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SITE INVESTIGATION & GEOTECHNICAL ASSESSMENT

5A HARROW VIEW
UXBRIDGE
UB10 0QG

Ref:	MES/2403/GS004
Rev:	01
Date:	March 2024
Prepared:	Heather Shaw BSc MSc DIC
Reviewed:	Corrado Candian MEng CEng MICE
Approved:	Graham Kite BSc MSc DIC FGS

Table of Contents

1.0 Executive Summary

On behalf of Guarav Shiel and Shipra Tiwari, a Ground Investigation and Geotechnical Assessment has been carried out at 5A Harrow View, Uxbridge UB10 0QG. The purpose of the assessment is to provide geotechnical information to the designer and contractor of the proposed demolition of the existing single storey building and construction of a new residential building with basement and associated garage and garden.

The assessment comprises a ground investigation and an assessment of geotechnical considerations, including a factual and interpretative report on the ground and groundwater conditions encountered and the likely foundation options for the proposed development.

The British Geological Survey (BGS) map indicates that the site is underlain by the Black Park Gravel Member (Sand and Gravel) underlain by the London Clay Formation.

The ground investigation confirmed the ground conditions as Made Ground overlying cohesive deposits of the Black Park Gravel Member and the London Clay Formation.

Permeability testing confirmed the site as not being suitable for the adoption of infiltration drainage, with the natural soils being of very low permeability (unable to support groundwater flow) and the presence of saturated Made Ground to near surface (infiltrating surface water perched over the very low permeability natural soils). Proposed drainage for the new development should consider adopting attenuation SuDS.

The proposed basement would not impact upon the wider hydrogeological environment (groundwater flow).

The proposed main house development will be constructed off a ground bearing basement raft slab within the natural, insitu London Clay at approximately 3.00m below ground level. An allowable bearing capacity of 100kPa will ensure total and differential settlements remain within standard structural tolerances.

The proposed garage will be constructed off shallow strip foundations at a minimum of 1.50m below ground level. An allowable bearing capacity of 75kPa will ensure total and differential settlements remain within standard structural tolerances. The floor slab should be suspended due to soils with high volume change potential.

2.0 Introduction

On behalf of Guarav Shiel and Shipra Tiwari, a Ground Investigation and Geotechnical Assessment has been carried out at 5A Harrow View, Uxbridge UB10 0QG. The purpose of the assessment is to provide geotechnical information to the designer and contractor of the proposed demolition of the existing single storey building and construction of a new residential building with basement and associated garage and garden.

The information contained within the assessment has been produced specifically to identify the underlying ground and groundwater conditions and to propose outline geotechnical information to assist in the planning and design of the redevelopment.

The assessment has been reviewed by Corrado Candian, MEng CEng MICE who has more than 25 years' relevant experience of design and assessment of residential and commercial developments.

2.1 Sources of Information

The following baseline data have been referenced to complete the assessment in relation to the proposed redevelopment:

- Stage 1 and 2 Basement Impact Assessment – Screening and Scoping report (ref P5283J2833/SEJ), July 2023, Jomas Associates Ltd;
- Planning Statement, 3rd October 2023, Paddington Planning;
- Existing and proposed plans, October 2022, KRN Design Studio;
- British Geological Survey, GeoIndex (onshore);
- Tomlinson, M.J. (2001) Foundation Design and Construction;
- Eurocode 7 and National Annexe to BS-EN-1997-1;
- CIRIA, C760 Embedded retaining walls - Guidance for Economic Design, 2017;
- ASUC, Guidelines for Safe and Efficient Basement Construction Directly Below or Near to Existing Structures, 2nd Edition, 2016;
- NHBC Guidance (2024);
- BS EN ISO 22282-1: 2012 Geotechnical Investigation and Testing – Geohydraulic Testing;
- BS EN ISO 22282-2: 2012 Geotechnical Investigation and Testing – Geohydraulic Testing;
- BRE365: 2016 Soakaway Design.

2.2 Existing and Proposed Development

The site location is presented in Appendix 1. The site currently comprises a partially demolished single storey residential building with associated driveway and garden. The site is located 2.9km southeast of Uxbridge railway station.

An outline proposed development plan is presented in Appendix 2.

The proposed development comprises:

- the demolition of the existing single storey building;
- construction of a new building with basement and associated garage, storage and garden.

The proposed basement will be formed at approximately 3.00m below ground level (bgl).

3.0 Desk Study

A full desk study is provided in Stage 1 and 2 Basement Impact Assessment – Screening and Scoping report (ref P5283J2833/SEJ), July 2023, Jomas Associates Ltd. The following geological and hydrogeological summary information is provided specifically as a reference to the site investigation works and geotechnical assessment provided in Sections 4.0 and 5.0.

3.1 Geology

The British Geological Survey (BGS) mapping data (Geo-Index Onshore) indicates that the site is underlain by the Black Park Gravel Member (Sand and Gravel) overlying the London Clay Formation.

The Black Park Gravel Member consists predominantly of granular sand and gravel terraces but with significant subordinate fines content, either as a matrix to the sands / gravels and / or as cohesive lenses of silt, clay and peat.

The London Clay is characterised as a firm to stiff, becoming very stiff with depth, fissured and thinly laminated brown becoming mottled blue grey clay.

Made Ground would normally be expected above the naturally occurring strata within urban environments related to the historic development on site. Where present, Made Ground is expected to exhibit a certain degree of heterogeneity and the nature of the material can be expected to vary substantially in both composition and thickness over short distances.

Period	Series		Deposits	
Quaternary	Holocene		Made Ground	
			Alluvium	
	Pleistocene		Langley Silt (Brickearth)	
			River Terrace Deposits	
Palaeogene	Eocene	Bracklesham Group	Camberley Sand Formation	
			Windlesham Formation	
			Bagshot Formation	
		Thames Group	London Clay Formation	Claygate Member
				Sub-Divisions A - D
			Harwich Formation	Swanscombe Member
				Oldhaven Member
		Lambeth Group	Woolwich Formation	Upper Shelley Beds
			Reading Formation	Upper Mottled Beds
			Woolwich Formation	Laminated Beds
				Lower Shelley Beds
	Palaeocene		Reading Formation	Lower Mottled Beds
			Upnor Formation	
		Thanet Sand Formation	Thanet Sand	
			Bullhead Beds	
Cretaceous	White Chalk Sub-Group	Seaford Chalk Formation	Haven Brow Beds	
			Cuckmere Beds	
			Bell Tout Beds	

Table 1 - General London Stratigraphy

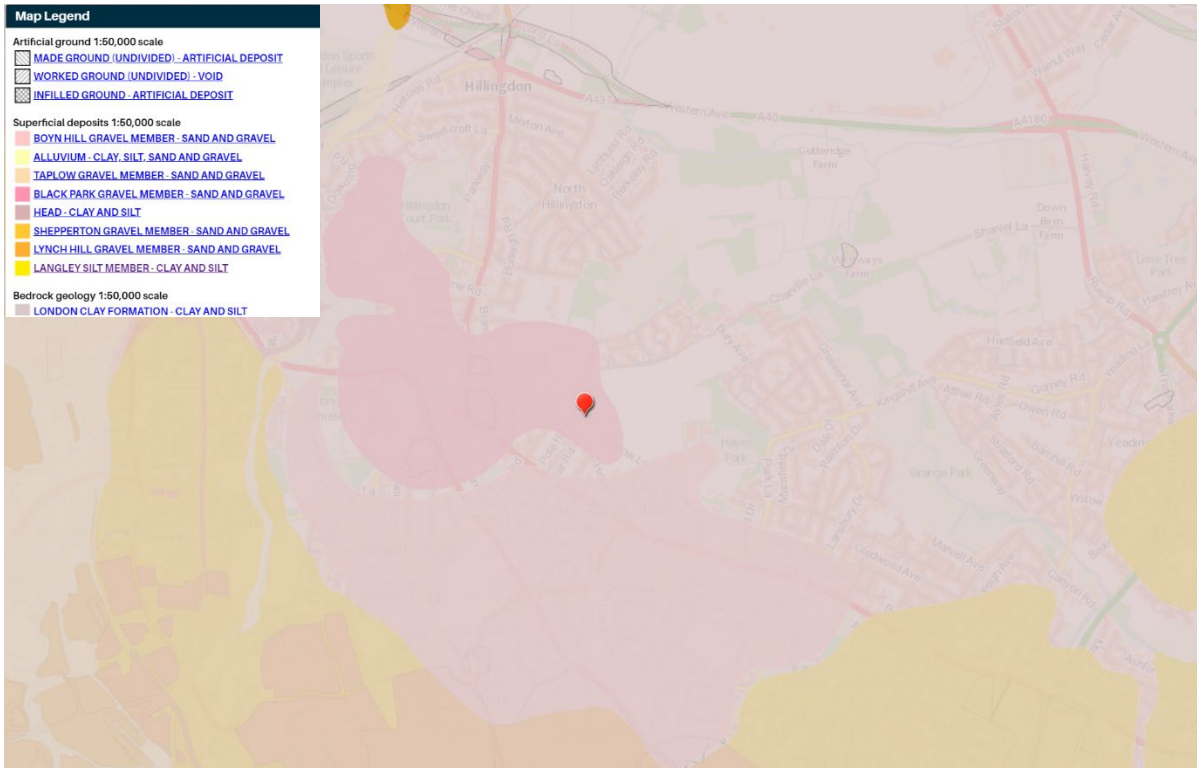


Figure 1 – Geological Map of Site Area (BGS, Geo-Index Onshore)

3.2 Hydrogeology

The Environment Agency (EA) Groundwater Protection Policy uses aquifer designations that are consistent with the Water Framework Directive. These designations reflect the importance of aquifers in terms of groundwater as a resource (drinking water supply) and also their role in supporting surface water flows and wetland ecosystems:

- Principal Aquifers – layers that have a high permeability and are likely to support water supply and / or river base flow on a strategic scale.
- Secondary Aquifer (A) - permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.
- Unproductive Strata – predominantly impermeable or low permeability layers that have negligible significance for water supply or river base flow.

The aquifer designations beneath the site are therefore classified:

- Black Park Gravel Member (Sand and Gravel) – Secondary Aquifer (A)
- London Clay – Unproductive Strata.

4.0 Site Investigation

4.1 Introduction

A ground investigation was undertaken on 23rd January 2024 comprising 3no rotary percussion (BH) boreholes to a maximum depth of 7.45m bgl. The exploratory hole location plan is presented in Appendix 1.

Prior to undertaking the works, utility service locations were checked by the site owners and exploratory hole locations were selected. Hand excavated pits to 1.20m bgl were undertaken at each proposed borehole location to confirm no utilities were present.

The boreholes were constructed at 125mm diameter. Insitu testing comprising Standard Penetration Tests (SPTs) were undertaken at 1.00m intervals. Groundwater monitoring standpipes were installed into each borehole and infiltration testing (rising head / falling head) was undertaken.

Disturbed samples were generally taken at 0.50m intervals and changes in strata to the base of each exploratory hole. A selection of these were tested in the laboratory for: moisture contents and Atterberg Limits, to assess plasticity; and, pH and sulphate testing to assess a suitable design concrete class for foundations.

The exploratory hole logs and laboratory test data are presented in Appendix 3.

4.2 Ground Conditions

The ground conditions encountered were generally as anticipated from the Desk Study. The London Clay Formation was the uppermost natural deposit to be encountered. A summary of the encountered ground conditions is presented in Table 2.

Soil descriptions are provided in detail within the exploratory hole logs which are presented in Appendix 3. Interpreted geotechnical parameters are presented in Section 5.0.

	Top mbgl	Thickness m	Top mbgl	Thickness m	Top mbgl	Thickness m	Final Depth mbgl
Exp. Hole No.	**Made Ground**		**Black Park Gravel Member (cohesive)**		**London Clay**		
BH1	0.00	0.40	0.40	1.10	1.50	>5.95	7.45
BH2	0.00	0.30	0.30	0.80	1.10	>4.35	5.45
BH3	0.00	0.30	0.30	0.80	1.10	>4.35	5.45

Table 2: Summary of Ground Conditions Encountered

Made Ground

A shallow layer of Made Ground was encountered in exploratory hole locations, observed between 0.30m to 0.40m bgl. The soils were reworked natural soils comprising sandy gravelly clay with fragments of brick, tile and concrete.

No visual or olfactory evidence of contamination was noted.

Black Park Gravel Member

The Black Park Gravel Member was encountered from the base of the Made Ground to between 1.10m and 1.50m bgl. The soils were cohesive, described as soft to firm orange brown sandy gravelly clay. The gravel content was variable, ranging from occasional in BH3

to very gravelly between 0.70m to 1.50m bgl in BH1. The gravel was predominantly flint with the addition of chalk in BH3.

Laboratory testing indicates the deposits to be of high to very high plasticity clay with a high volume change potential (VCP). The soils are of very low permeability; of the soils tested (2no samples) 93% and 99% were classed as silt or clay (finer than 425um). The soils do not exhibit signs of desiccation.

1no SPT was undertaken in these soils, BH1 at 1.20m bgl. SPT N have been corrected to standardised N60 values and insitu shear strength (cu) assessed based on Cu = N60 x 5 (based on Stroud and Butler, 1975), indicating medium strength / firm clay at 1.20m bgl of insitu shear strength = 45 kN/m^2 (the SPT hammer energy certificate is provided in Appendix 3).

London Clay

The London Clay was encountered from the base of the Black Park Gravel Member to the base of the boreholes, a maximum of 7.45m bgl.

The London Clay is characterised as a firm to stiff, brown orange mottled blue grey clay with partings of silty sand. A claystone band of <50mm thickness was encountered in BH2 at 1.80m bgl.

Laboratory testing indicates the deposits to be of high to very high plasticity and of high VCP. The soils do not exhibit signs of desiccation.

N60 values indicate medium to high strength / firm to stiff clays, with stiffness increasing with depth from insitu shear strength = 45 kN/m^2 to 105 kN/m^2.

4.3 Groundwater

A groundwater seepage was encountered within the BH2 at 1.80m bgl associated with the claystone band encountered.

The site surface was observably moist and very soft, with the Made Ground saturated from rainfall (surface water infiltration). With the Made Ground cased off during drilling, no further groundwater was encountered in the natural soils.

Infiltration testing was undertaken in the monitoring standpipes on 12 February 2024. Initially groundwater levels were taken: 0.23m bgl in BH1, 0.38m bgl in BH2 and 0.56m bgl in BH3.

Infiltration testing was undertaken in accordance with BS EN ISO 22282-2:2012 in the boreholes, comprising rising head and falling head tests. The calculated permeability is <1 x 10^{-7}m/s.

These results confirm the previous observations that the Made Ground is saturated with surface water infiltration, perched on the low permeability natural soils.

The borehole monitoring standpipes remain insitu to allow the contractor to monitor water levels in advance of construction and design temporary works accordingly.

5.0 Preliminary Geotechnical Assessment

5.1 Geotechnical Parameters

A ground model based on the insitu and laboratory testing is provided in Table 3. Values indicated are characteristic soil parameters. The insitu shear strength profile was correlated from the SPTs, with SPT N60 multiplied by F1 (5).

Stratum	From	To	Thick	γ	C_u	Ø'	Eu	E'	K0
	(m bgl)	(m bgl)	(m)	(kN/m³)	(kPa)	(°)	(kPa)	(kPa)	
Made Ground	0.0	0.4	0.4	18	-	28	-	5000	0.53
Soft to firm gravelly clay	0.4	1.5	1.1	19	35+10z	-	350Cu	0.8Eu	1.00
Firm to stiff London Clay	1.5	>7.5	>6.0	19	45+13z	-	400Cu	0.8Eu	1.20
Groundwater	0.4								

Table 3: Ground Model

Notes: Cu profile based on correlation Cu/SPT N60 = 5.
z = incremental increase in shear strength kPa/m depth; z = 0 at top of stratum.
Made Ground is saturated; perched groundwater adopted at top of natural cohesive soils.

5.2 Foundations Assessment

House with Basement

In discussion with the site owners, preliminary foundation options have been assessed, based on the proposed ground bearing basement raft slab. A raft foundation is considered feasible.

Excavations will be carried out through Made Ground and soft to firm cohesive deposits. It is anticipated that excavations should be achievable using conventional earthmoving plant.

Based on soil descriptions and the perched groundwater levels, sidewall stability of temporary excavations will be very much dependent on the length of time it is left open. The Made Ground and shallow natural soils should be considered unstable and appropriate support such as trench boxes and / or battering / benching should be allowed for in the temporary works design.

Site workers should not enter excavations unless an assessment of the need for ground support has been carried out by a competent person and any necessary ground support has been installed. Construction plant and stockpiles of materials must not be permitted close to the edges of open excavations.

Perched water may be present and require dewatering, and potential surface water infiltration should be taken into account when planning groundworks and the requirement for water control.

An assessment of the approximately 15m x 9m raft has been undertaken in accordance with BS-EN-1997-1 (Eurocode 7) for combinations 1 and 2 of Design Approach 1. The formation level will be approximately 3.00m bgl. It has been assumed that loads will be spread evenly across the raft slab (ie the raft will be stiff enough to spread the loads).

In order to ensure total settlements of <25mm and deflection ratios due to differential settlements of <1/500 between walls, the raft should be designed based on a maximum allowable bearing capacity of 100kPa.

The soils have a high VCP. At 3.00m depth the raft should be beyond the influence of tree roots and the potential for variations in moisture content. The Engineer / contractor should inspect excavations for the presence of roots at formation level and take appropriate advice from an arboriculturist if roots are present to identify them and apply appropriate mitigation action.

The Engineer / contractor should design the raft slab appropriately to accommodate uplift pressures:

- the heave pressure (unloading of the soils below formation level by excavation to formation level);
- groundwater pressure (the cohesive soils are assumed to be saturated and exhibit hydrostatic pressures).

The basement should be appropriately waterproofed in accordance with the architect's specification (assumed to be Grade 3, for domestic use).

Garage

It is considered likely that shallow foundations can be adopted for the garage, assuming a typically lightly loaded structure. However, the laboratory tests indicate a high VCP and this will impact the required minimum foundation depth in accordance with NHBC 2024. The zone of influence of trees (former, existing or proposed for planting or removal) should be considered.

Due to the presence of soils with VCP, floor slabs should be suspended.

Foundations may be placed within the natural firm to stiff clay at:

- A minimum depth of 1.50m bgl; or
- As required by NHBC 4.2.13 (Tables 11 to 13) where within the zone of influence of trees.

In all cases, foundations must be taken beyond the Made Ground.

A preliminary assessment of the bearing capacity of shallow foundations has been undertaken by a number of methods to provide a sensitivity check, in accordance with BS8004-1986 (factor of safety of 3), BS-EN-1997-1:2004+A1:2013 (Eurocode 7) and National Annexe to BS-EN-1997-1 for combinations 1 and 2 of Design Approach 1.

In order to ensure total settlements of <25mm and deflection ratios due to differential settlements of <1/500 between walls, foundations should be designed based on a maximum allowable bearing capacity of 75kPa.

5.3 Design Concrete Class

Seven soil samples were analysed to determine the design concrete class in accordance with BRE Special Digest 1:2005 (Table C2). Samples were tested from within the Made Ground, Black Park Gravel Member and London Clay Formation. The laboratory results are presented in Appendix 3.

The preliminary Design Sulphate Class is DS-1, the preliminary ACEC class is AC-1 and the DC class is DC-1. The results are presented in Table 4.

Parameter	Observed Range	Number of Tests	Characteristic Value
Water Soluble Sulphate (mg/l)	31 to 339	7	339
pH	7.9 to 8.6	7	7.9

Table 4: Laboratory Test Results

5.4 Infiltration Drainage

Infiltration testing in accordance with BS EN ISO 22282-2 was undertaken in all boreholes.

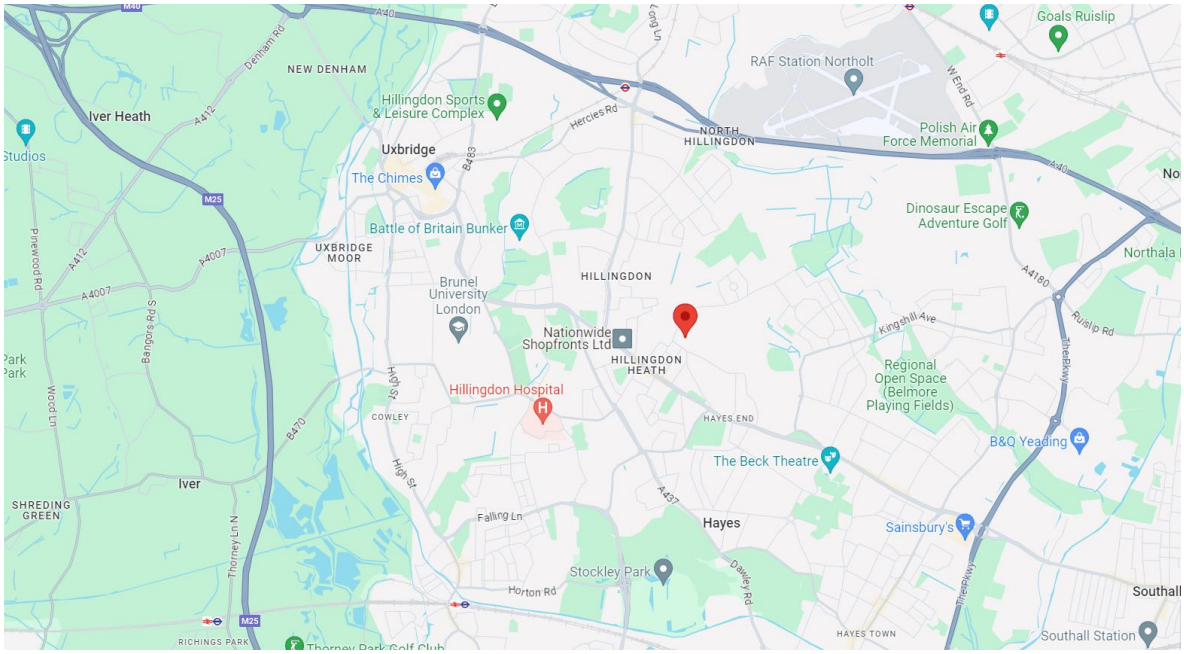
The testing indicates:

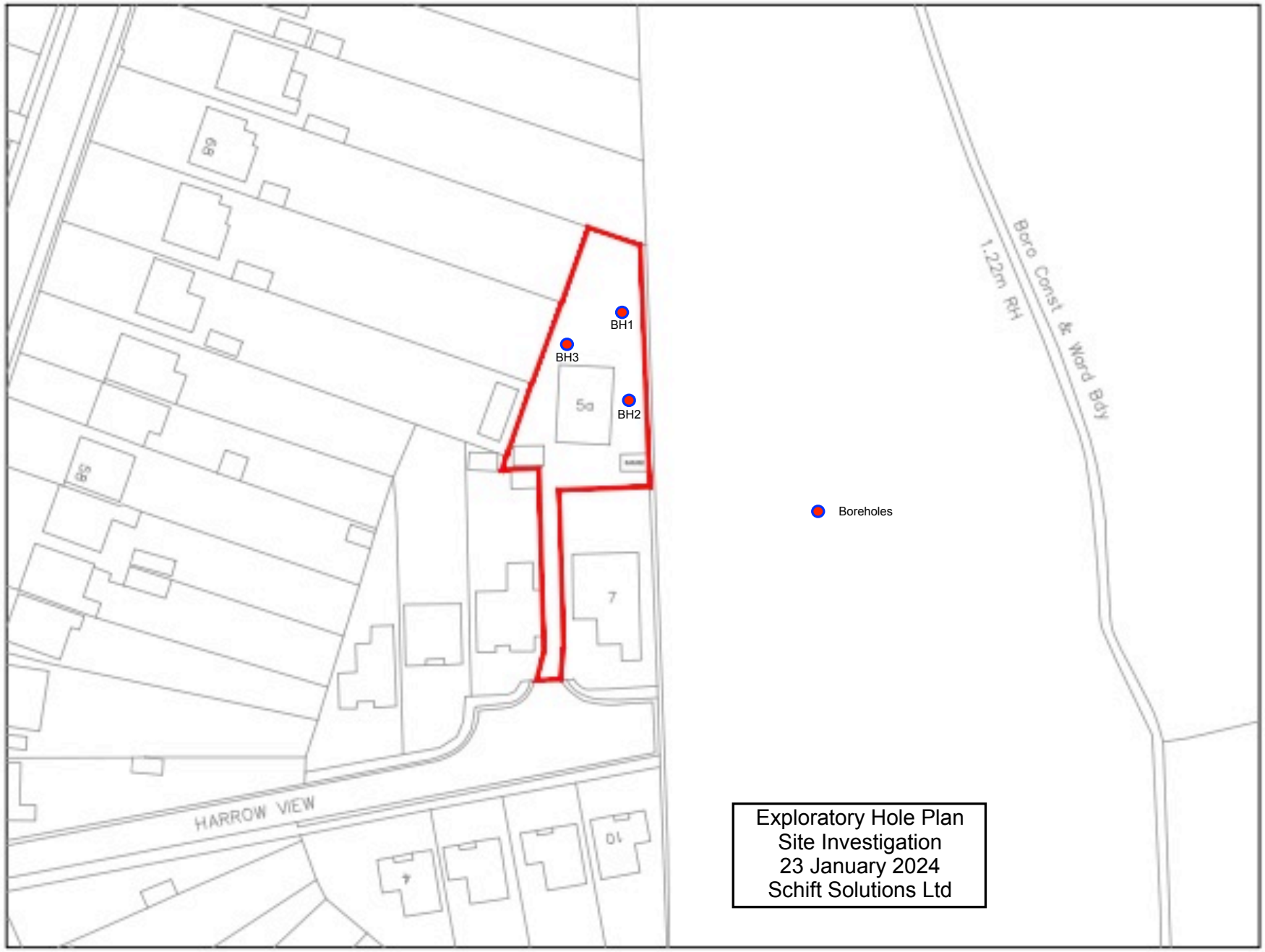
- insufficient unsaturated testing area (saturated Made Ground with perched water at <0.50m bgl).
- very low permeability natural soils encountered, with infiltration rates of < 1 x $10m^{-7}$m/s.

The adoption of infiltration drainage is not considered to be appropriate, due to the presence of very low permeability natural soils and shallow, perched groundwater.

Proposed drainage for the new development should consider adopting attenuation SuDS.

Appendix 1 Site Location and Exploratory Hole Location Plan

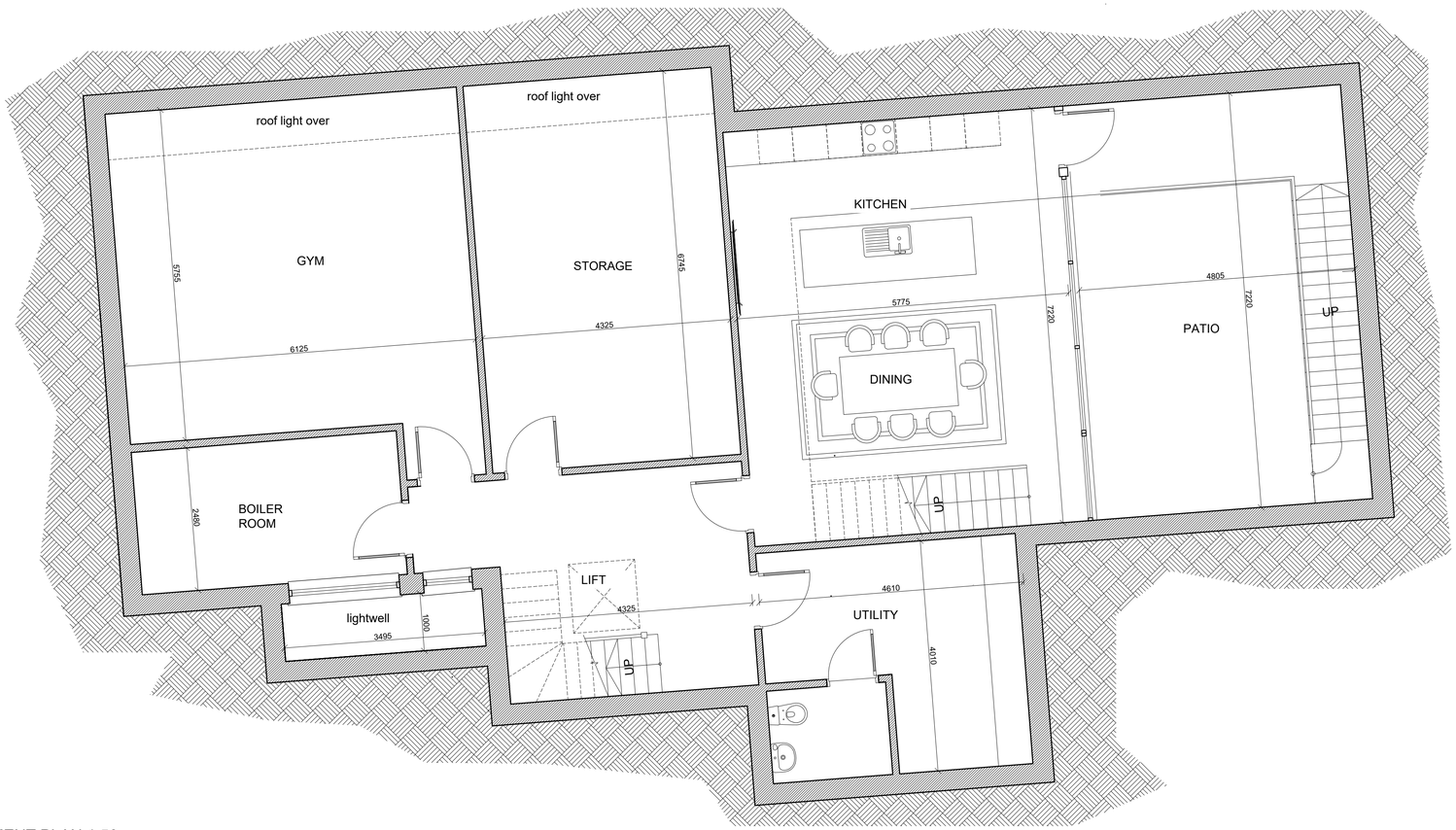




Exploratory Hole Plan
Site Investigation
23 January 2024
Schift Solutions Ltd

LOCATION MAP

Appendix 2 Existing and Proposed Development



BASEMENT PLAN 1:50

SITE PLAN 1:200

N

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Scale 1:200

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Scale 1:100

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Scale 1:50

AMENDMENTS	DATE	REV.

JOB

5A HARROW VIEW
UXBRIDGE
UB10 OQG

CLIENT

DRAWING
PROPOSED SITE PLAN

DALE VENN ARCHITECTS
Architects, Planners & Surveyors

HIGH HOUSE, HARLINGTON ROAD,
HILLINGDON, MIDDLESEX 01895-237345

SCALE 1:200 @A1	DRAWING No.	REV.
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AMENDMENTS DATE REV.

JOB

5A HARROW VIEW
UXBRIDGE
UB10 0QG

CLIENT

DRAWING
PROPOSED GROUND FLOOR PLAN

DALE VENN ARCHITECTS
Architects, Planners & Surveyors

HIGH HOUSE, HARLINGTON ROAD,
HILLINGDON, MIDDLESEX 01895-237345

SCALE 1:50 @A1	DRAWING No.	REV.
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CHECKED DV		

AMENDMENTS	DATE	REV.

JOB

5A HARROW VIEW
UXBRIDGE
UB10 0QG

CLIENT

DRAWING
PROPOSED FIRST FLOOR PLAN

DALE VENN ARCHITECTS
Architects, Planners & Surveyors

HIGH HOUSE, HARLINGTON ROAD,
HILLINGDON, MIDDLESEX 01895-237345

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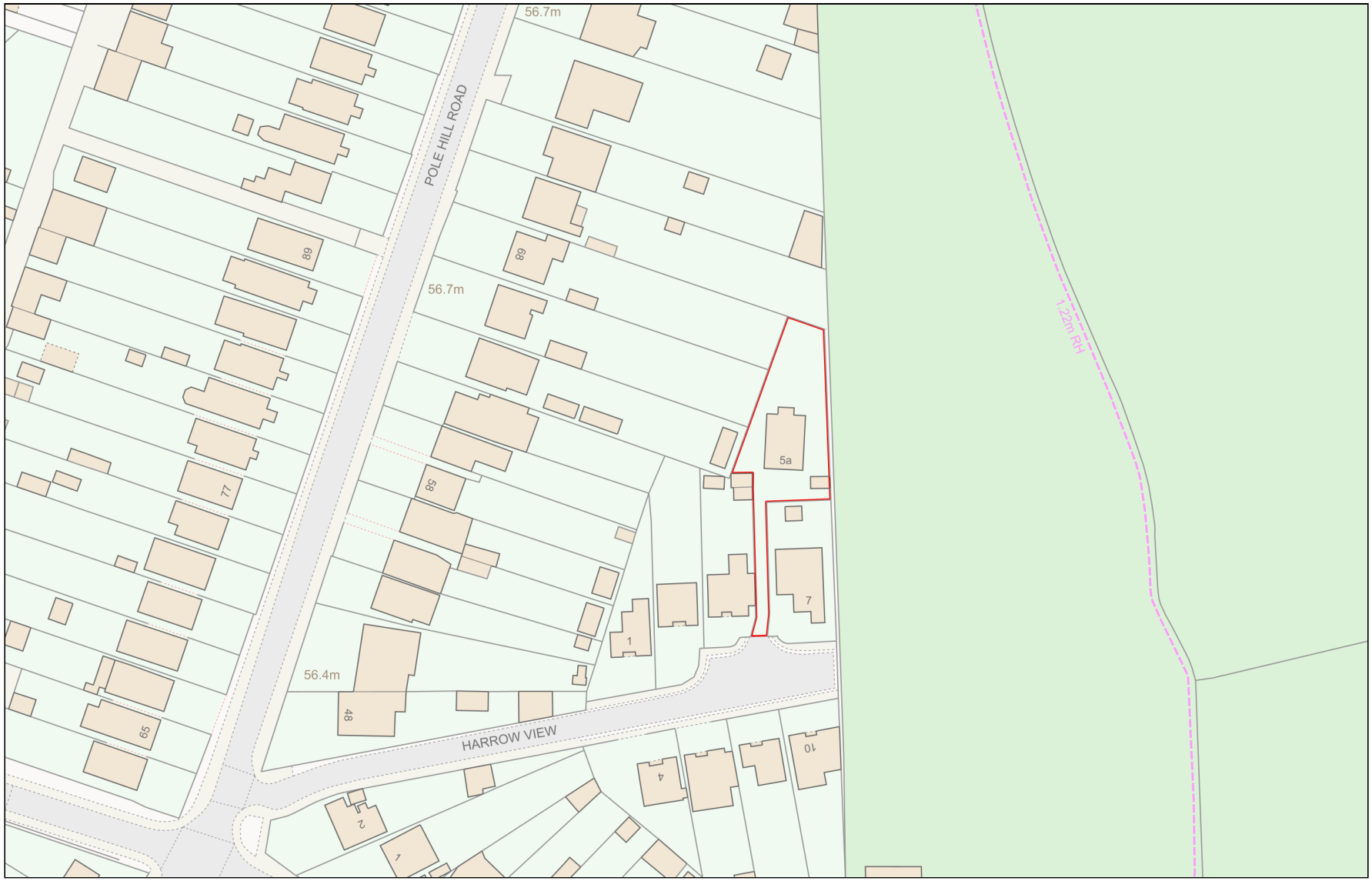
Location Plan

Site Address: **5a, Harrow View, Uxbridge, UB10 0QG**

PlanningPortal

Date Produced: **22-Jan-2024**

Scale: **1:1250 @A4**



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Metres

Planning Portal Reference: **PP-12750805v1**

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Appendix 3 Ground Investigation Logs and Data

SCHIFT Geotechnical Monitoring+ Risk Management

EXPLORATORY HOLE LOG Borehole BH1

PROJECT NUMBER MES/2403/GS004	**DRILLING DATE** 23/01/2024	**EASTINGS** -
PROJECT NAME 5a Harrow View	**TOTAL DEPTH** 7.45m	**NORTHINGS** -
CLIENT Milvum Engineering Services Ltd	**DIAMETER** 125mm	**COMPLETION** 4.00m Standpipe
ADDRESS 5a Harrow View, Uxbridge, UB10 0QG	**CASING** 1.00m	**SURFACE ELEVATION** 57.00mOD
	SCREEN 3.00m	**WELL TOC** 57.00mOD

COMMENTS

LOGGED BY NPB
CHECKED BY GK

Method	Samples / Tests	Depth (m)	Material Description	Elevation (m)
RP	D	0.5	MADE GROUND: Dark brown slightly sandy slightly gravelly clay. Gravel is fine to medium, sub-angular to rounded flint. Occasional brick and concrete.	56.5
	D	1	Soft to firm brown mottled orange slightly sandy slightly gravelly CLAY. Gravel is sub-angular to rounded flint. Occasional rootlets. (BLACK PARK GRAVEL)	56
	2,3/2,2,2,2 N=8	1.5	Soft to firm brown mottled orange sandy very gravelly CLAY. Gravel is sub-angular to rounded flint. Becoming orange >0.8m. (BLACK PARK GRAVEL)	55.5
	D		Firm orange brown mottled blue grey CLAY. Occasional partings of silty sand. (LONDON CLAY).	
	2,2/2,2,3,3 N=10	2		55
	D	2.5		54.5
	2,3/3,3,3,4 N=13	3	Stiff brown mottled blue grey CLAY. Occasional partings of silty sand. (LONDON CLAY)	54
	D	3.5		53.5
	3,3/3,4,4,4 N=15	4		53
	D	4.5		52.5
	3,4/4,4,4,5 N=17	5		52
	D	5.5		51.5
	4,4/4,5,5,5 N=19	6		51
	D	6.5		50.5
	4,5/5,5,5,6 N=21	7		50
		7.5		49.5
		8		49
		8.5		48.5

Monitoring Standpipe: SP; Bentonite; Filter Pack; Bentonite

Notes RP = Rotary Percussion Bore

SCHIFT Geotechnical Monitoring+ Risk Management

EXPLORATORY HOLE LOG Borehole BH2

PROJECT NUMBER MES/2403/GS004	**DRILLING DATE** 23/01/2024	**EASTINGS** -
PROJECT NAME 5a Harrow View	**TOTAL DEPTH** 5.45m	**NORTHINGS** -
CLIENT Milvum Engineering Services Ltd	**DIAMETER** 125mm	**COMPLETION** 4.00m Standpipe
ADDRESS 5a Harrow View, Uxbridge, UB10 0QG	**CASING** 1.00m	**SURFACE ELEVATION** 57.00mOD
	SCREEN 3.00m	**WELL TOC** 57.00mOD

COMMENTS

LOGGED BY NPB
CHECKED BY GK

Method	Samples / Tests	Depth (m)	Graphic Log	Material Description	Monitoring Standpipe	Elevation (m)
RP	D	0.5		MADE GROUND: Dark brown slightly sandy slightly gravelly clay. Gravel is fine to medium, sub-angular to rounded flint.	Bentonite	56.5
	D	1		Soft to firm brown mottled orange CLAY. Occasional gravel of sub-angular to rounded flint. Occasional rootlets. (BLACK PARK GRAVEL)		56
	1,2/2,2,2,3 N=9	1.5		Firm orange brown mottled blue grey CLAY. Occasional partings of silty sand. (LONDON CLAY).		55.5
	D			- 1.80m <50mm claystone layer.		
	2,2/2,2,3,3 N=10	2		Stiff brown mottled blue grey CLAY. Occasional partings of silty sand. (LONDON CLAY)	Filter Pack	55
	D	2.5				54.5
	2,3/3,3,3,3 N=12	3				54
	D	3.5				53.5
	3,3/4,4,4,4 N=16	4		- >4.00m becoming fissured.		53
	D	4.5			Bentonite	52.5
	3,4/4,4,4,5 N=17	5				52
		5.5		Groundwater seepage on claystone at 1.80m.		51.5
		6				51
		6.5				50.5
		7				50
		7.5				49.5
		8				49
		8.5				48.5

Notes RP = Rotary Percussion Bore

SCHIFT Geotechnical Monitoring+ Risk Management

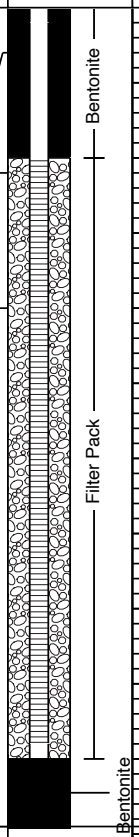
EXPLORATORY HOLE LOG Borehole BH3

PROJECT NUMBER MES/2403/GS004	**DRILLING DATE** 23/01/2024	**EASTINGS** -
PROJECT NAME 5a Harrow View	**TOTAL DEPTH** 5.45m	**NORTHINGS** -
CLIENT Milvum Engineering Services Ltd	**DIAMETER** 125mm	**COMPLETION** 5.00m Standpipe
ADDRESS 5a Harrow View, Uxbridge, UB10 0QG	**CASING** 1.00m	**SURFACE ELEVATION** 57.00mOD
	SCREEN 4.00m	**WELL TOC** 57.00mOD

COMMENTS

LOGGED BY NPB
CHECKED BY GK

Method	Samples / Tests	Depth (m)	Material Description	Elevation (m)
RP	D	0.5	MADE GROUND: Dark brown slightly sandy slightly gravelly clay. Gravel is fine to medium, sub-angular to rounded flint. Fragments of brick and tile.	56.5
	D	1	Soft to firm brown mottled orange CLAY. Occasional gravel of sub-angular to rounded flint and chalk. Occasional rootlets. (BLACK PARK GRAVEL)	56
	1,2/2,2,3,3 N=10	1.5	Firm orange brown mottled blue grey CLAY. Occasional partings of silty sand. Occasional rootlets. (LONDON CLAY)	55.5
	D	2		55
	2,3/3,3,4,4 N=14	2.5	Stiff fissured brown mottled blue grey CLAY. Occasional partings of silty sand. (LONDON CLAY)	54.5
	D	3		54
	3,3/4,4,4,4 N=16	3.5		53.5
	D	4		53
	3,3/4,4,4,5 N=17	4.5		52.5
	D	5		52
	3,4/4,4,5,5 N=19	5.5	No groundwater encountered.	51.5
		6		51
		6.5		50.5
		7		50
		7.5		49.5
		8		49
		8.5		48.5



Notes RP = Rotary Percussion Bore

Graham Kite
Schift Solutions Ltd
71-75 Shelton Street
London
WC2H 9JQ

e: gkite@schiftsolutions.com

i2 Analytical Ltd.
7 Woodshots Meadow,
Croxley Green
Business Park,
Watford,
Herts,
WD18 8YS

t: 01923 225404
f: 01923 237404
e: reception@i2analytical.com

Analytical Report Number : 24-80443

Project / Site name:	5A Harrow View, Uxbridge, UB10 0QG	**Samples received on:**	25/01/2024
Your job number:	5HV	**Samples instructed on/ Analysis started on:**	29/01/2024
Your order number:		**Analysis completed by:**	09/02/2024
Report Issue Number:	1	**Report issued on:**	09/02/2024
Samples Analysed:	7 soil samples		

Signed: A. Czerwińska

Agnieszka Czerwińska
Reporting Specialist
For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41-711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

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Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement.
Application of uncertainty of measurement would provide a range within which the true result lies.
An estimate of measurement uncertainty can be provided on request.

Analytical Report Number: 24-80443
Project / Site name: 5A Harrow View, Uxbridge, UB10 0QG

Lab Sample Number				2940368	2940369	2940370	2940371	2940372
Sample Reference				BH1	BH1	BH1	BH1	BH2
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Depth (m)				0.50	1.00	2.75	4.75	1.85
Date Sampled				23/01/2024	23/01/2024	23/01/2024	23/01/2024	23/01/2024
Time Taken				None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	17	13	16	21	16
Total mass of sample received	kg	0.001	NONE	0.5	0.5	0.5	2	2

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	7.9	8	8.6	8.3	8.4
Total Sulphate as SO4	%	0.005	MCERTS	0.024	0.018	0.039	0.07	0.074
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	63	80	270	680	74
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.0317	0.0398	0.138	0.339	0.0372
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	31.7	39.8	138	339	37.2
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	1.9	2.6	19	89	4.2
Total Sulphur	%	0.005	MCERTS	0.019	0.01	0.016	0.024	0.026
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	< 2.0	< 2.0	< 2.0	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0	< 5.0	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number: 24-80443
Project / Site name: 5A Harrow View, Uxbridge, UB10 0QG

Lab Sample Number				2940373	2940374
Sample Reference				BH2	BH3
Sample Number				None Supplied	None Supplied
Depth (m)				3.75	1.20-1.65
Date Sampled				23/01/2024	23/01/2024
Time Taken				None Supplied	None Supplied
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**		
Stone Content	%	0.1	NONE	< 0.1	< 0.1
Moisture Content	%	0.01	NONE	20	21
Total mass of sample received	kg	0.001	NONE	2	2

General Inorganics

pH - Automated	pH Units	N/A	MCERTS	8.6	8.2
Total Sulphate as SO4	%	0.005	MCERTS	0.043	0.049
Water Soluble Sulphate as SO4 16hr extraction (2:1)	mg/kg	2.5	MCERTS	420	300
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	g/l	0.00125	MCERTS	0.21	0.15
Water Soluble SO4 16hr extraction (2:1 Leachate Equivalent)	mg/l	1.25	MCERTS	210	150
Water Soluble Chloride (2:1) (leachate equivalent)	mg/l	0.5	MCERTS	29	5.5
Total Sulphur	%	0.005	MCERTS	0.021	0.022
Ammoniacal Nitrogen as NH4	mg/kg	0.5	MCERTS	< 0.5	< 0.5
Ammonium as NH4 (10:1 leachate equivalent)	mg/l	0.05	MCERTS	< 0.05	< 0.05
Water Soluble Nitrate (2:1) as NO3	mg/kg	2	NONE	< 2.0	< 2.0
Water Soluble Nitrate (2:1) as NO3 (leachate equivalent)	mg/l	5	NONE	< 5.0	< 5.0

U/S = Unsuitable Sample I/S = Insufficient Sample ND = Not detected

Analytical Report Number : 24-80443
Project / Site name: 5A Harrow View, Uxbridge, UB10 0QG

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
2940368	BH1	None Supplied	0.5	Brown clay and sand.
2940369	BH1	None Supplied	1	Brown clay and sand with gravel.
2940370	BH1	None Supplied	2.75	Brown clay.
2940371	BH1	None Supplied	4.75	Brown clay.
2940372	BH2	None Supplied	1.85	Brown clay.
2940373	BH2	None Supplied	3.75	Brown clay.
2940374	BH3	None Supplied	1.20-1.65	Brown clay.

Analytical Report Number : 24-80443
Project / Site name: 5A Harrow View, Uxbridge, UB10 0QG

Water matrix abbreviations:
Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Waters (PrW) Final Sewage Effluent (FSE) Landfill Leachate (LL)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Sulphate, water soluble, in soil (16hr extraction)	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In house method.	L019-UK/PL	W	NONE
Nitrate, water soluble, in soil	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In house method.	L099-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Ammonium as NH4 in soil	Determination of Ammonium/Ammonia/ Ammoniacal Nitrogen by the colorimetric salicylate/nitroprusside method, 10:1 water extraction.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton	L082-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Total Sulphur in soil as %	Determination of total sulphur in soil by extraction with aqua-regia, potassium bromide/bromate followed by ICP-OES.	In house method.	L038-PL	D	MCERTS
Chloride, water soluble, in soil	Determination of Chloride colorimetrically by discrete analyser.	In house method.	L082-PL	D	MCERTS
Water Soluble Nitrate (leachate equivalent)	Determination of nitrate by reaction with sodium salicylate and colorimetry.	In-house method based on Examination of Water and Wastewatern & Polish Standard Method PN-82/C-04579.08, 2:1 extraction.	L078-PL	D	NONE
Sulphate, water soluble, in soil	Determination of water soluble sulphate by ICP-OES. Results reported directly (leachate equivalent) and corrected for extraction ratio (soil equivalent).	In house method.	L038-PL	D	MCERTS

For method numbers ending in 'UK or A' analysis have been carried out in our laboratory in the United Kingdom (WATFORD).
For method numbers ending in 'F' analysis have been carried out in our laboratory in the United Kingdom (East Kilbride).
For method numbers ending in 'PL or B' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.
Unless otherwise indicated, site information, order number, project number, sampling date, time, sample reference and depth are provided by the client. The instructed on date indicates the date on which this information was provided to the laboratory.

4041

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

Environmental Science

Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

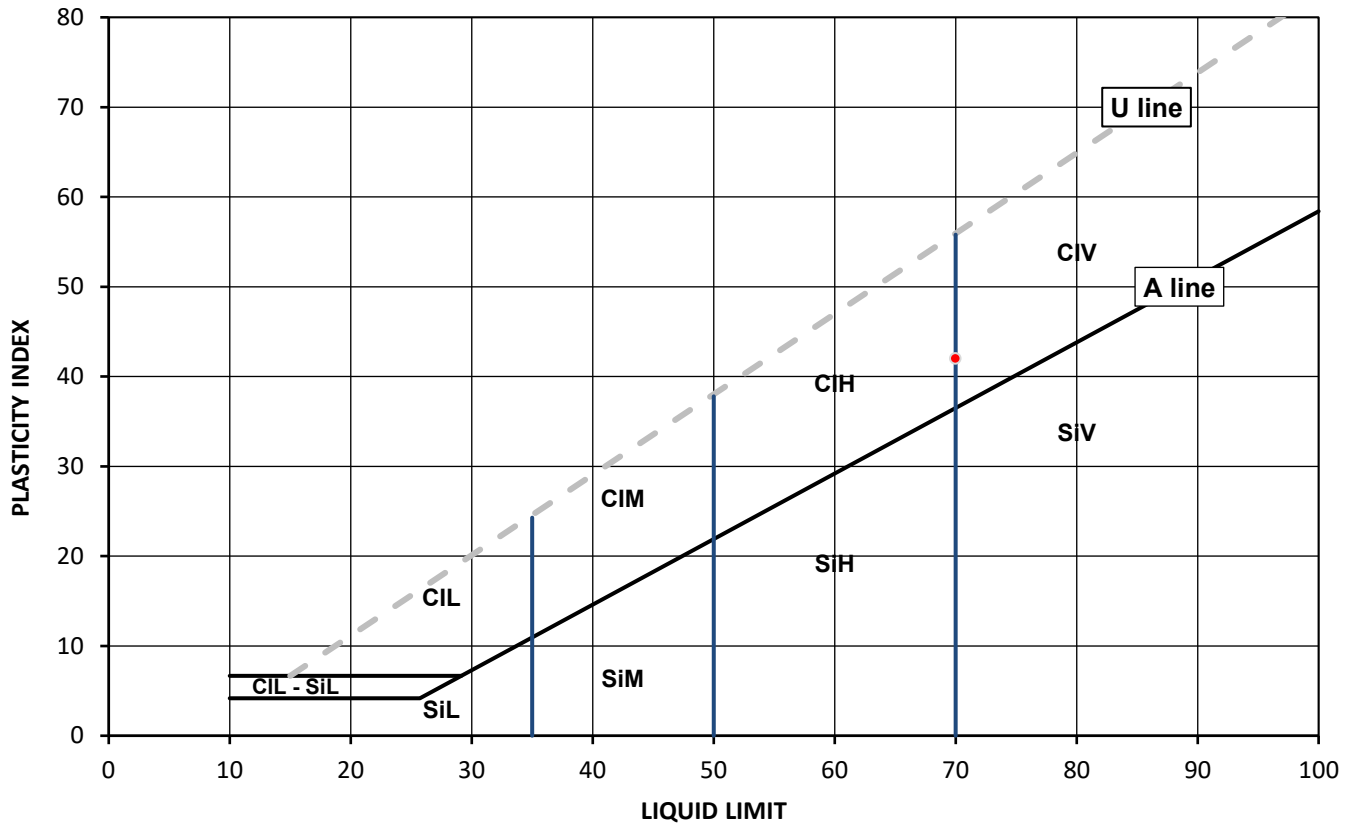
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2940375	Depth Top [m]:	1.85
Hole No.:	BH1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown slightly gravelly CLAY		

Sample Preparation: Tested after >425 µm removed by hand

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
30	70	28	42	99



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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

4041

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

Environmental Science

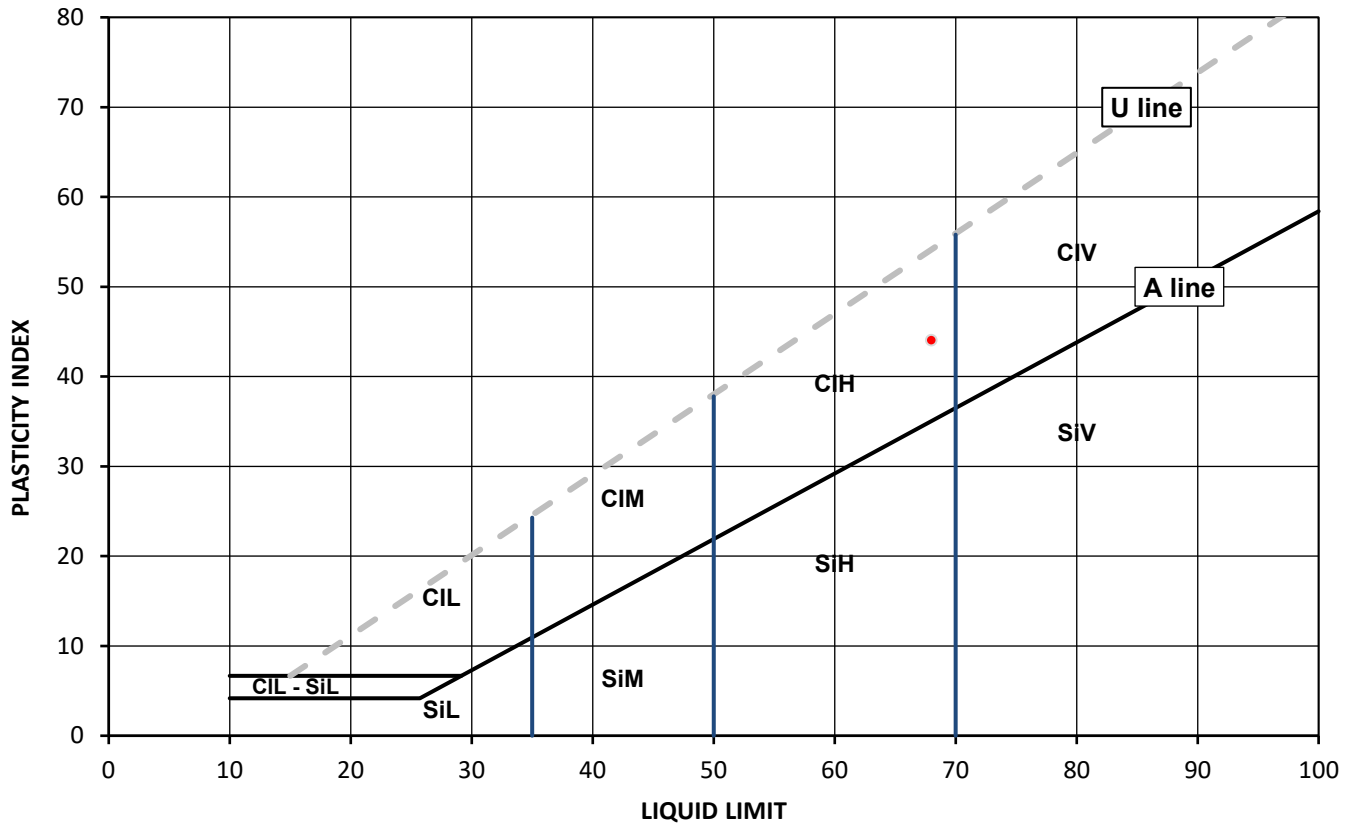
Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

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

Test Results:

Laboratory Reference:	2940376	Depth Top [m]:	3.75
Hole No.:	BH1	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey 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
27	68	24	44	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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

4041

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

Environmental Science

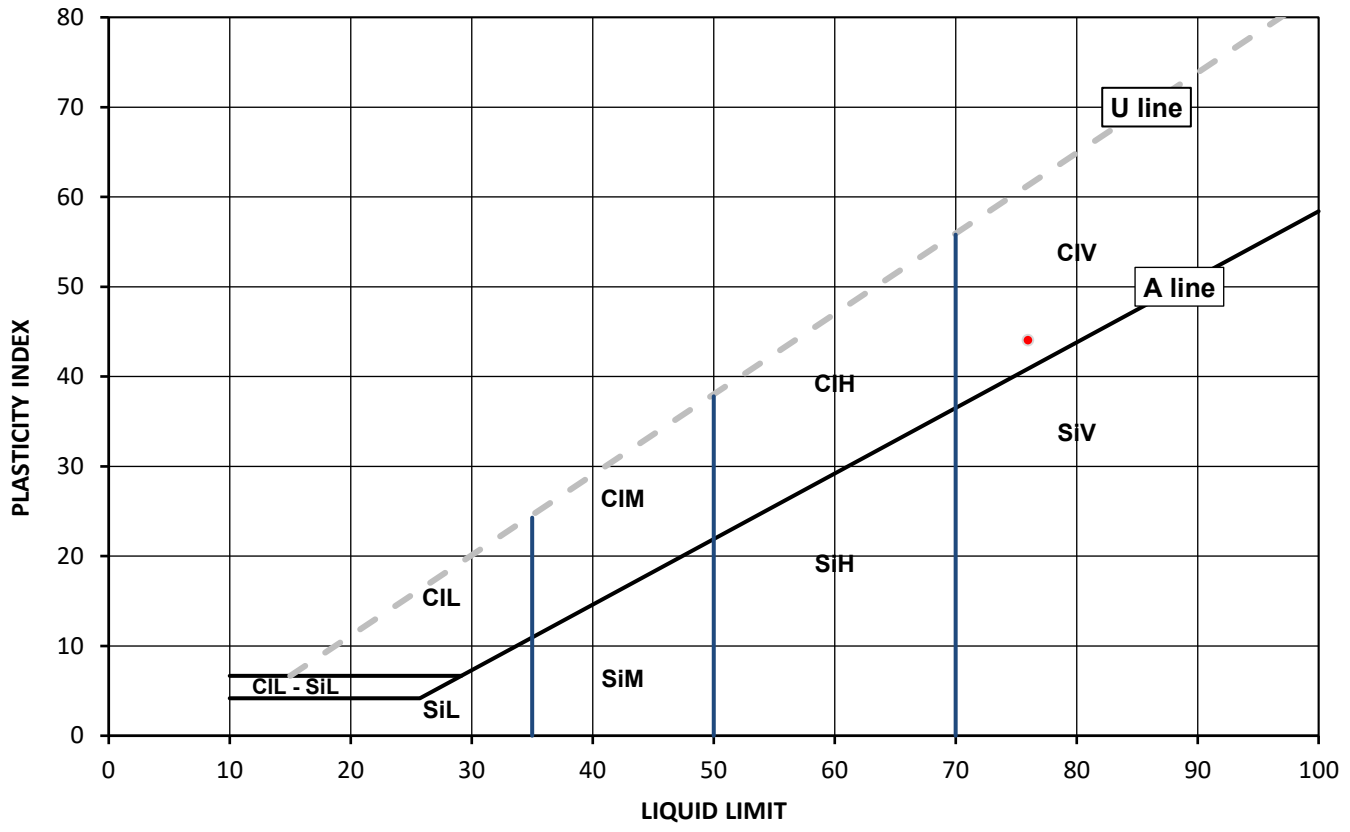
Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

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

Test Results:

Laboratory Reference:	2940377	Depth Top [m]:	0.50
Hole No.:	BH2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey 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
38	76	32	44	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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

4041

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

Environmental Science

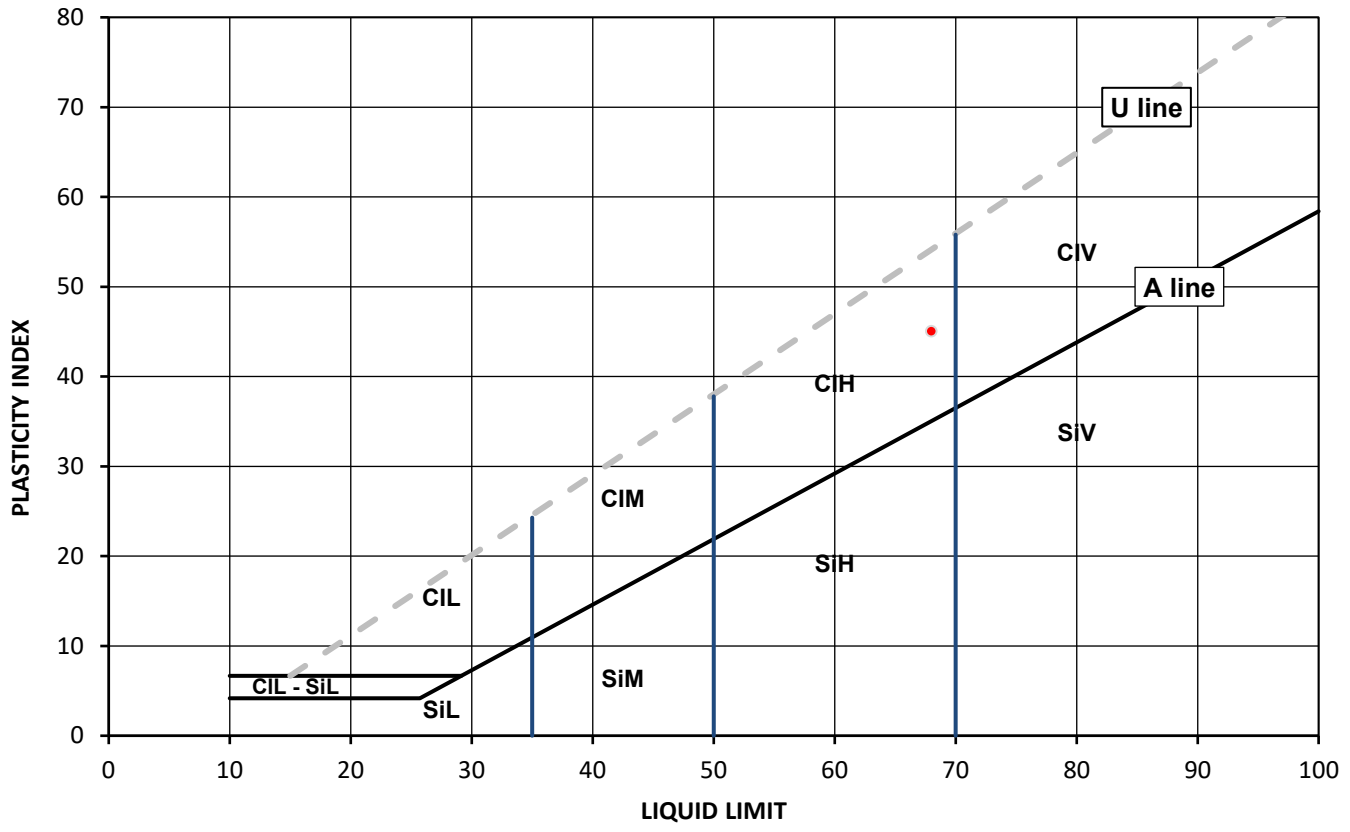
Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

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

Test Results:

Laboratory Reference:	2940378	Depth Top [m]:	1.00
Hole No.:	BH2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey slightly gravelly CLAY		
Sample Preparation:	Tested after >425 µm removed by hand		

As Received Water Content [W] %	Liquid Limit [WL] %	Plastic Limit [Wp] %	Plasticity Index [Ip] %	% Passing 425µm BS Test Sieve
27	68	23	45	93



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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

4041

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

Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

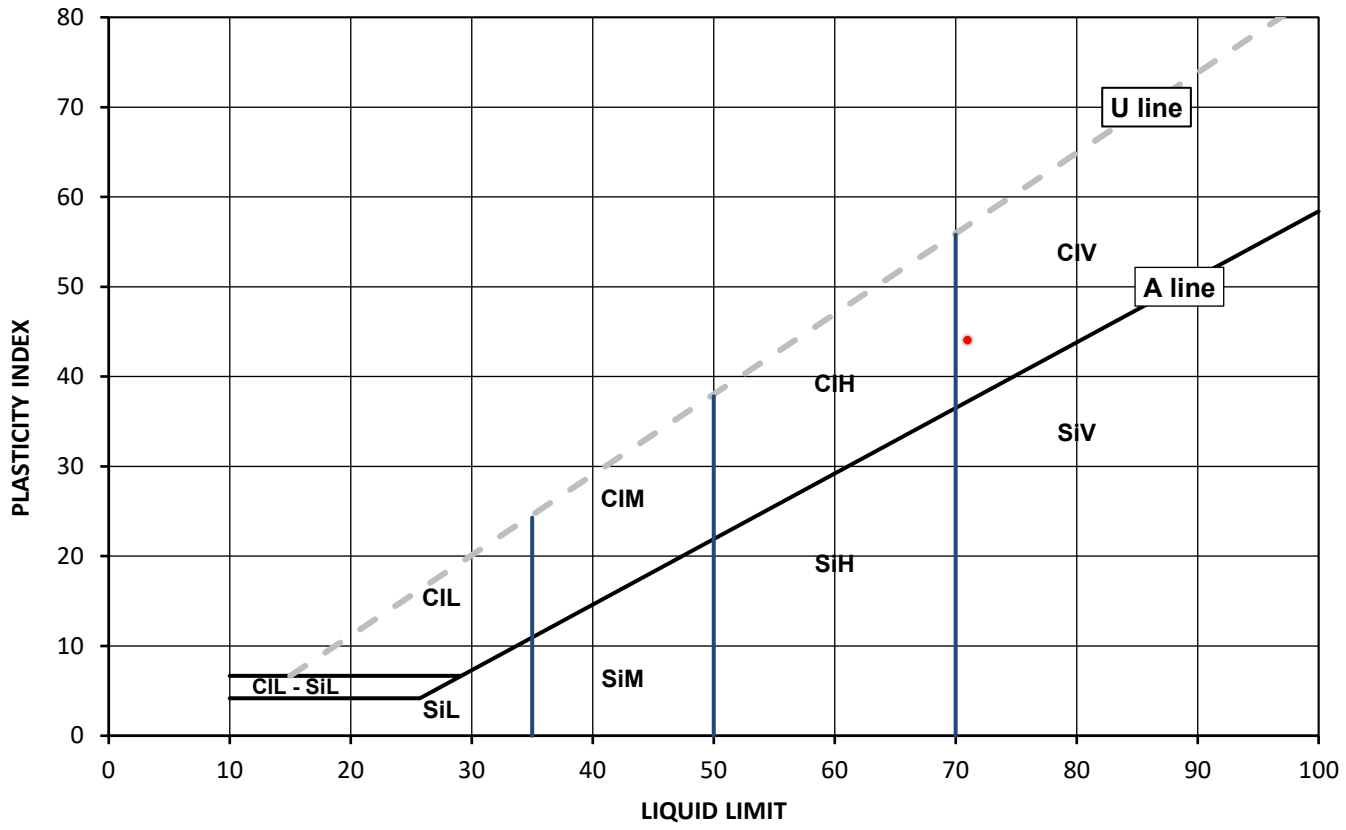
Testing carried out at i2 Analytical Limited, ul. Pionierow, 41-711 Ruda Slaska, Poland

Test Results:

Laboratory Reference:	2940379	Depth Top [m]:	2.75
Hole No.:	BH2	Depth Base [m]:	Not Given
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brown 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
31	71	27	44	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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

4041

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

Environmental Science

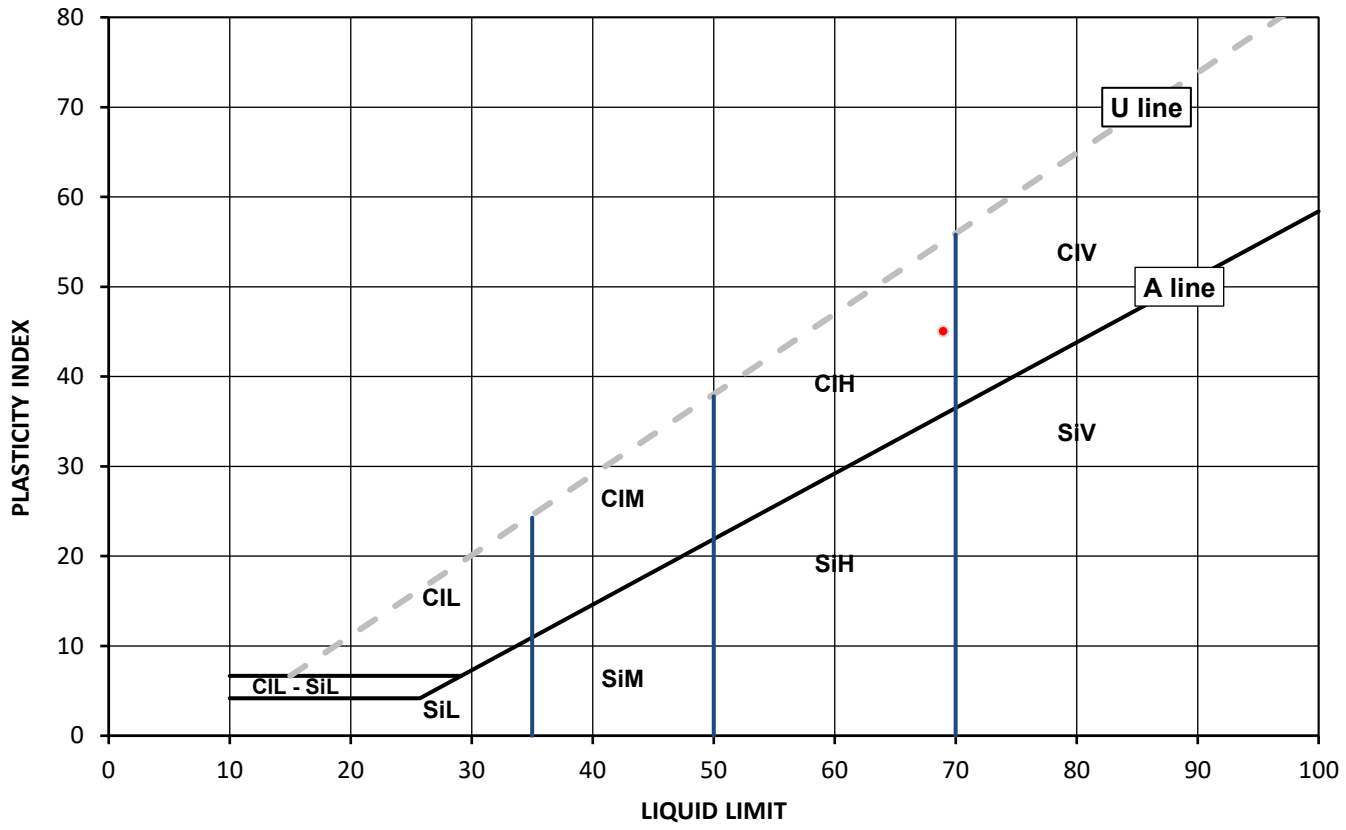
Client:	Schift Solutions Ltd	Client Reference:	5HV
Client Address:	71-75 Shelton Street, London, WC2H 9JQ	Job Number:	24-80444-1
		Date Sampled:	23/01/2024
		Date Received:	25/01/2024
Contact:	Graham Kite	Date Tested:	05/02/2024
Site Address:	5A Harrow View, Uxbridge, UB10 0QG	Sampled By:	Client - NPB

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

Test Results:

Laboratory Reference:	2940380	Depth Top [m]:	2.00
Hole No.:	BH3	Depth Base [m]:	2.45
Sample Reference:	Not Given	Sample Type:	D
Sample Description:	Brownish grey 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
27	69	24	45	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: Katarzyna Koziel

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 232.13

SUMMARY REPORT

SUMMARY OF CLASSIFICATION TEST RESULTS

Tested in Accordance with:

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

4041

Client: Schift Solutions Ltd

Client Address: 71-75 Shelton Street, London, WC2H 9JQ

Contact: Graham Kite

Site Address: 5A Harrow View, Uxbridge, UB10 0QG

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

Client Reference: 5HV
Job Number: 24-80444-1
Date Sampled: 23/01/2024
Date Received: 25/01/2024
Date Tested: 05/02/2024
Sampled By: Client - NPB

Testing carried out at i2 Analytical Limited, ul. Pionierow, 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	%		
2940375	BH1	Not Given	1.85	Not Given	D	Brown slightly gravelly CLAY	Atterberg 1 Point	30		99	70	28	42						
2940376	BH1	Not Given	3.75	Not Given	D	Brownish grey CLAY	Atterberg 1 Point	27		100	68	24	44						
2940377	BH2	Not Given	0.50	Not Given	D	Brownish grey CLAY	Atterberg 1 Point	38		100	76	32	44						
2940378	BH2	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly CLAY	Atterberg 1 Point	27		93	68	23	45						
2940379	BH2	Not Given	2.75	Not Given	D	Brown CLAY	Atterberg 1 Point	31		100	71	27	44						
2940380	BH3	Not Given	2.00	2.45	D	Brownish grey CLAY	Atterberg 1 Point	27		100	69	24	45						

Note: # Non accredited; NP - Non plastic

Comments:

Signed:

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

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: Schift Solutions Ltd

Client Address: 71-75 Shelton Street, London, WC2H 9JQ

Contact: Graham Kite

Site Address: 5A Harrow View, Uxbridge, UB10 0QG

Client Reference: 5HV
Job Number: 24-80444-1
Date Sampled: 23/01/2024
Date Received: 25/01/2024
Date Tested: 05/02/2024
Sampled By: Client - NPB

Testing carried out at i2 Analytical Limited, ul. Pionierow, 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			%				
2940375	BH1	Not Given	1.85	Not Given	D	Brown slightly gravelly CLAY		30	Sample was quartered, oven dried at 108.8 °C			
2940376	BH1	Not Given	3.75	Not Given	D	Brownish grey CLAY		27	Sample was quartered, oven dried at 108.8 °C			
2940377	BH2	Not Given	0.50	Not Given	D	Brownish grey CLAY		38	Sample was quartered, oven dried at 108.8 °C			
2940378	BH2	Not Given	1.00	Not Given	D	Brownish grey slightly gravelly CLAY		27	Sample was quartered, oven dried at 108.8 °C			
2940379	BH2	Not Given	2.75	Not Given	D	Brown CLAY		31	Sample was quartered, oven dried at 108.8 °C			
2940380	BH3	Not Given	2.00	2.45	D	Brownish grey CLAY		27	Sample was quartered, oven dried at 108.8 °C			

Comments:

Signed:

Katarzyna Koziel
Senior Reporting Specialist
for and on behalf of i2 Analytical Ltd

Date Reported: 16/02/2024

GF 099.17

SPT Hammer Energy Test Report

in accordance with BSEN ISO 22476-3:2005

Southern Testing
Unit 11
Charlwoods Road
East Grinstead
West Sussex
RH19 2HU

SPT Hammer Ref:	110RP
Test Date:	31/01/2023
Report Date:	31/01/2023
File Name:	110RP.spt
Test Operator:	NPB

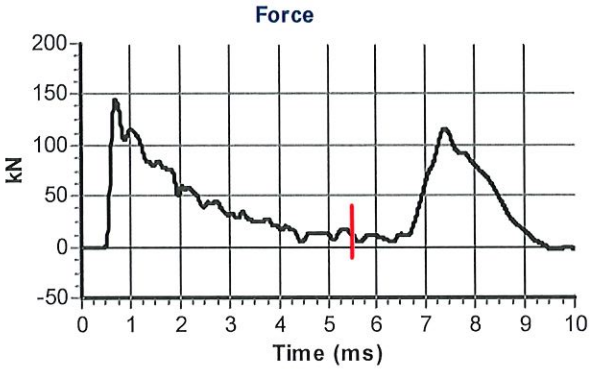
Instrumented Rod Data

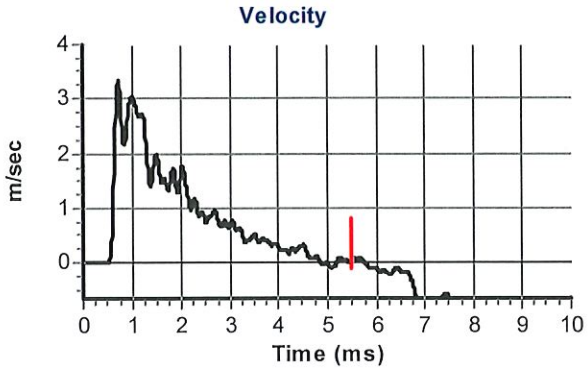
Diameter d_r (mm):	54
Wall Thickness t_r (mm):	6.7
Assumed Modulus E_a (GPa):	208
Accelerometer No.1:	64786
Accelerometer No.2:	64789

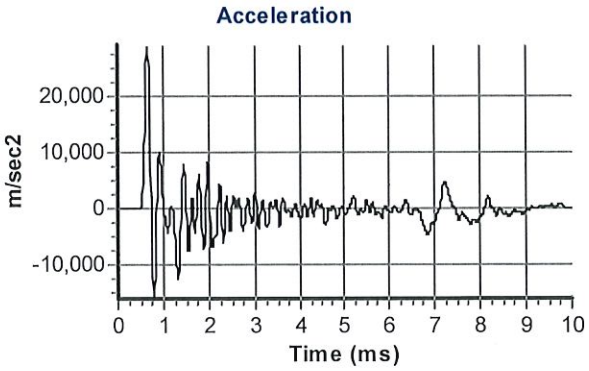
SPT Hammer Information

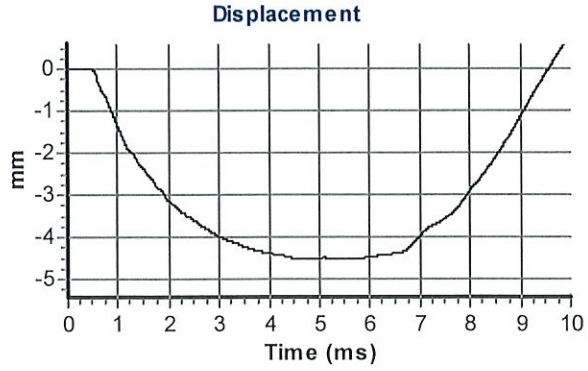
Hammer Mass m (kg):	63.5
Falling Height h (mm):	760
SPT String Length L (m):	14.7

Comments / Location
CHARLWOODS









Calculations

Area of Rod A (mm2):	996
Theoretical Energy E_{theor} (J):	473
Measured Energy E_{meas} (J):	370

Energy Ratio E_r (%): **78**

Signed: Bob Stewart
Title: Technician

The recommended calibration interval is 12 months

Appendix 4 Disclaimer

This report has been prepared by Milvum Engineer Services in its professional capacity as soil and groundwater specialists, with reasonable skill, care and diligence within the agreed scope and terms of contract and taking account of the manpower and resources devoted to it by agreement with its client, and is provided by Milvum Engineering Services solely for the use of its client (Guarav Shie1 / Shipra Tiwari).

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