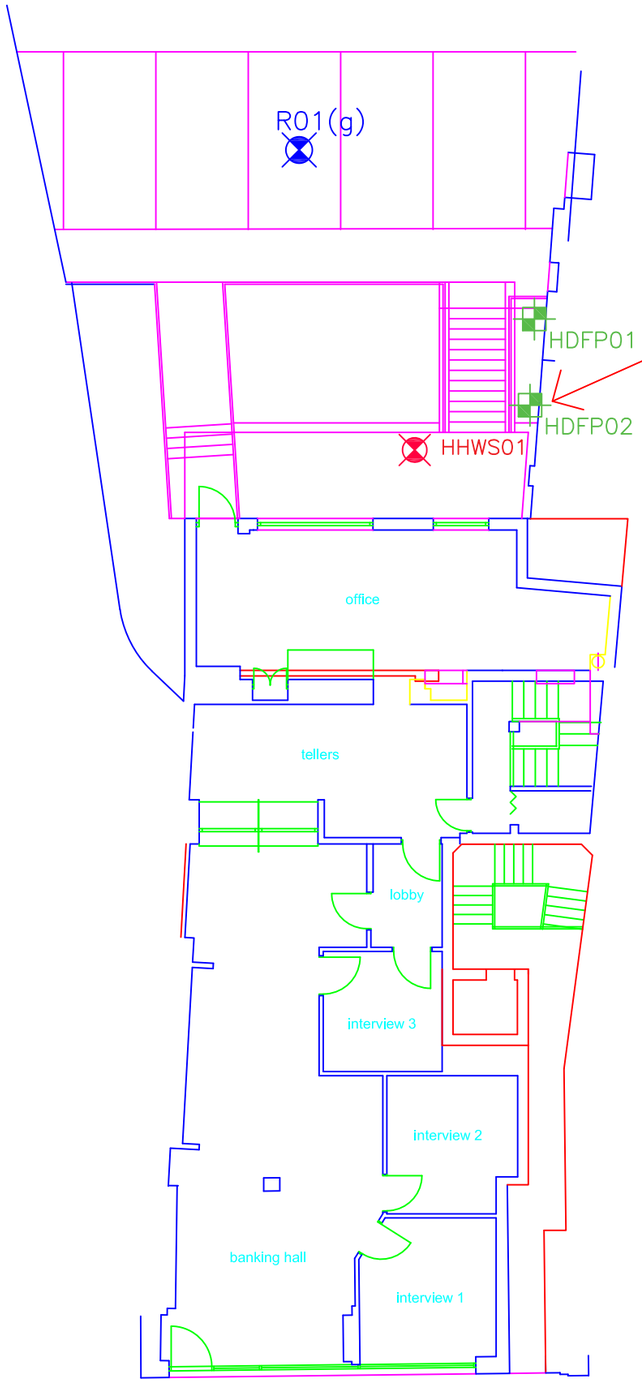


Photo showing intersection of 3 components forming the eastern boundary retaining wall

Key

HDFP Hand Excavated Trial Pit Location

RO Rotary Openhole and Cored Borehole

HHWS Hand Held Mini Percussive Borehole

(g) Combined Groundwater and Ground Gas Monitoring Well

Hydrock 3E

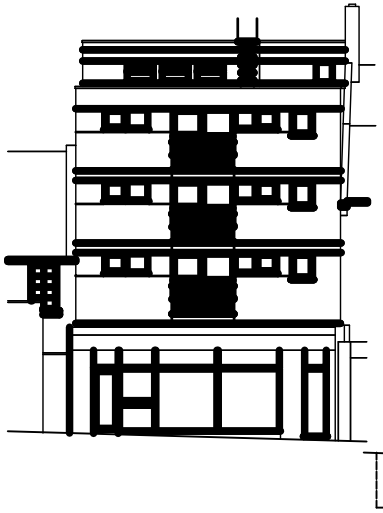
2 Esh Plaza
Sir Bobby Robson Way
Great Park
Newcastle upon Tyne
NE13 9BA

tel: 0191 230 2993
www.3econsult.com
www.hydrock.com

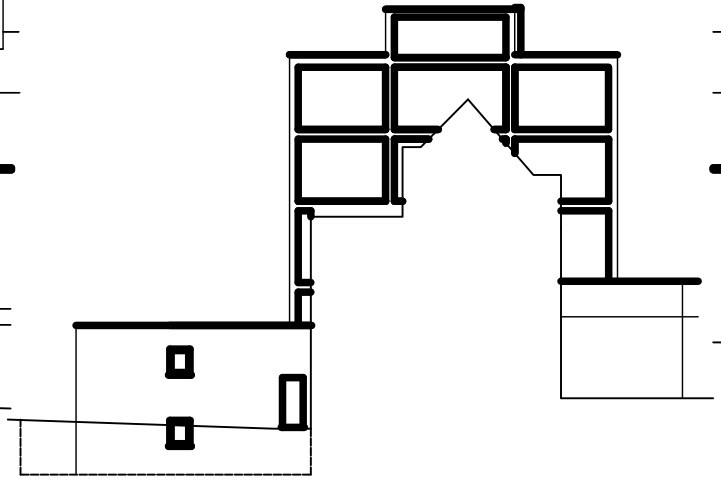
Project	HSBC, 11 Hampstead High Street For CSM Architects		
Title	Exploratory Hole Location Plan		
Scale: NTS	Drawn: AM	Checked: NW	Date: Aug 22
Job No.: P21-270	Drawing No.: G0002		Rev: 1

Appendix A

Proposed Site Plan

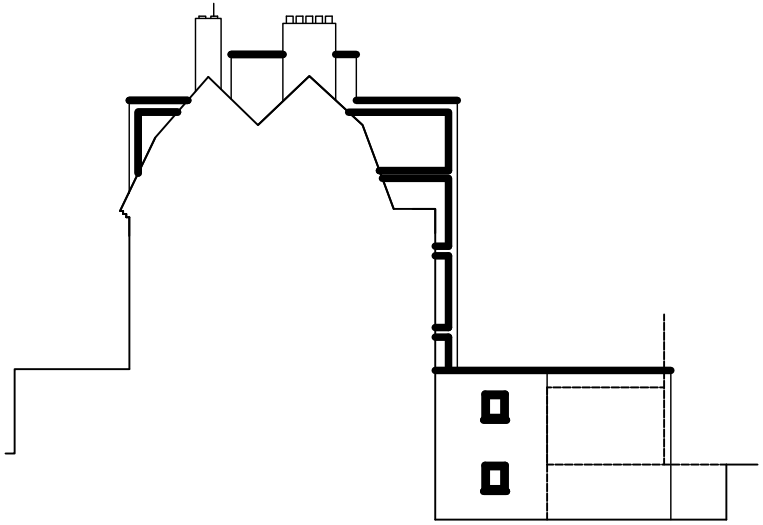


South (Front) Elevation

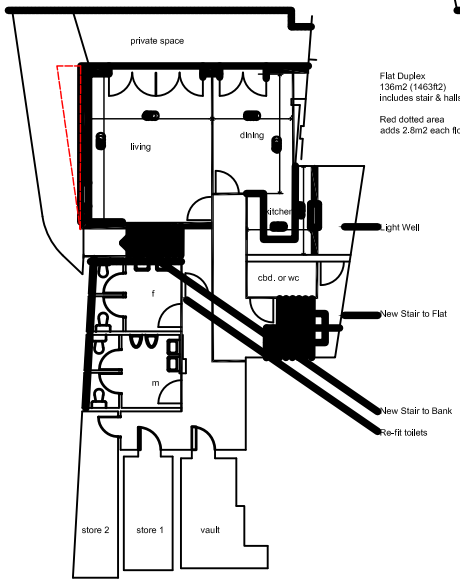


West (Side) Elevation

North (Rear) Elevation

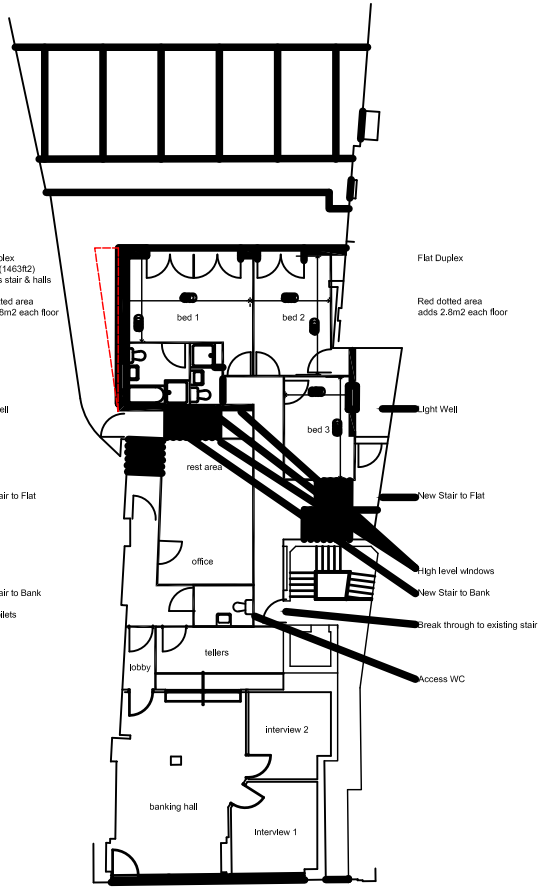


East (Side) Elevation

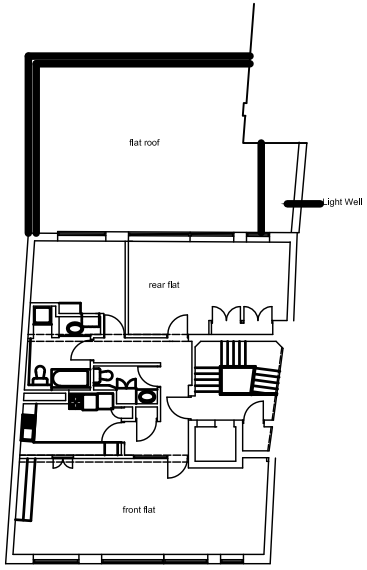


PROPOSED 1

Lower Ground Floor



Ground Floor



First Floor & Above

A1 Original Sheet Size

Scale Bar @ 1:50 0 2.5m

Scale Bar @ 1:100 0 5.0m

Revision

Job

11 Hampstead HIgh Street
London NW3 1PX

Client

Farlane Investments Ltd

Drawing

Proposed New Flat (Duplex)

Scale/Date/Drawn/Chk.

1:100/06'21/WDM

CSM + ARCHITECTS
1 Boyd Street
Shieldfield
Newcastle upon Tyne
NE2 1AP
Tel + 44 (0) 191 260-2450
Fax + 44 (0) 191 261-7301
E-mail admin@csmarchitects.co.uk
Web Site www.csmarchitects.co.uk

4708

-12

Appendix B

Exploratory Hole Records

Hydrock 3E

Borehole Log

Borehole No.
HHWS01
Sheet 1 of 1

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: -	Hole Type WLS
Location: Hampstead, London		Level:	Scale 1:50
Client: CSM Architects LLP		Dates: 27/06/2022 - 27/06/2022	Logged By AM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.05			MADE GROUND: Paving slab
					0.15			MADE GROUND: Brown bedding sand.
					0.45			MADE GROUND: Concrete.
								End of borehole at 0.45 m

Remarks
1. No groundwater encountered.
2. borehole terminated due to presence of thick concrete.

AGS

Hydrock 3E

Trial Pit Log

Trialpit No
HDP01
Sheet 1 of 1

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: - Level:	Date 27/06/2022
Location: Hampstead, London		Dimensions (m): Depth 1.40	Scale 1:25
Client: CSM Architects LLP			Logged AM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.50	ES					Dark brown sand, clay and occasional gravel with paving slabs, wood, concrete and polystyrene.
	1.00	ES					
				1.40			End of pit at 1.40 m

Remarks: 1. No groundwater encountered.

Stability:

AGS

Hydrock 3E

Trial Pit Log

Trialpit No
HDP02
Sheet 1 of 1

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: - Level:	Date 27/06/2022
Location: Hampstead, London		Dimensions (m): Depth 0.50	Scale 1:25
Client: CSM Architects LLP			Logged AM

Water Strike	Samples and In Situ Testing: Depth	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
	0.20	D		0.50			Dark brown sand, clay and occasional gravel with paving slabs, wood, concrete and polystyrene. End of pit at 0.50 m

1
2
3
4
5

Remarks: 1. No groundwater encountered.

Stability:

AGS

Hydrock 3E

Borehole Log

Borehole No. **R01**

Sheet 1 of 3

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: -	Hole Type RC
Location: Hampstead, London		Level:	Scale 1:50
Client: CSM Architects LLP		Dates: 28/06/2022 - 29/06/2022	Logged By AM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
					0.10			MADE GROUND: Tarmacadam surfacing.
		0.30	ES					MADE GROUND: Yellow sandstone sub-base with black clay, sand and brick.
					0.55			Firm brown and orange mottled sandy CLAY.
		1.00	ES					
		1.20		N=6 (1,1/1,2,1,2)				
		1.20 - 1.65	D					
				HVP=53				
		2.20 - 2.70	U					
		3.20		N=10 (2,1/2,3,2,3)				
		3.20 - 3.65	D					
				HVP=56				
		4.20 - 4.70	U					
		5.20		N=12 (2,3/2,3,3,4)				
		5.20 - 5.65	D					
					5.60			Stiff dark grey slightly silty CLAY. (LONDON CLAY)
		6.20 - 6.70	U					
				HVP=40				
		7.20		N=20 (2,4/4,5,5,6)				
		7.20 - 7.65	D					
				HVP=9				
		8.20 - 8.70	U					
		9.20		N=19 (2,3/4,4,5,6)				
		9.20 - 9.65	D					

Continued on next sheet

Remarks
1. No groundwater encountered.
2. Borehole terminated upon completion.

AGS

Hydrock 3E

Borehole Log

Borehole No. **R01**

Sheet 2 of 3

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: -	Hole Type RC
Location: Hampstead, London		Level:	Scale 1:50
Client: CSM Architects LLP		Dates: 28/06/2022 - 29/06/2022	Logged By AM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.20 - 10.70	U	HVP=106				
		12.80 12.80 - 13.25	D	N=24 (3,5/5,5,6,8)				
		14.30 - 14.80	U	HVP=116				
		15.80 15.80 - 16.25	D	N=24 (2,4/5,6,6,7)				
		17.30 - 17.80	U	HVP=120				
		18.80 18.80 - 19.25	D	N=25 (2,3/6,6,6,7)				

11 12 13 14 15 16 17 18 19 20

Continued on next sheet

Remarks
1. No groundwater encountered.
2. Borehole terminated upon completion.

AGS

Borehole Log

Hydrock 3E

Borehole No. **R01**
Sheet 3 of 3

Project Name: HSBC, Hampstead High Street	Project No. P21-270	Co-ords: -	Hole Type RC
Location: Hampstead, London		Level:	Scale 1:50
Client: CSM Architects LLP		Dates: 28/06/2022 - 29/06/2022	Logged By AM

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		20.30 - 20.80	U	HVP=120				
		21.80		N=42 (5,6/8,10,12,12)				
		21.80 - 22.25	D					
		23.30 - 23.80	U	HVP=120				
					24.80			End of borehole at 24.80 m

Remarks
1. No groundwater encountered.
2. Borehole terminated upon completion.

AGS

Appendix C

Laboratory Test Results

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

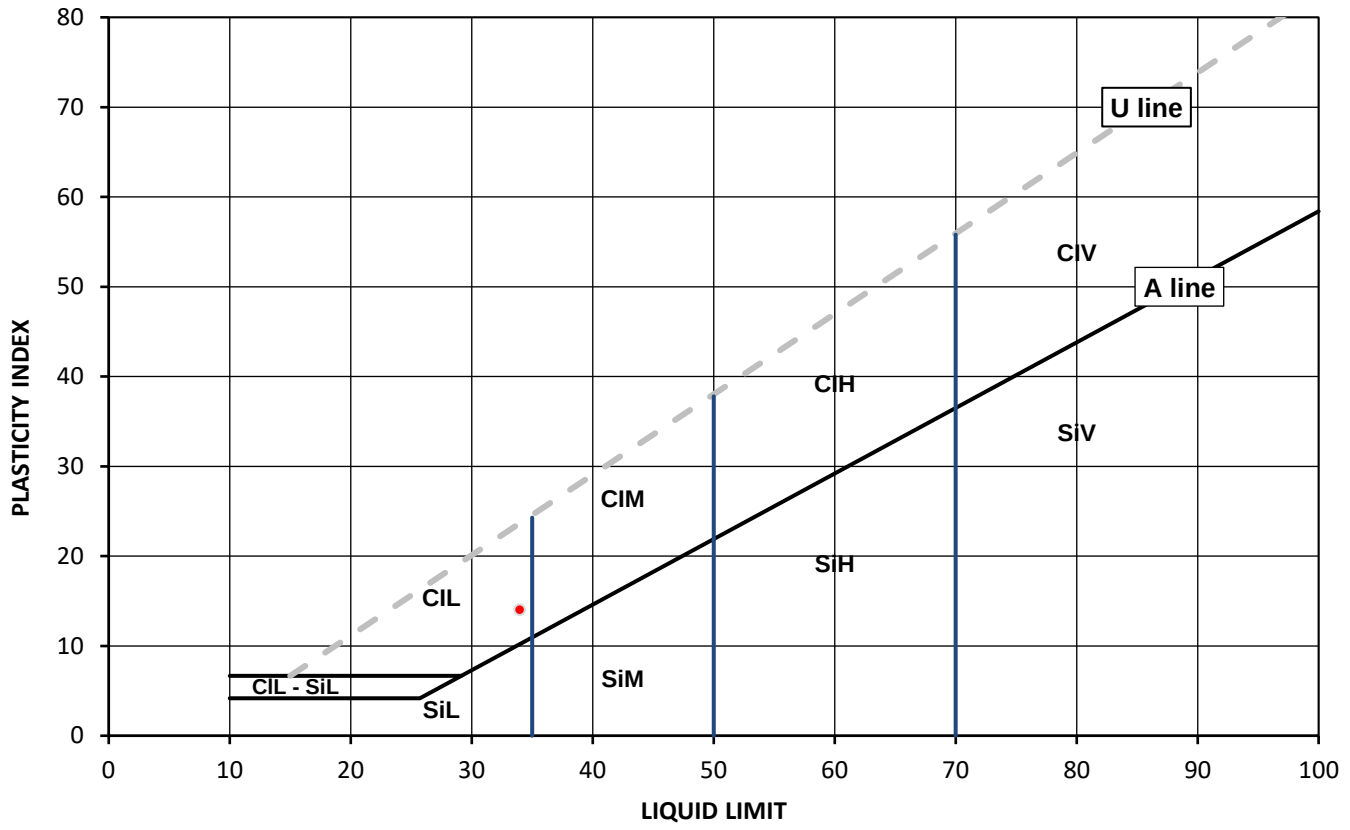
Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	13/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2340856	Depth Top [m]:	1.20
Hole No.:	RO1	Depth Base [m]:	1.65
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly very sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
22	34	20	14	87



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

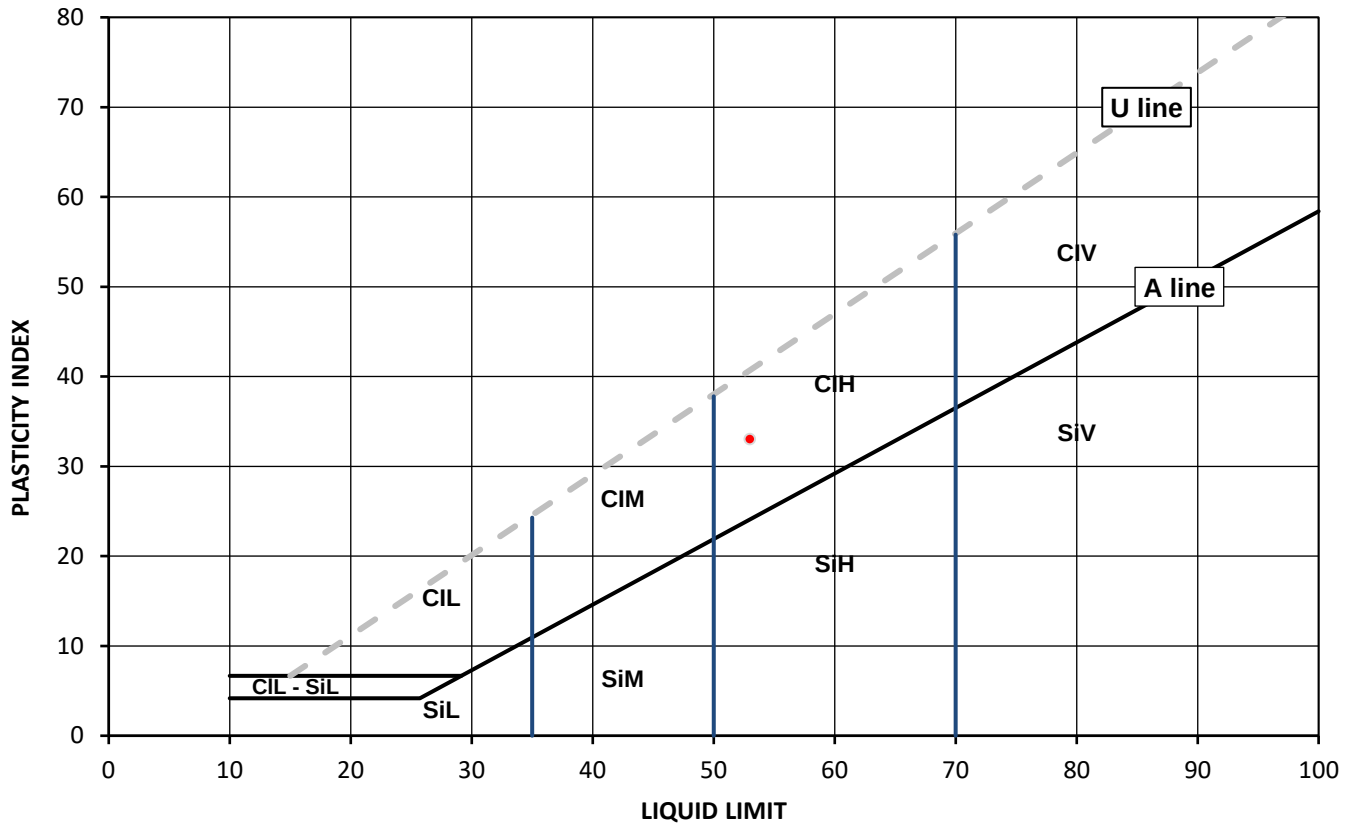
Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	13/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2340859	Depth Top [m]:	5.20
Hole No.:	RO1	Depth Base [m]:	5.65
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly slightly sandy CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
30	53	20	33	97



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

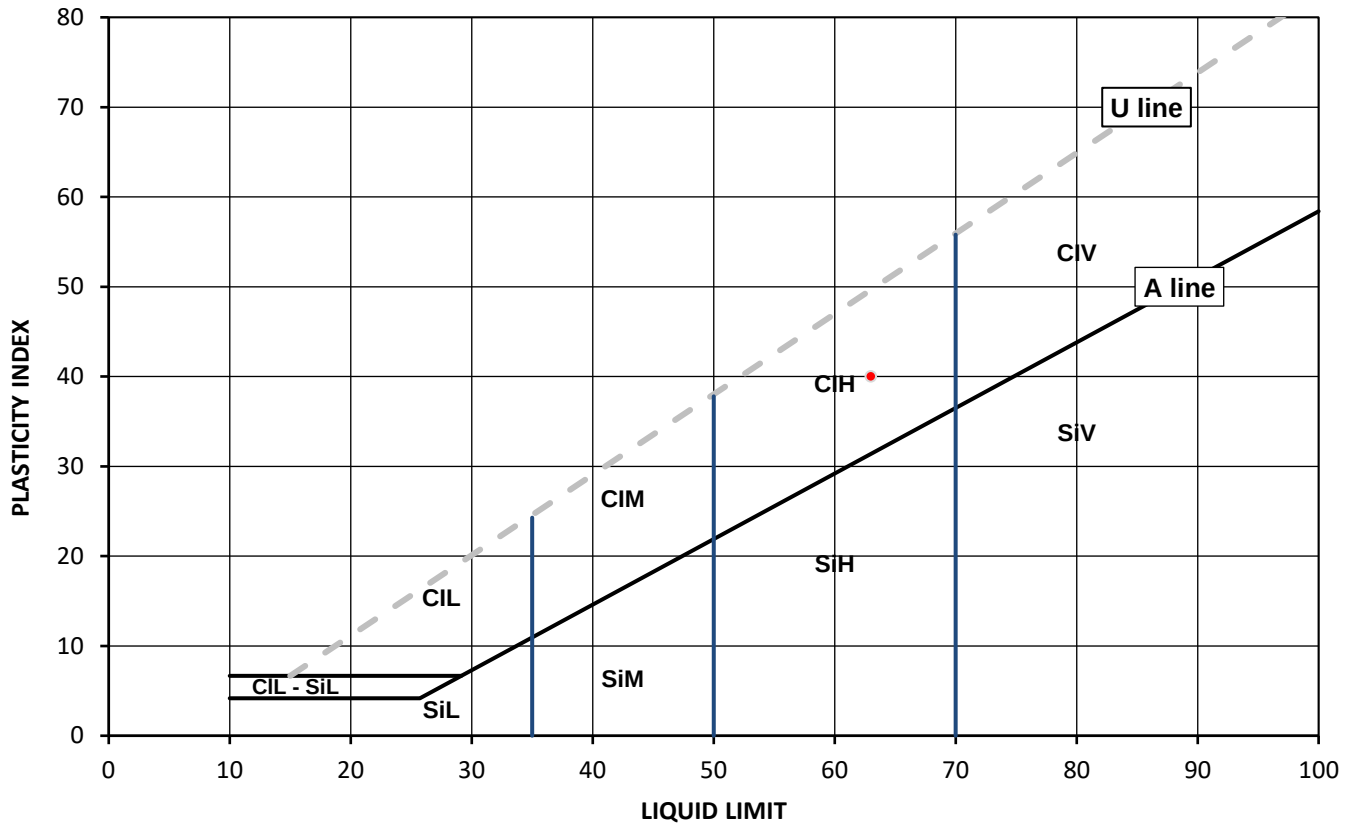
Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	13/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2340864	Depth Top [m]:	15.80
Hole No.:	RO1	Depth Base [m]:	16.25
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly gravelly CLAY		
Sample Preparation:	Tested after >425um removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
26	63	23	40	95



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 232.12

TEST CERTIFICATE

DETERMINATION OF LIQUID AND PLASTIC LIMITS
Tested in Accordance with:BS 1377-2:1990:Clause 4.4 and 5

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

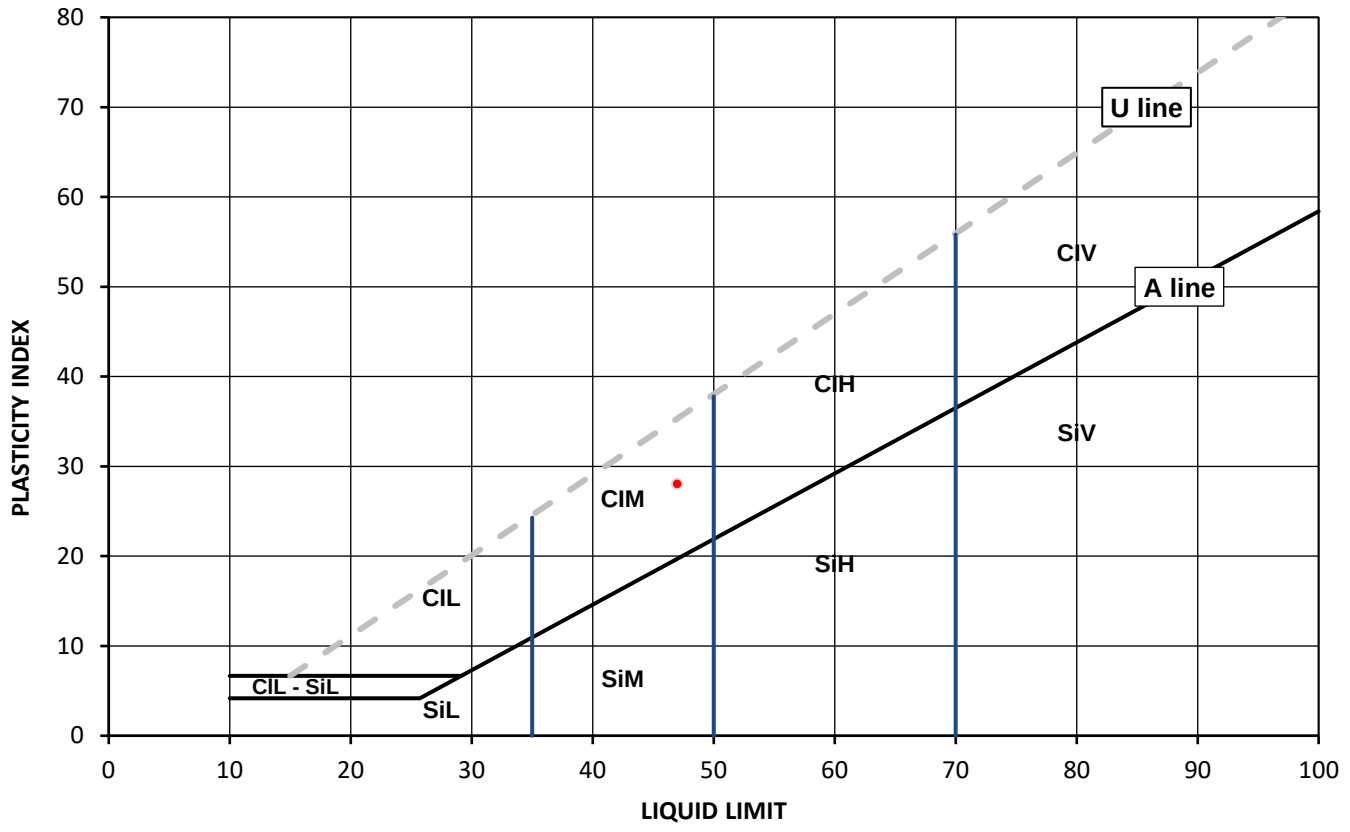
Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	13/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2340865	Depth Top [m]:	18.80
Hole No.:	RO1	Depth Base [m]:	19.25
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly sandy CLAY		
Sample Preparation:	Tested in natural condition		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
22	47	19	28	100



Legend, based on BS EN ISO 14688 2:2018 Geotechnical investigation and testing – Identification and classification of soil

		Plasticity		Liquid Limit
Cl	Clay	L	Low	below 35
Si	Silt	M	Medium	35 to 50
		H	High	50 to 70
		V	Very high	exceeding 70
		O	Organic	append to classification for organic material (eg ClHO)

Note: Water Content by BS 1377-2: 1990: Clause 3.2

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 232.12

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

Water Content by BS 1377-2:1990: Clause 3.2; Atterberg by BS 1377-2: 1990: Clause 4.3 (4 Point Test), Clause 4.4 (1 Point Test) and 5; PD by BS 1377-2: 1990: Clause 8.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: 3E Consulting

Client Address: 2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA

Contact: Alex Middleton

Site Address: HSBC Hampstead

Client Reference: P21-270
Job Number: 22-69787
Date Sampled: 28/06/2022
Date Received: 07/07/2022
Date Tested: 13/07/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	Water Content BS 1377-2 [W]	Water Content BS EN ISO 17892-1 [W]	Atterberg				Density			Total Porosity#		
		Reference	Depth Top	Depth Base	Type					% Passing 425um	WL	Wp	Ip	bulk	dry	PD			
			m	m				%	%	%	%	%	%	Mg/m3	Mg/m3	Mg/m3	%		
2340856	RO1	Not Given	1.20	1.65	D	Brown slightly gravelly very sandy CLAY	Atterberg 1 Point	22		87	34	20	14						
2340859	RO1	Not Given	5.20	5.65	D	Brown slightly gravelly slightly sandy CLAY	Atterberg 1 Point	30		97	53	20	33						
2340861	RO1	Not Given	9.20	9.65	D	Brownish grey CLAY		21											
2340863	RO1	Not Given	12.80	13.25	D	Brownish grey CLAY		22											
2340864	RO1	Not Given	15.80	16.25	D	Brownish grey slightly gravelly CLAY	Atterberg 1 Point	26		95	63	23	40						
2340865	RO1	Not Given	18.80	19.25	D	Brownish grey slightly sandy CLAY	Atterberg 1 Point	22		100	47	19	28						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 234.14

SUMMARY REPORT

DETERMINATION OF WATER CONTENT

Tested in Accordance with: BS 1377-2: 1990: Clause 3.2

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

4041

Client: 3E Consulting

Client Address: 2 Esh Plaza, Sir Bobby Robson Way,
Great Park, Newcastle upon Tyne,
NE13 9BA

Contact: Alex Middleton

Site Address: HSBC Hampstead

Client Reference: P21-270
Job Number: 22-69787
Date Sampled: 28/06/2022
Date Received: 07/07/2022
Date Tested: 13/07/2022
Sampled By: Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test results

Laboratory Reference	Hole No.	Sample				Description	Remarks	WC	Sample preparation / Oven temperature at the time of testing			
		Reference	Depth Top m	Depth Base m	Type			%				
2340856	RO1	Not Given	1.20	1.65	D	Brown slightly gravelly very sandy CLAY		22	Sample was quartered, oven dried at 109 °C			
2340859	RO1	Not Given	5.20	5.65	D	Brown slightly gravelly slightly sandy CLAY		30	Sample was quartered, oven dried at 109 °C			
2340861	RO1	Not Given	9.20	9.65	D	Brownish grey CLAY		21	Sample was quartered, oven dried at 109 °C			
2340863	RO1	Not Given	12.80	13.25	D	Brownish grey CLAY		22	Sample was quartered, oven dried at 109 °C			
2340864	RO1	Not Given	15.80	16.25	D	Brownish grey slightly gravelly CLAY		26	Sample was quartered, oven dried at 109 °C			
2340865	RO1	Not Given	18.80	19.25	D	Brownish grey slightly sandy CLAY		22	Sample was quartered, oven dried at 109 °C			

Comments:

Signed:

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 099.16

TEST CERTIFICATE

DETERMINATION OF THE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Tested in Accordance with: BS 1377-7: 1990: Clause 8

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	26/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

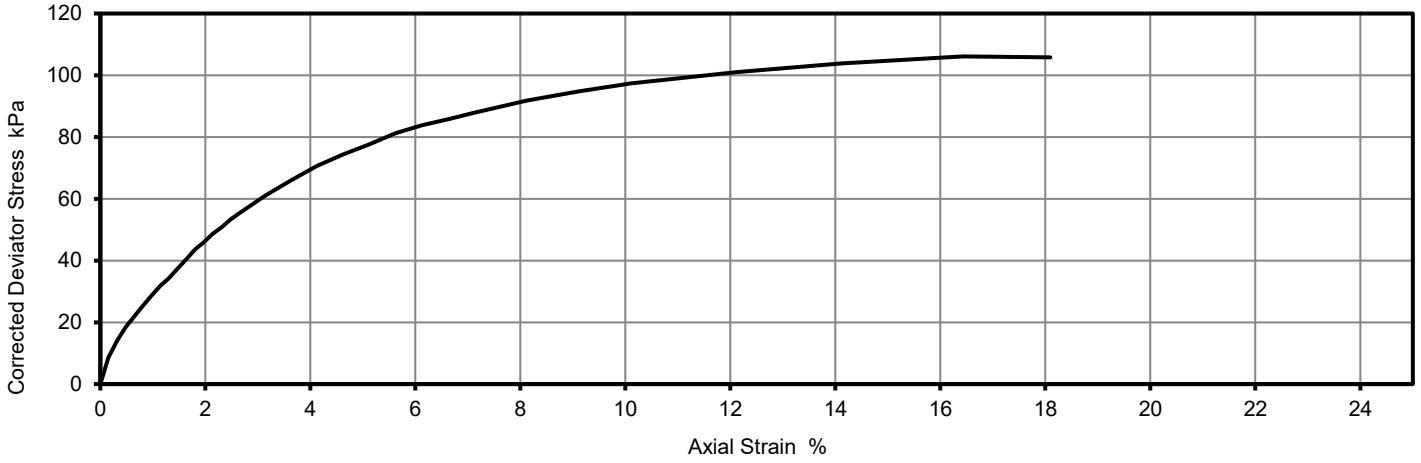
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

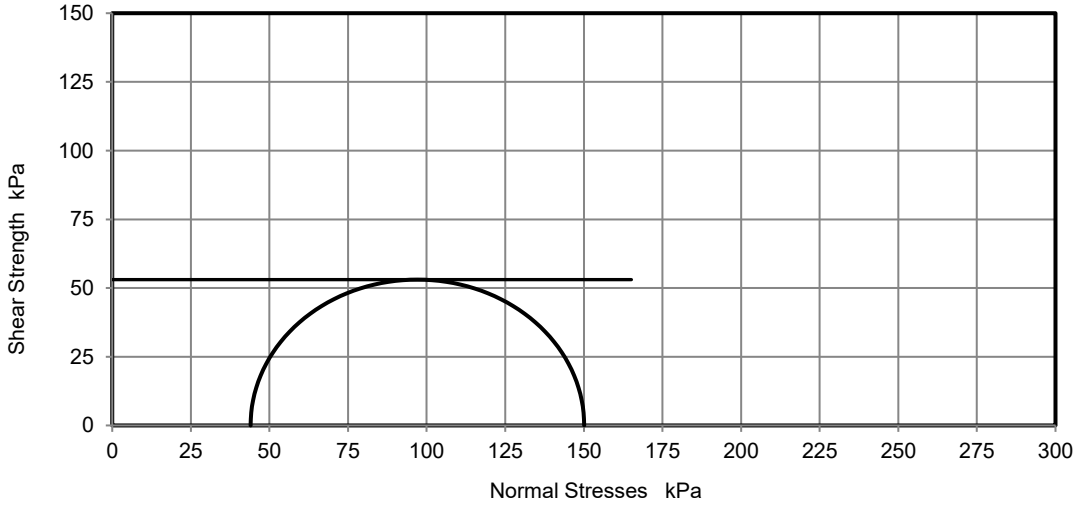
Laboratory Reference:	2340857	Depth Top [m]:	2.20
Hole No.:	RO1	Depth Base [m]:	2.70
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Sample prepared in accordance with BS 1377-1:2016 Clause 9.1.1.		

Test Number	1		Rate of Strain	1.97	%/min
Length	202.93	mm	Cell Pressure	44	kPa
Diameter	103.29	mm	Axial Strain at failure	16.4	%
Bulk Density	2.00	Mg/m3	Deviator Stress, (σ1 - σ3)f	106	kPa
Moisture Content	30	%	Undrained Shear Strength, cu	53	kPa ½(σ1 - σ3)f
Dry Density	1.53	Mg/m3	Mode of Failure	Compound	
Membrane Correction	0.89	kPa	Membrane thickness	0.28	mm

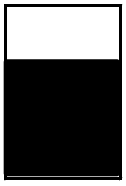
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 184.12

TEST CERTIFICATE

DETERMINATION OF THE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Tested in Accordance with: BS 1377-7: 1990: Clause 8

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	26/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

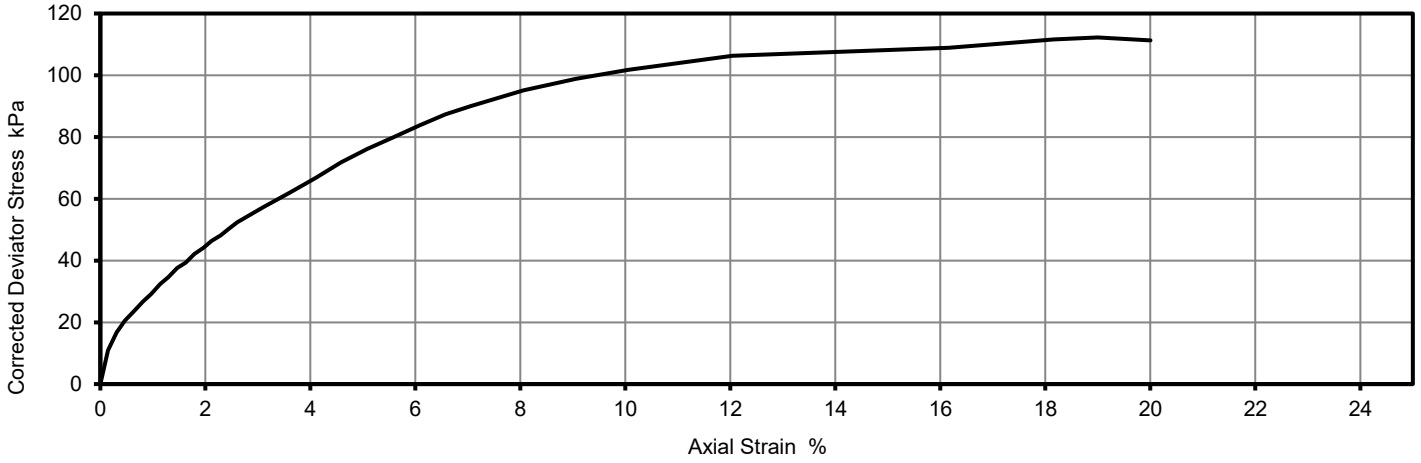
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

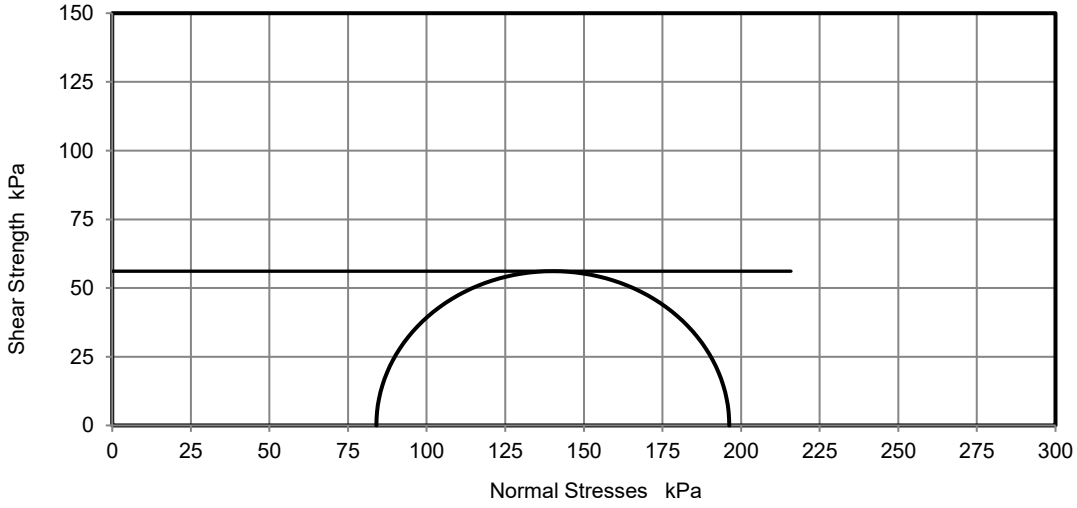
Laboratory Reference:	2340858	Depth Top [m]:	4.20
Hole No.:	RO1	Depth Base [m]:	4.70
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Yellowish brown sandy CLAY		
Sample Preparation:	Sample prepared in accordance with BS 1377-1:2016 Clause 9.1.1.		

Test Number	1		Rate of Strain	1.98	%/min
Length	201.68	mm	Cell Pressure	84	kPa
Diameter	103.43	mm	Axial Strain at failure	19.0	%
Bulk Density	1.93	Mg/m3	Deviator Stress, (σ1 - σ3)f	112	kPa
Moisture Content	31	%	Undrained Shear Strength, cu	56	kPa ½(σ1 - σ3)f
Dry Density	1.47	Mg/m3	Mode of Failure	Compound	
Membrane Correction	1.03	kPa	Membrane thickness	0.29	mm

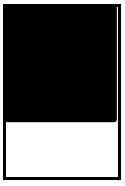
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 184.12

TEST CERTIFICATE

DETERMINATION OF THE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Tested in Accordance with: BS 1377-7: 1990: Clause 8

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	27/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

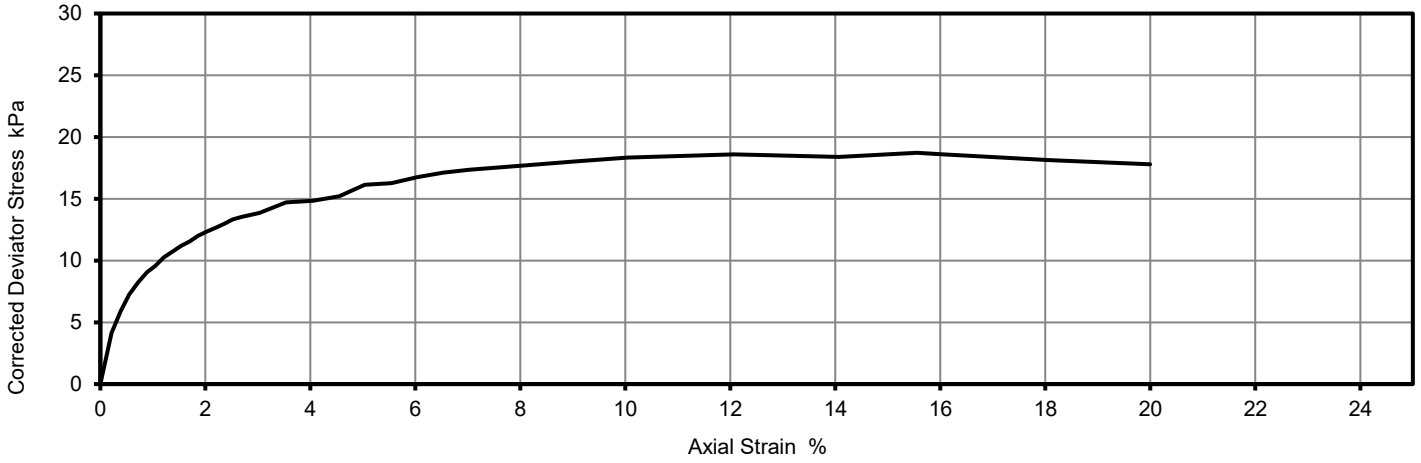
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

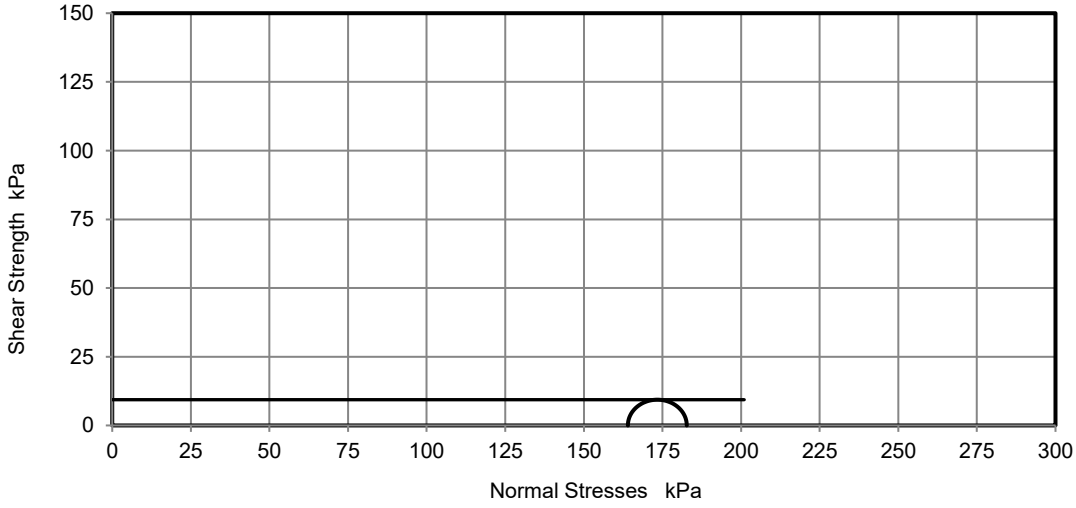
Laboratory Reference:	2340860	Depth Top [m]:	8.20
Hole No.:	RO1	Depth Base [m]:	8.70
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Greyish brown CLAY		
Sample Preparation:	Sample prepared in accordance with BS 1377-1:2016 Clause 9.1.1.		

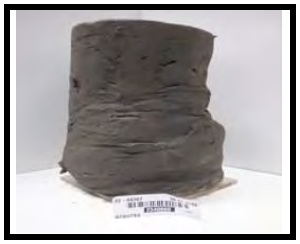
Test Number	1		Rate of Strain	2.00	%/min
Length	199.50	mm	Cell Pressure	164	kPa
Diameter	100.40	mm	Axial Strain at failure	15.6	%
Bulk Density	1.95	Mg/m3	Deviator Stress, (σ1 - σ3)f	19	kPa
Moisture Content	40	%	Undrained Shear Strength, cu	9	kPa ½(σ1 - σ3)f
Dry Density	1.39	Mg/m3	Mode of Failure	Compound	
Membrane Correction	0.90	kPa	Membrane thickness	0.29	mm

Deviator Stress v Axial Strain



Mohr Circles





Position within sample

Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 184.12

TEST CERTIFICATE

DETERMINATION OF THE UNDRAINED SHEAR STRENGTH IN TRIAXIAL COMPRESSION WITHOUT MEASUREMENT OF PORE PRESSURE

Tested in Accordance with: BS 1377-7: 1990: Clause 8

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

Environmental Science

Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	27/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

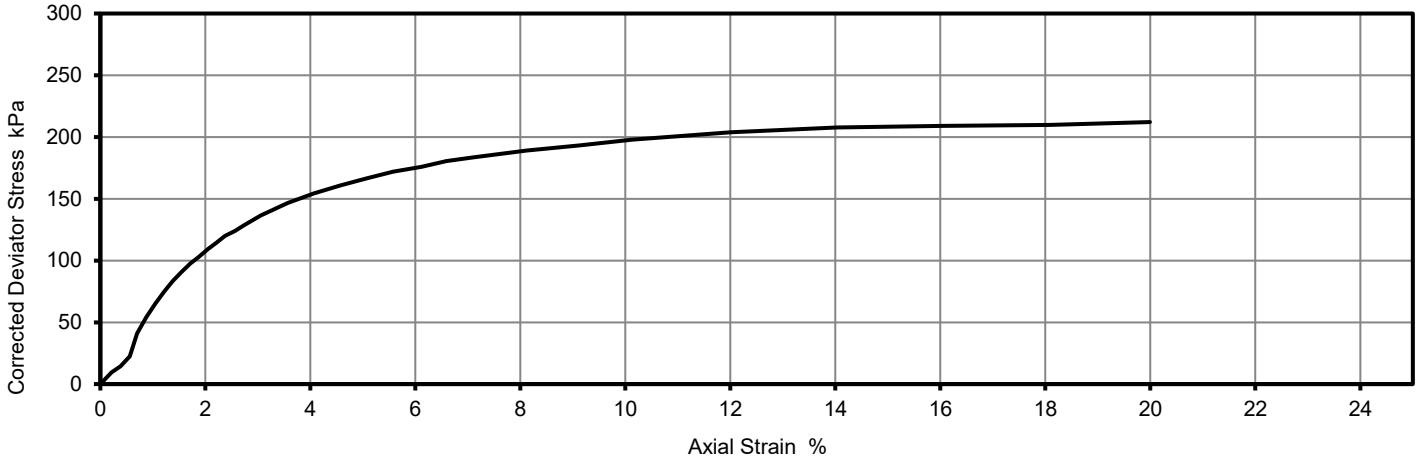
Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

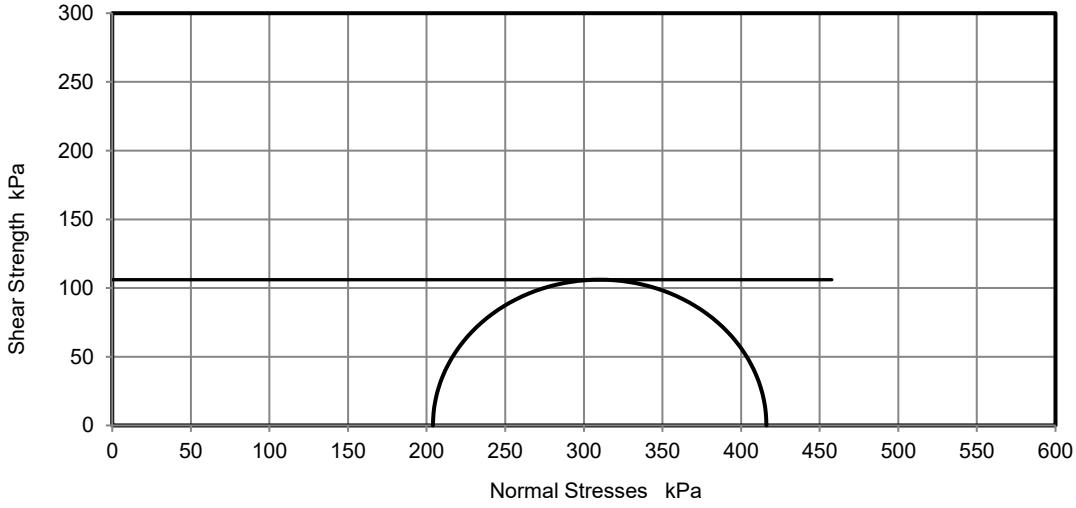
Laboratory Reference:	2340862	Depth Top [m]:	10.20
Hole No.:	RO1	Depth Base [m]:	10.70
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Grey sandy CLAY		
Sample Preparation:	Sample prepared in accordance with BS 1377-1:2016 Clause 9.1.1.		

Test Number	1		Rate of Strain	2.00	%/min
Length	141.11	mm	Cell Pressure	204	kPa
Diameter	69.28	mm	Axial Strain at failure	20.0	%
Bulk Density	2.01	Mg/m3	Deviator Stress, (σ1 - σ3)f	212	kPa
Moisture Content	23	%	Undrained Shear Strength, cu	106	kPa ½(σ1 - σ3)f
Dry Density	1.63	Mg/m3	Mode of Failure	Compound	
Membrane Correction	1.39	kPa	Membrane thickness	0.25	mm

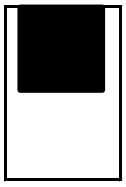
Deviator Stress v Axial Strain



Mohr Circles



Position within sample



Note: Deviator stress corrected for area change and membrane effects. Mohr circles and their interpretation is not covered by BS1377. This is provided for information only.

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 184.12

TEST CERTIFICATE

DETERMINATION OF THE ONE-DIMENSIONAL CONSOLIDATION PROPERTIES

Tested in Accordance with: BS 1377-5:1990: Clause 3

i2 Analytical Ltd
Unit 8 Harrowden Road
Brackmills Industrial Estate
Northampton NN4 7EB

UKAS TESTING 4041

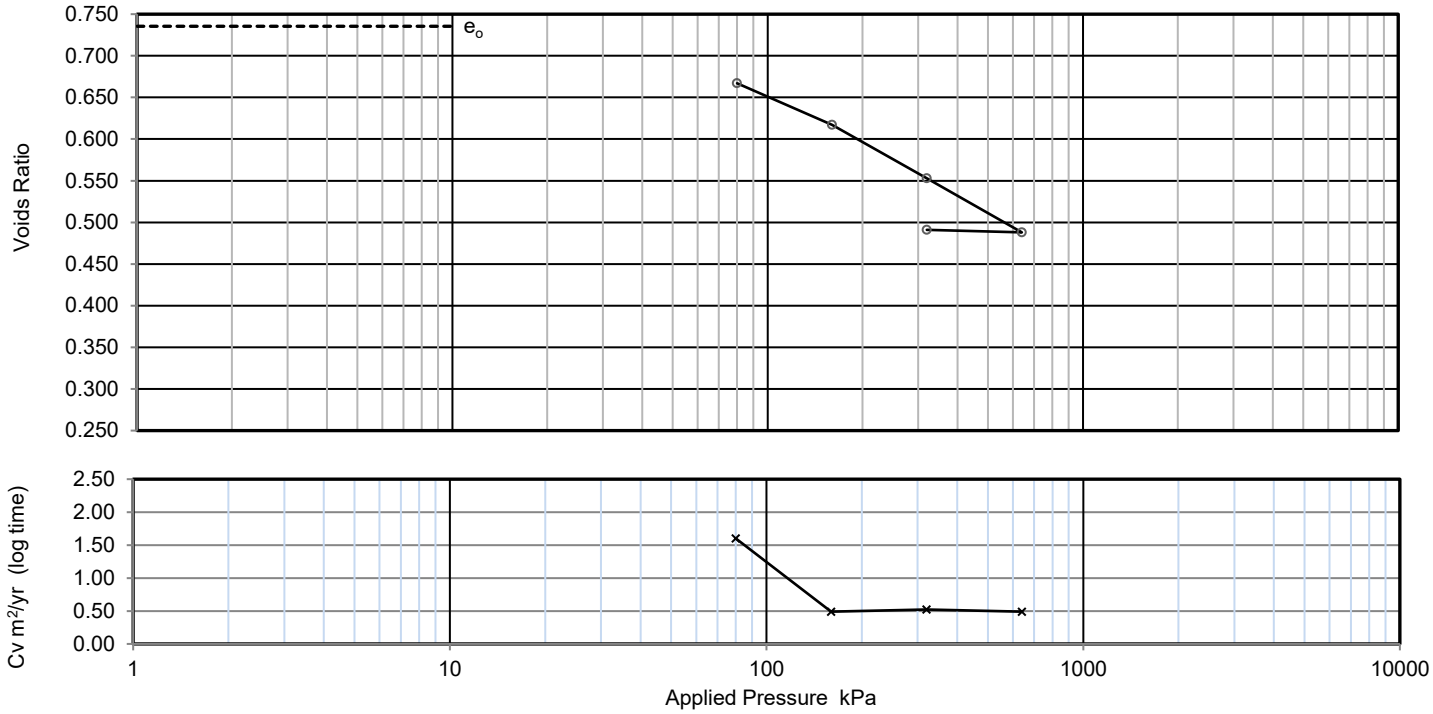
Environmental Science

Client:	3E Consulting	Client Reference:	P21-270
Client Address:	2 Esh Plaza, Sir Bobby Robson Way, Great Park, Newcastle upon Tyne, NE13 9BA	Job Number:	22-69787
		Date Sampled:	28/06/2022
		Date Received:	07/07/2022
Contact:	Alex Middleton	Date Tested:	14/07/2022
Site Address:	HSBC Hampstead	Sampled By:	Not Given

Testing carried out at i2 Analytical Limited, ul. Pionierow 39, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2340860	Depth Top [m]:	8.20
Hole No.:	RO1	Depth Base [m]:	8.70
Sample Reference:	Not Given	Sample Type:	U
Sample Description:	Greyish brown CLAY		



Applied Pressure kPa	Voids ratio	Mv m2/MN	Cv (t50, log) m2/yr	Cv (t90, root m2/yr	Csec
0	0.735	-	-	-	-
80	0.667	0.5	1.6	5.6	0.0013
160	0.617	0.37	0.49	0.84	0.0019
320	0.553	0.25	0.52	0.94	0.0025
640	0.488	0.13	0.49	0.78	0.0025
320	0.491	0.0066			

Preparation: Carried out on bottom of U100

Index tests			
Orientation of the sample	Vertical		
Particle density	assumed	2.65	Mg/m3
Liquid limit	N/A		%
Plastic limit	N/A		%

Specimen details	Initial	Final	
Diameter	50.10	-	mm
Height	20.00	17.18	mm
Moisture Content	30	22	%
Bulk density	1.99	2.17	Mg/m3
Dry density	1.53	1.78	Mg/m3
Voids Ratio	0.735	0.491	
Saturation	109	120	%
Avg. temperature for test	22.0		°C
Swelling Pressure	Not measured		kPa
Settlement on saturation			%
Total test time	5		days

Note: Cv corrected to 20°C

Remarks:

Signed: Dudzinska Anna

Anna Dudzinska
PL Deputy Head of Reporting Team
for and on behalf of i2 Analytical Ltd

Date Reported: 28/07/2022

GF 172.16

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

Final Report

Report No.:	22-26294-1
Initial Date of Issue:	18-Jul-2022
Client	3E Consulting Engineers Ltd
Client Address:	2 Esh Plaza, Sir Bobby Robson Way Great park Newcastle upon Tyne NE13 9BA
Contact(s):	Alex Middleton
Project	P21-270 Hampstead
Quotation No.:	Q20-21147
Order No.:	P21-270
No. of Samples:	4
Turnaround (Wkdays):	5
Date Approved:	18-Jul-2022
Approved By:	
Details:	Stuart Henderson, Technical Manager

Date Received:	12-Jul-2022
Date Instructed:	12-Jul-2022
Results Due:	18-Jul-2022

Results - Soil

Project: P21-270 Hampstead

Client: 3E Consulting Engineers Ltd			**Chemtest Job No.:**		22-26294	22-26294	22-26294	22-26294
Quotation No.: Q20-21147			**Chemtest Sample ID.:**		1466240	1466241	1466242	1466243
			Sample Location:		R01	R01	R01	HDP01
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.30	3.20	7.20	0.50
			Bottom Depth (m):			3.65	7.65	
			Date Sampled:		28-Jun-2022	28-Jun-2022	28-Jun-2022	28-Jun-2022
			Asbestos Lab:		NEW-ASB			NEW-ASB
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
ACM Type	U	2192		N/A	-			-
Asbestos Identification	U	2192		N/A	No Asbestos Detected			No Asbestos Detected
Moisture	N	2030	%	0.020	14	17	18	8.9
Stones and Removed Materials	N	2030	%	0.020	< 0.020			< 0.020
pH	U	2010		4.0	7.3	8.0	8.0	7.9
Boron (Hot Water Soluble)	U	2120	mg/kg	0.40	< 0.40			0.88
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	< 0.010	0.056	0.51	0.43
Sulphate (Total)	U	2430	%	0.010	0.052			0.21
Arsenic	U	2455	mg/kg	0.5	29			16
Cadmium	U	2455	mg/kg	0.10	0.25			0.13
Chromium	U	2455	mg/kg	0.5	35			23
Copper	U	2455	mg/kg	0.50	60			24
Mercury	U	2455	mg/kg	0.05	0.71			0.13
Nickel	U	2455	mg/kg	0.50	23			12
Lead	U	2455	mg/kg	0.50	280			73
Selenium	U	2455	mg/kg	0.25	1.2			0.80
Zinc	U	2455	mg/kg	0.50	92			69
Chromium (Hexavalent)	N	2490	mg/kg	0.50	< 0.50			< 0.50
Total Organic Carbon	U	2625	%	0.20	5.4			1.3
Naphthalene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Acenaphthylene	N	2800	mg/kg	0.10	< 0.10			< 0.10
Acenaphthene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Fluorene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Phenanthrene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Anthracene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Fluoranthene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Pyrene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Benzo[a]anthracene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Chrysene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Benzo[b]fluoranthene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Benzo[k]fluoranthene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Benzo[a]pyrene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Indeno(1,2,3-c,d)Pyrene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Dibenz(a,h)Anthracene	N	2800	mg/kg	0.10	< 0.10			< 0.10
Benzo[g,h,i]perylene	U	2800	mg/kg	0.10	< 0.10			< 0.10
Total Of 16 PAH's	N	2800	mg/kg	2.0	< 2.0			< 2.0

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2192	Asbestos	Asbestos	Polarised light microscopy / Gravimetry
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.
2490	Hexavalent Chromium in Soils	Chromium [VI]	Soil extracts are prepared by extracting dried and ground soil samples into boiling water. Chromium [VI] is determined by 'Aquakem 600' Discrete Analyser using 1,5-diphenylcarbazide.
2625	Total Organic Carbon in Soils	Total organic Carbon (TOC)	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Soil by GC-MS	Acenaphthene*; Acenaphthylene; Anthracene*; Benzo[a]Anthracene*; Benzo[a]Pyrene*; Benzo[b]Fluoranthene*; Benzo[ghi]Perylene*; Benzo[k]Fluoranthene; Chrysene*; Dibenz[ah]Anthracene; Fluoranthene*; Fluorene*; Indeno[123cd]Pyrene*; Naphthalene*; Phenanthrene*; Pyrene*	Dichloromethane extraction / GC-MS

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix D

Ground Gas and Water Monitoring Record Sheets

Hydrock 3E

Ground Gas and Water Monitoring Certificate

Site: 11 and 12 Hampstead High Street, London
Project No. P21-270
Date: 26.07.2022

Borehole	Gas Flow (l/hr)	Time	Atmospheric Pressure (mB)	Methane (%v/v)		Methane (% LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Other Gases (ppm)			Depth to Water (mBGL)
				Peak	Steady	Initial	Steady	Peak	Steady	Minimum	Steady	PID	H_2S	CO	
R01	<0.1	~	1010	0.0	0.0	0.0	0.0	0.70	0.70	17.80	17.80	-	0.0	0.0	4.54

Notes:
Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v. mBGL = metres Below Ground Level.

Relevant Information At Time Of Monitoring				
Monitored by:	AM			
Atmospheric Pressure (mB):	1010			
Weather:	Sunny, dry			
Atmospheric Pressure Trend:	Rising			
Equipment Used:	Infra-red Gas Analyser	Yes	**Last calibrated:**	05/04/2022
	Mass Balance Transducer	~	**Last calibrated:**	~
	Tiger PID	~	**Last calibrated:**	~
Visible Signs of Vegetation Stress:	~			
Other Comments / Observations:	~			
Boreholes Sampled For Laboratory Analysis:	~			

Hydrock 3E

Ground Gas and Water Monitoring Certificate

Site: 11 and 12 Hampstead High Street, London
Project No. P21-270
Date: 28.07.2022

Borehole	Gas Flow (l/hr)	Time	Atmospheric Pressure (mB)	Methane (%v/v)		Methane (% LEL*)		Carbon Dioxide (%v/v)		Oxygen (%v/v)		Other Gases (ppm)			Depth to Water (mBGL)
				Peak	Steady	Initial	Steady	Peak	Steady	Minimum	Steady	PID	H_2S	CO	
R01	<0.1	~	1008	0.0	0.0	0.0	0.0	0.60	0.60	18.20	18.20	-	0.0	0.0	4.45

Notes:
Monitoring should be for **not less** than 3 minutes. However, if high concentrations of gases initially recorded, monitoring should be for up to 10 minutes
* LEL = Lower Explosive Limit = 5%v/v. mBGL = metres Below Ground Level.

Relevant Information At Time Of Monitoring				
Monitored by:	AM			
Atmospheric Pressure (mB):	1010			
Weather:	Sunny, dry			
Atmospheric Pressure Trend:	Steady			
Equipment Used:	Infra-red Gas Analyser	Yes	**Last calibrated:**	05/04/2022
	Mass Balance Transducer	~	**Last calibrated:**	~
	Tiger PID	~	**Last calibrated:**	~
Visible Signs of Vegetation Stress:	~			
Other Comments / Observations:	~			
Boreholes Sampled For Laboratory Analysis:	~			