LBS Properties

BRILL PLACE, LONDON

Ground Investigation Report

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NOVEMBER 2019

CONFIDENTIAL

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Ground Investigation Report

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EXECUTIVE SUMMARY

PROJECT NAME	Brill Place, London.
CLIENT	LBS Properties.
SITE LOCATION	The development site is in the southern end of Brill Place Park, immediately north-west of the Brill Place Roadway and opposite the Francis Crick Institute Building within the Somers Town district of the London Borough of Camden, London NW1. The site is approximately centred on National Grid Reference TQ 52980 83130.
PROPOSED DEVELOPMENT	The proposed 22-storey Brill Place Tower scheme comprises a contemporary park side building of 54 private residential apartments, with flexible floor space and a café at ground level. A single-storey basement is also proposed.
SITE INVESTIGATION	The larger redevelopment scheme for Central Somers Town was the subject of factual and interpretive site investigation reports by ESG in 2016, which will also be consulted throughout this report. Further ground investigation fieldworks were undertaken by Ground Engineering Ltd. from 08/04/2019 to 11/04/2019. The fieldworks comprised eight window sample boreholes, and twenty-nine dynamic probe tests, with subsequent laboratory chemical testing, and gas and groundwater monitoring being undertaken on return visits to site.
GROUND CONDITIONS	The geology within the study area comprises Made Ground, London Clay Formation, Lambeth Group, Thanet Sand Formation, and Chalk.
GROUNDWATER	Standpipes installed with a response zone in the Made Ground have been recorded as dry throughout the monitoring visits post the 2019 site investigation works. Groundwater monitoring data from the historical 2016 site investigation has recorded hydrostatic pressures in the upper part of the London Clay. The lower part of the London Clay and the Lambeth Group appeared to be under-drained. Based on the measured pressures within the upper part of the London Clay Formation from the 2016 site investigation data, a hydrostatic pore water pressure profile has been assumed from the top (+16.5m.O.D) to the base of the London Clay stratum for design purposes.
DESIGN PARAMETERS	The geotechnical design parameters of the strata underlying the site are summarised in Section 7 of this report.
BURIED CONCRETE	The Design Sulphate Class and Aggressive Chemical Environment for Concrete Classification of the strata underlying the site are summarised in this report in accordance with BRE Special Digest 1. The highest DS Class was DS-4, the highest ACEC Class was AC-3s, and were assessed for the London Clay.
OTHER CONSIDERATIONS	The basis for this report is that the client has full reliance on the data presented to WSP.

1 INTRODUCTION

1.1 AUTHORISATION

WSP (the Designer) has prepared a Ground Investigation Report (GIR) on behalf of LBS Properties (the Client), following a site investigation at the proposed Brill Place Tower development site. The plot is located within the Central Somers Town Community Facilities Project in Camden, London NW1.

The ground investigation fieldworks were undertaken by Ground Engineering Ltd. from 08/04/2019 to 11/04/2019. The fieldworks comprised eight window sample boreholes, and twenty-nine dynamic probe tests, with subsequent laboratory chemical testing, and gas and groundwater monitoring being undertaken on return visits to site.

1.2 DEVELOPMENT PROPOSALS

The Brill Place Tower development site is located within the Central Somers Town Community Facilities Project, which aims to provide a new primary school, community facilities, affordable homes, and a public park, as well as a small number of private homes.

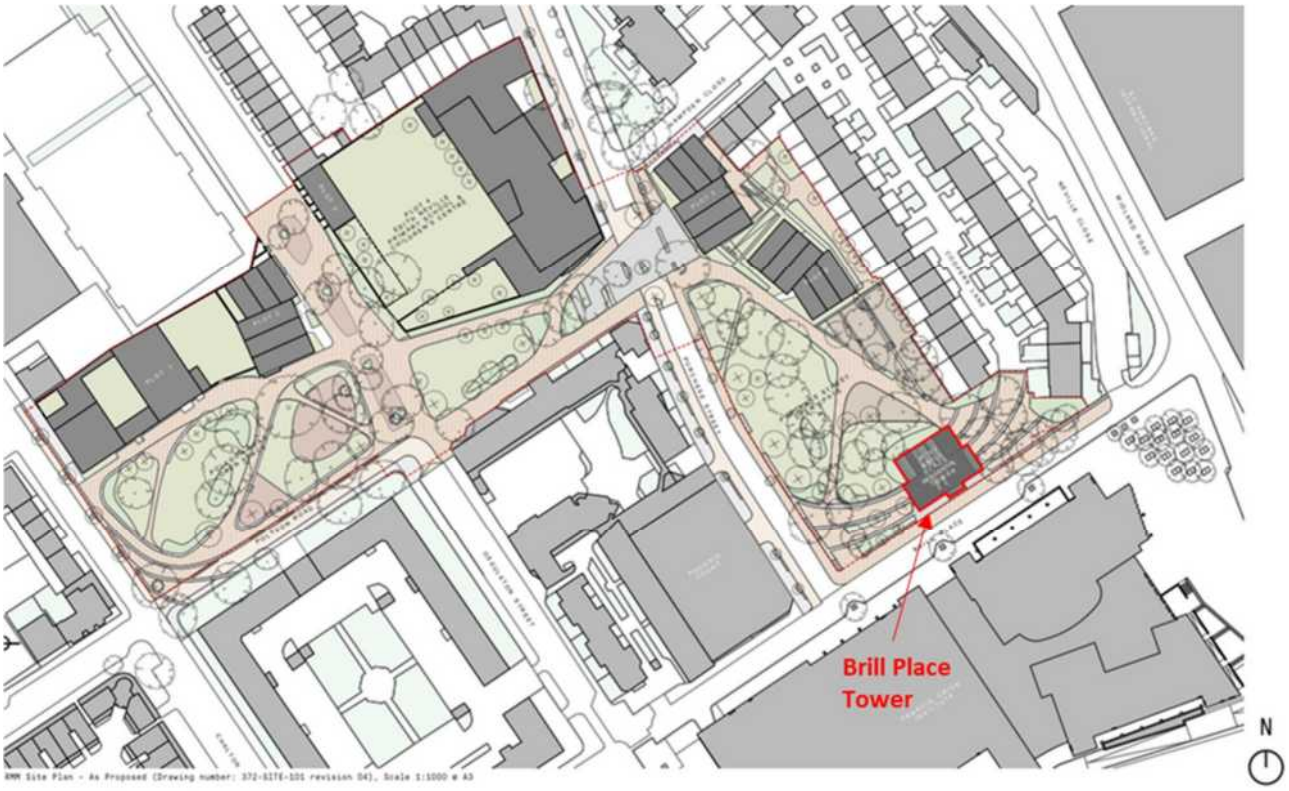


Figure 1-1 - Central Somers Town: Community Facilities Project Masterplan

The proposed 22-storey Brill Place Tower scheme comprises a contemporary park side building of 54 private residential apartments, with flexible floor space and a café at ground level. A single-storey basement is also proposed.

1.3 OBJECTIVES AND SCOPE OF WORKS

The larger redevelopment scheme for Central Somers Town was the subject of factual and interpretive site investigation reports by ESG in 2016, which will also be consulted throughout this report. Further ground investigation works were instructed to determine the nature and chemical characteristics of the soils beneath the site, and to identify any potential constraints with respect to the geotechnical design.

The scope of works comprised:

- Targeted intrusive ground investigation;
- Laboratory chemical analyses; and,
- Factual and interpretive reporting.

The current report presents a factual description of the fieldworks and laboratory test results, and derives characteristic geotechnical design parameters.

1.4 REFERENCES

The following references have been reviewed in the preparation of this report. These should be referred to for more detailed information.

FACTUAL REPORT

- ***Reference 1*** **–** Ground Engineering Ltd., 'Ground Investigation Report, Brill Place, London NW1', Report Reference No. C14727, dated June 2019.
- ***Reference 2*** **–** ESG, 'Central Somers Town, London, Factual and Interpretative Report on Ground Investigation, Volume 1: Factual Report', Report No. D5061-15/1, dated September 2016.
- ***Reference 3*** **–** ESG, 'Central Somers Town, London, Factual and Interpretative Report on Ground Investigation, Volume 2: Interpretative Report', Report No. D5061-15/2, dated September 2016.

PHASE I INFORMATION

- ***Reference 4*** **–** BuroHappold Engineering, 'Brill Place, Phase I Geotechnical and Geoenvironmental Desk Study', Revision 00, dated 18 September 2015.

LITERATURE

- ***Reference 5*** **–** Environment Agency, 'Management of the London Basin Chalk Aquifer, Status Report – 2018', dated August 2018.
- ***Reference 6*** **–** King, C., 1981. The stratigraphy of the London Clay and associated deposits. Backhuys.

1.5 LIMITATIONS

The general limitations to the nature of the investigation are outlined in Appendix F.

2 SITE SETTING

2.1 SITE LOCATION AND DESCRIPTION

The development site is in the southern end of Brill Place Park, immediately north-west of the Brill Place Roadway and opposite the Francis Crick Institute Building within the Somers Town district of the London Borough of Camden, London NW1. St. Pancras mainline railway station is situated approximately 80m east of the site. The site is approximately centred on National Grid Reference TQ 52980 83130.

The site is currently open parkland with trees. Part of the site to the north is being used as a playground and another area to the south as a basketball court. The site is approximately 0.1 hectares (ha) in area of which the majority is made up of impermeable ground.

At the southern end of the park, the ground level lies at about 19m.O.D to 20m.O.D. The park is gently undulating and slopes down locally towards the south-east.

Site location plans are provided in Appendix A of this report.

2.2 GEOLOGY

The British Geological Survey (BGS) Map No. 256 (North London, 1:50 000 Series) indicates the geology within the study area to comprise Made Ground, London Clay Formation, Lambeth Group, Thanet Sand Formation and Chalk (see: Appendix A.5).

A general stratigraphy of the geology of London is shown below in Table 2-1, and details of the expected geology are discussed hereafter.

Table 2-1 – General London Stratigraphy

PERIOD	SERIES		DEPOSITS	
Quaternary	Holocene		Made Ground	
			Alluvium	
	Pleistocene		Brickearth (Langley Silt)	
			River Terrace Gravels & Deposits	
Palaeogene	Eocene	Thames Group	London Clay Formation	Sub-divisions A to D*
	Palaeocene	Thames Group	Harwich Formation	Swanscombe Member Oldhaven Member Blackhearth Member
		Lambeth Group	Woolwich Formation	Upper Shelly Beds
			Reading Formation	Upper Mottled Beds – Sand Channel Upper Mottled Beds
			Woolwich Formation	Laminated Beds – Sand channel Laminated Beds Lower Shelly Beds

PERIOD	SERIES		DEPOSITS	
			Mid Lambeth Group Hiatus	
			Reading Formation	Lower Mottled Beds Lower Mottled Beds – Calcrete Lower Mottled Beds – Kings Cross Organic Unit Lower Mottled Beds – Mottled Upnor Formation
			Upnor Formation	Upnor Formation – Pebble 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

MADE GROUND

Made Ground is expected across the site area and is likely to exhibit a certain degree of heterogeneity. The nature of the material can be expected to vary substantially in both composition and thickness over short distances.

LONDON CLAY

The London Clay Formation is of relatively homogeneous lithology. Distinct vertical lithological changes are however present within the material that are persistent regionally in the London area. These were classified as separate “Divisions” A1, A2, A3, B, C, D, and E by King (1981), each representing a coarsening upwards sequence.

1) LONDON CLAY DIVISION B

Division B1 is typically a 1m thick sandy clay unit which is glauconitic, and marks the boundary between Divisions A and B. Division B2 comprises silty clays with weak silt and sand partings, and numerous claystones. The lowest of which is the most prominent and continuous. Up to 5 or 6 sedimentary cycles are weakly discernible within Division B2. The total thickness of unit B is 25m.

2) LONDON CLAY DIVISION A3

The base of the A3 unit is marked by an abrupt upward change to homogenous stiff clay. The lowest claystone layer in the London Clay is present around 1.5m to 2.5m above the base of Division A3. It is characteristically semi-continuous, approximately 300mm thick. A second semi-continuous layer is usually present about 1m higher, and a third less well-developed layer may occur at a slightly higher level.

Above that the A3 division typically consists of silty clay and very silty clay with thin partings of coarse silt and very fine sand (approximately 9m thick). These partings begin to appear several metres above the base of Division A3, and become thicker and more common upwards. This differs from Division A2 in that the clays are less silty, and the silt and sand partings are usually very thin, well-sorted and well-defined. Pyrite is present

throughout and occurs as minute aggregates and discrete nodules where it has been formed as an infilling to a burrow or a fossil.

3) LONDON CLAY DIVISION A2

The lowest unit of the London Clay formation typically comprises a thin basal unit of occasionally glauconitic sandy clay. The clay occasionally contains black flint pebbles, shell and wood fragments. In the central London area, this deposit rests directly on the Lambeth Group Strata.

Above the basal unit, the A2 division typically consists of interbeds of very silty clays and sandy silts. Typically, about three or four such alternations are present. This unit is more poorly sorted than the overlying London Clay units. The unit commonly contains pyritic and carbonised wood. Claystones are generally absent from this material.

LAMBETH GROUP BEDS

Much work has been done in recent years in examining the stratigraphy and engineering characteristics of the Lambeth Group.

The Lambeth Group (formerly the Woolwich and Reading Beds) comprises three distinct units: the Reading Formation, the Woolwich Formation and the Upnor Formation. The three formations are characterised into six lithological divisions.

These units are highly variable in their composition and engineering properties, both laterally and vertically, due to their different depositional environments and subsequent post-depositional changes. The Reading Formation was deposited in alluvial or supratidal environments whereas the Woolwich Formation and Upnor Formation were deposited in shallow marine or estuarine waters. The cyclic regression and transgression of sea level resulted in high variability within the deposits.

Additionally, the alluvial plain depositional environment was crossed by river channels resulting in the occurrence of sand filled channels within Lambeth Group deposits. These erosional features are ribbon shaped in plan and are laterally inconstant.

The Lambeth Group are generally encountered as between 15m and 40m thick within the London Basin.

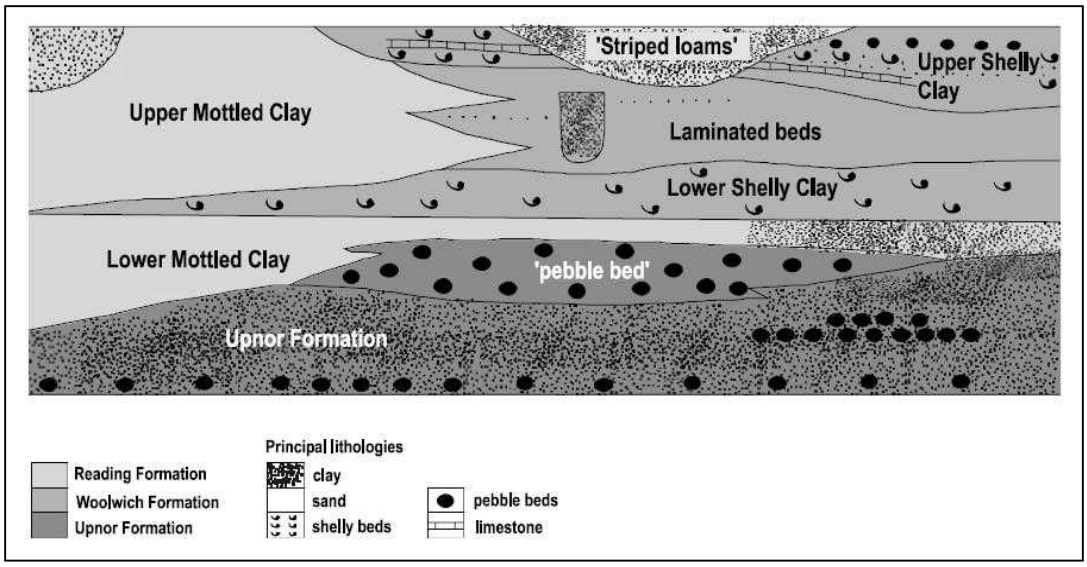


Figure 2-1 – General Lambeth Group succession in Central London (Source: CIRIA Report C583, 2004)

1) UPPER SHELLY BEDS

The Upper Shelly Beds are generally less than 3m thick and typically comprise stiff, grey thinly laminated clay, interbedded with brown grey silt and fine sand. Bivalve shells and shell fragments are present sporadically throughout this unit and weakly cemented shell beds up to 0.4m thick can be locally present.

2) UPPER MOTTLED BEDS

The Upper Mottled Beds generally comprise stiff to hard fissured multi-coloured clays with a varying silt and sand content. The colouration can vary greatly and includes red, orange, brown, green, blue, and purple which reflect the variable oxidation of the material.

This stratum locally includes Upper Mottled Bed Sands Channels containing pyritic quartz or clean fine to medium sands. The sands are predominantly poorly graded and are often discrete but can be found up to 11m thick within central London.

3) LAMINATED BEDS

The Laminated Beds are generally up to 4m thick and comprise very stiff, grey, light grey and blue grey laminated silty clay or clayey silt, with partings of silty sand. Occasional shell beds can be present and the stratum may contain lignite and or pyrite. This unit thins and contains higher concentrations of lignite to the west.

Localised laminated bed sand channels are present within this unit and are typically poorly graded and comprise pyritic quartz or clean, fine to medium sands. These are generally continuous and may be multiple within the stratum.

4) LOWER SHELLY BEDS

The Lower Shelly Beds can be up to 6m thick and generally comprise stiff to very stiff, dark grey to black, thinly to thickly laminated clay interlaminated with sandy clay and abundant shell fragments. The shells were predominantly re-deposited following tidal and/or storm activity and have been locally cemented to form thin limestone beds. This unit thickens from central London towards the south-east.

5) MID-LAMBETH GROUP HIATUS

The boundary between the Lower Mottled Beds and the Lower Shelly Beds is known as the Mid-Lambeth Group Hiatus as it represents a pause in deposition, and calcareous concretions, in the form of Calcrete or locally silcrete (predominantly in the north-west of the London Basin) or ferricretes (mainly in the south-west of the London Basin), and are often found at this interface. These calcareous deposits are typically weak to hard nodular to massive and often mottled in colour.

These deposits are thinner within central London and thicken towards the east. The Mid-Lambeth Group Hiatus is easily recognised within borehole records by a distinct change in lithology, from the grey sediments of the Lower Shelly Beds, to the reddish oxidised or multi-coloured sediments of the Lower Mottled Beds.

6) LOWER MOTTLED BEDS

The Lower Mottled Beds generally comprise firm to hard fissured multi-coloured mottled clays with varying silt and sand content. This stratum varies towards the base to include silty sands and a pebble bed. Sand channels are also known to occur locally within this stratum and are similar to those encountered within the Upper Mottled Beds and Laminated Beds.

7) UPNOR FORMATION

The Upnor Formation is typically less than 3m thick (although can be found up to 7m in central London) and comprises sand lithologies with variable clay and/or silt content. This stratum could vary from sandy clay to a fine to medium grained clean sand. Glauconite is present throughout this unit, although where exposed it weathers to iron oxides. Within the east and central parts of the London Basin, glauconite can make up, up to 25% of the sandy beds. This stratum may contain pebbles and shells.

Pebble beds are present at the interface between the overlying Lower Mottled Beds and Upnor Formation which can be up to 5m thick and are loosely to un-cemented fine to coarse gravel-sized black well-rounded flints with a light grey sand or grey clayey sand matrix.

THANET SANDS

The Thanet Sands generally comprise a very dense slightly silty fine or fine and medium sand. The silt and clay content of the deposit is expected to increase with depth.

UPPER CHALK

The Chalk extends for many meters below the London Basin. Typically, the material is encountered as a white chalk with flints, initially the chalk typically appears very weak to weak.

2.3 PHASE I INFORMATION

The following represents a summary of the pertinent findings of the Geotechnical Desk Study report prepared by BuroHappold Engineering in September 2015 (Reference 4).

SITE INFORMATION

The site is currently open parkland with trees. Part of the site to the north is being used as a playground and another area to the south as a basketball court.

In 1876, the Brill Place Park site was occupied by housing. By 1896, most of this housing was demolished, except in the southern area where the Brill Place Tower development site is located. By 1916 all housing was demolished and the site was occupied by a Coal Depot with rail links out of the adjacent St Pancras Station. The area was subject to bombing during World War II with substantial damage to the surrounding residential areas recorded. The Coal Depot was present for some 60 years as indicated by historical maps, until it was replaced by the temporary "Euston Air Terminal" in 1969 (for an air race). The Terminal was demolished by 1982 and replaced by the current playground area by 1988.

HISTORICAL LAND USE – OFF SITE

St. Pancras Railway Station, the Imperial Gas Works and residential use occupied the surrounding area prior to 1876. By 1896, a tramway, Goods Sheds (including railway links), Milk Sheds, and Coal Depots had been developed. The tramway was removed by 1948 and other industrial and commercial buildings were present with some gas holders demolished. By this time, some areas of clearance had been redeveloped for residential use. All railway links to the Coal Depots and Goods Sheds had been removed by 1976, and the Goods Sheds demolished by 1982. In 1984 Camley Street Natural Park was created in place of the former coal shoots.

HYDROLOGY AND HYDROGEOLOGY

The site is not located within a source protection zone.

There are two surface water abstractions, one located 370m north associated with Grand Union Canal/Regent's Canal at Camley Street Nature Park and another 550m north-east associated with Regent's Canal.

There are two groundwater abstractions located over 250m (but within 500m) of the site.

The Grand Union Canal is located more than 250m north-east of the site. The River Fleet is culverted and located 80m west of the site, but was once located adjacent to St Pancras Road, 80m north-east of the site. The Grand Union Canal, between 2005 – 2009 has been classified as 'Bad' biological quality.

The site is underlain by the London Clay formation, which is designated as unproductive strata. The Chalk is a Principal Aquifer, defined as layers of rock or drift deposits that have high intergranular and/or fracture permeability capable of supporting water supply and/or river base flow on a strategic scale. The overlying Thanet Sand Formation is designated as a Secondary 'A' Aquifer, and is potentially in hydraulic continuity with the Chalk.

UNEXPLODED ORDNANCE

A Preliminary UXO Risk Assessment was carried out by BuroHappold Engineering in accordance with CIRIA C681. The assessment found risk associated with UXO to be moderate, and a detailed assessment was recommended to be undertaken prior to extensive earth works.

During the ground investigation fieldworks, an EOD specialist was employed to provide drilling personnel with an on-site pre-start briefing. Periodic magnetometry testing within the starter pits and boreholes were also undertaken as stated in the factual report (Reference 1).

3 FIELD AND LABORATORY STUDIES

3.1 WSP SITE INVESTIGATION

3.1.1 DESCRIPTION OF FIELDWORKS

The ground investigation fieldworks were undertaken by Ground Engineering Ltd. from 08/04/2019 to 11/04/2019. The fieldworks comprised eight window sample boreholes, and twenty-nine dynamic probe tests, with subsequent laboratory chemical testing, and gas and groundwater monitoring being undertaken on return visits to site.

Table 3-1 summarises the maximum depth, ground elevation, and installation details of the exploratory holes. Exploratory hole drawings are provided in Appendix B of this report.

Table 3-1 – Summary of fieldworks

Type of Hole	WS No.	Max Bore Depth (m)	Ground Elevation (m.O.D)	Installation Details			
				Instrument Type	Top Depth (m)	Base Depth (m)	Response Zone
Dynamic Sampling Borehole	WS101	1.40	+19.12	SPG/GW	0.40	1.40	MG
	WS101A	1.10	+19.12	No installation			
	WS102	1.10	+18.93	No installation			
	WS102A	1.00	+19.03	SPG/GW	0.50	1.00	MG
	WS103	6.00	+18.99	SPG/GW	1.00	2.50	MG
	WS104	2.00	+18.85	No installation			
	WS104A	1.10	+18.75	No installation			
	WS104B	1.20	+18.90	SPG/GW	0.70	1.10	MG

Notes:
SPG/GW – Gas and Groundwater Standpipe
MG – Made Ground

3.1.2 IN SITU TESTING

DYNAMIC PROBING

Twenty-Nine Dynamic DPH Probes (DP101-DP127) were undertaken to confirm the presence or absence of below ground obstructions along the basement wall line of the proposed Brill Place Tower. Asphalt hardstanding was cored where present, and starter pits then hang-dug to 1.00m to 1.20m below ground level to ensure the absence of buried services.

Thirteen of the twenty-nine dynamic probe tests were successfully completed to a depth of 5.00m below ground level, whilst the remaining sixteen refused on obstructions at depths between 1.30m and 4.10m below ground level and were abandoned.

A plan showing the depth of obstructions encountered by the dynamic probe tests across the site can be found in Appendix B.9. Plots of the dynamic probe tests against elevation are provided in the factual report (see: Appendix D).

3.1.3 LABORATORY TESTING

No geotechnical laboratory testing was required within the current scope of works. Chemical testing was undertaken including pH and Water-Soluble Sulphate content of soils. The laboratory results are graphically presented in Appendix C.

3.2 HISTORICAL SITE INVESTIGATION

CENTRAL SOMERS TOWN, LONDON, ESG (2016)

The larger redevelopment scheme for Central Somers Town was the subject of factual and interpretive site investigation reports by ESG in 2016. The fieldworks comprised: eleven cable percussion boreholes to a maximum depth of 30.36m below ground level; forty-six windowless sampler boreholes; and four trial pits.

The factual and interpretive site investigation reports by ESG are provided in Appendix E.

Appendix B.3 shows the exploratory hole location plan with the Brill Place Tower development site location indicated with respect to the larger scheme area. Historical exploratory holes BH9, BH10, WS28 and WS29 lie within the structural footprint of the Brill Place Tower development. Additional deep boreholes (BH7 and BH8) located in Brill Place Park within circa 50m from the development site have also been consulted throughout this report.

Table 3-2 summarises the maximum depth, ground elevation, and installation details of the selected exploratory holes.

Table 3-2 – Summary of selected 2016 fieldworks

Type of Hole	BH / WS	Max Bore Depth (m)	Ground Elevation (m.O.D)	Installation Details			
				Instrument Type	Top Depth (m)	Base Depth (m)	Response Zone
Cable Percussion Borehole	BH7	30.36	17.80	SPG/GW	20.00	30.36	LG C
	BH8	24.00	18.51	No installation			
	BH9	25.00	18.77	SPG/GW	4.50	7.50	LC
	BH10	30.30	18.57	SPG/GW	21.00	30.00	LG C
Windowless Sampler Borehole	WS28	1.60	19.34	No installation			
	WS29	0.75	18.37	No installation			

Notes:
SPG/GW – Gas and Groundwater Standpipe
LC – London Clay
LG C – Lambeth Group Clay

Soil samples were retrieved from the horizons encountered for geotechnical laboratory testing, and in-situ testing included the Standard Penetration Test (SPT).

Ground gas and groundwater monitoring was also undertaken. Monitoring results indicate relatively shallow groundwater levels of between 2.72m and 9.97m below ground level within the London Clay.

Where appropriate, the results of this investigation are presented in parallel with the results of the current investigation in Appendices B and C.

4 GROUND SUMMARY

A description of the expected strata at the site was presented in Section 2.2. The sequence of deposits which has been confirmed by the current WSP and historical ground investigations is summarised in Table 4-1 below. The log descriptions show Made Ground overlying the London Clay Formation and the Lambeth Group.

The historical exploratory holes considered in this ground model include BH9, BH10, WS28 and WS29 which lie within the structural footprint of the proposed Brill Place Tower (and basement).

Table 4-2 presents the proposed geological profile suggested for design purposes.

Table 4-1 – Summary of the geological profile for the site (2019 and 2016 site investigations)

Stratum	Elevation of Upper Surface (m.O.D)	Average Upper Elevation (m.O.D)	Typical Range of Thickness (m)	Average Thickness (m)
Hardstanding(1)	+19.12	+19.12	0.06-0.07	0.07
Made Ground	+18.37 to +19.34	+18.88	1.60-2.70	2.26
London Clay	+16.07 to +17.25	+16.53	16.90-17.55(2)	17.23
Lambeth Group	-1.23 to -0.83	-1.03	>10.50(3)	>10.50(3)

Notes:

(1) Hardstanding was only encountered in the current Window Samples WS101 and WS101A undertaken in the basketball court. The remaining exploratory holes were undertaken on grassland.

(2) According to historical boreholes BH9 and BH10 which penetrated through the base of the London Clay stratum.

(3) The maximum thickness of the Lambeth Group was encountered by Borehole BH10 as 10.50m. None of the current or historical exploratory holes on the development site penetrated through the base of this stratum.

Table 4-2 – Proposed geological profile for design

Stratum	Elevation of Upper Surface (m.O.D)	Typical Thickness (m)
Made Ground	+18.9	2.4
London Clay	+16.5	17.5
Lambeth Group	-1.0	Not Proven

CHISELLING / SLOW DRILLING

Chiselling was noted for historical Borehole BH9 within the Made Ground and the London Clay as Table 4-3 describes. The SPT hammer reference is not provided in the logs, therefore the SPT hammer efficiency is unknown.

Table 4-3 – Slow drilling details (2016)

Hole	Depth (m) / Elevation (m.O.D)	Log Description	Stratum	Duration (mins)	Equipment
BH9 (2016)	1.00-1.20 / +17.77-+17.57	Brick concrete and flagstones	Made Ground	90	Dando 2000
	1.20-2.10 / +17.57-+16.67			420	
	7.10-7.40 / +11.67-+11.37	Very weak to weak dark grey claystone	London Clay	45	

5 GROUNDWATER

5.1 GROUNDWATER STRIKES

During the current site investigation, no water strikes were recorded in Window Samples WS101-WS104B.

During the historical site investigation (2016) no water strikes were recorded in Borehole BH10 on site. Two water strikes were recorded in Borehole BH9 for which details are provided in Table 5-1.

Historical Borehole BH7 lies circa 50m from the development site. Two water strikes were recorded for this borehole in the Lambeth Group stratum, the details of which are also provided in Table 5-1 below.

Table 5-1 – Summary of groundwater strikes encountered during drilling (2016)

Borehole	Ground Elevation (m.O.D)	Strike at (m.O.D)	Rise to (m.O.D)	Time to rise (mins)	Depth Sealed (m)	Stratum
BH7	+17.80	-4.95	-4.10	20	24.00	Lambeth Group (Sand)
		-7.50	-4.00	20	26.00	Lambeth Group (Clay)
BH9	+18.77	+16.67	+16.87	20	2.70	Made Ground (Gravel)
		+11.67	Seepage			London Clay

5.2 GROUNDWATER MONITORING AND DESIGN PROFILE

Standpipes were installed in the current window sample holes as indicated in Table 3-1. Gas and groundwater monitoring and sampling was carried out by Ground Engineering following completion of the exploratory holes on 6 monitoring visits between 18/04/2019 and 07/05/2019. Six additional visits will be undertaken over a period of 12 months throughout 2019-2020.

The groundwater monitoring data to date as provided in the factual report is included in Appendix D.

All standpipes have been installed with response zones within the Made Ground. All standpipes have been recorded as dry throughout all monitoring visits.

Monitoring data across the wider site area from the 2016 site investigation has been consulted in this report. Standpipes were installed in the boreholes as indicated in Table 5-2. Gas and groundwater monitoring was undertaken by ESG following completion of the exploratory holes on 6 monitoring visits between 15/01/2016 and 20/06/2016. The interpretative report by ESG indicates that monitoring would have continued for six months, however this data has not been obtained. The groundwater monitoring data as provided in the factual report is included in Appendix E.

A summary of the groundwater monitoring is presented in Table 5-3, and in Appendices B.11 to B.13 inclusive.

Table 5-2 – Summary of the 2016 groundwater monitoring installations

Type of Hole	BH	Max Bore Depth (m)	Ground Elevation (m.O.D)	Installation Details			
				Instrument Type	Top Depth (m)	Base Depth (m)	Response Zone
Cable Percussion Borehole	BH1(1)	24.20	+21.25	SPG/GW	21.20	24.20	LG C
	BH1(2)	24.20	+21.25	SPG/GW	6.50	15.50	LC
	BH4	20.45	+20.15	SPG/GW	7.00	16.00	LC
	BH7	30.36	+17.80	SPG/GW	20.00	30.36	LG C
	BH9	25.00	+18.77	SPG/GW	4.50	7.50	LC
	BH10	30.30	+18.57	SPG/GW	21.00	30.00	LG C

It should be noted that Boreholes BH1 and BH4 are located approximately 250m and 190m from the development site respectively.

The standpipe data suggested the following:

- Hydrostatic pore water pressure was recorded in the upper part of the London Clay in Borehole BH9.
- Monitoring results from Borehole BH4 shows that the lower part of the London Clay appears to be under-drained.
- Monitoring results from Boreholes BH7 and BH10 indicate relatively low groundwater pressures in the Lambeth Group when compared to the London Clay Formation.
- Monitoring results from the two standpipes in Borehole BH1 show hydrostatic pressures in both the London Clay and Lambeth Group strata. However, it was stated in the interpretative report by ESG that this may be due to a relatively poor seal between the two installations.

Table 5-3 – Summary of the 2016 groundwater monitoring data - Standpipes

Hole ID	Elevation (m.O.D)	Installation Depth (m)	Response Zone	Water Level				
				Shallowest (m bgl)	Deepest (m bgl)	Shallowest (m.O.D)	Deepest (m.O.D)	Last Reading (m.O.D)
BH1(1)	+21.25	24.20	LG C	3.94	4.76	+17.31	+16.49	+16.51
BH1(2)	+21.25	15.50	LC	3.82	4.74	+17.43	+16.51	+16.51
BH4	+20.15	16.00	LC	9.93	9.97	+10.22	+10.18	+10.22
BH7	+17.80	30.36	LG C	19.54	19.65	-1.74	-1.85	-1.74
BH9	+18.77	7.50	LC	2.67	2.76	+16.10	+16.01	+16.1
BH10	+18.57	30.00	LG C	15.28	15.32	+3.29	+3.25	+3.29[(1)]

Notes:

[(1)] Last reading recorded for Borehole BH10 on 12/04/2016.

Based on the measured pressures within the upper part of the London Clay Formation, a hydrostatic pore water pressure profile has been assumed for design purposes, from the top of the London Clay stratum (+16.5m.O.D).

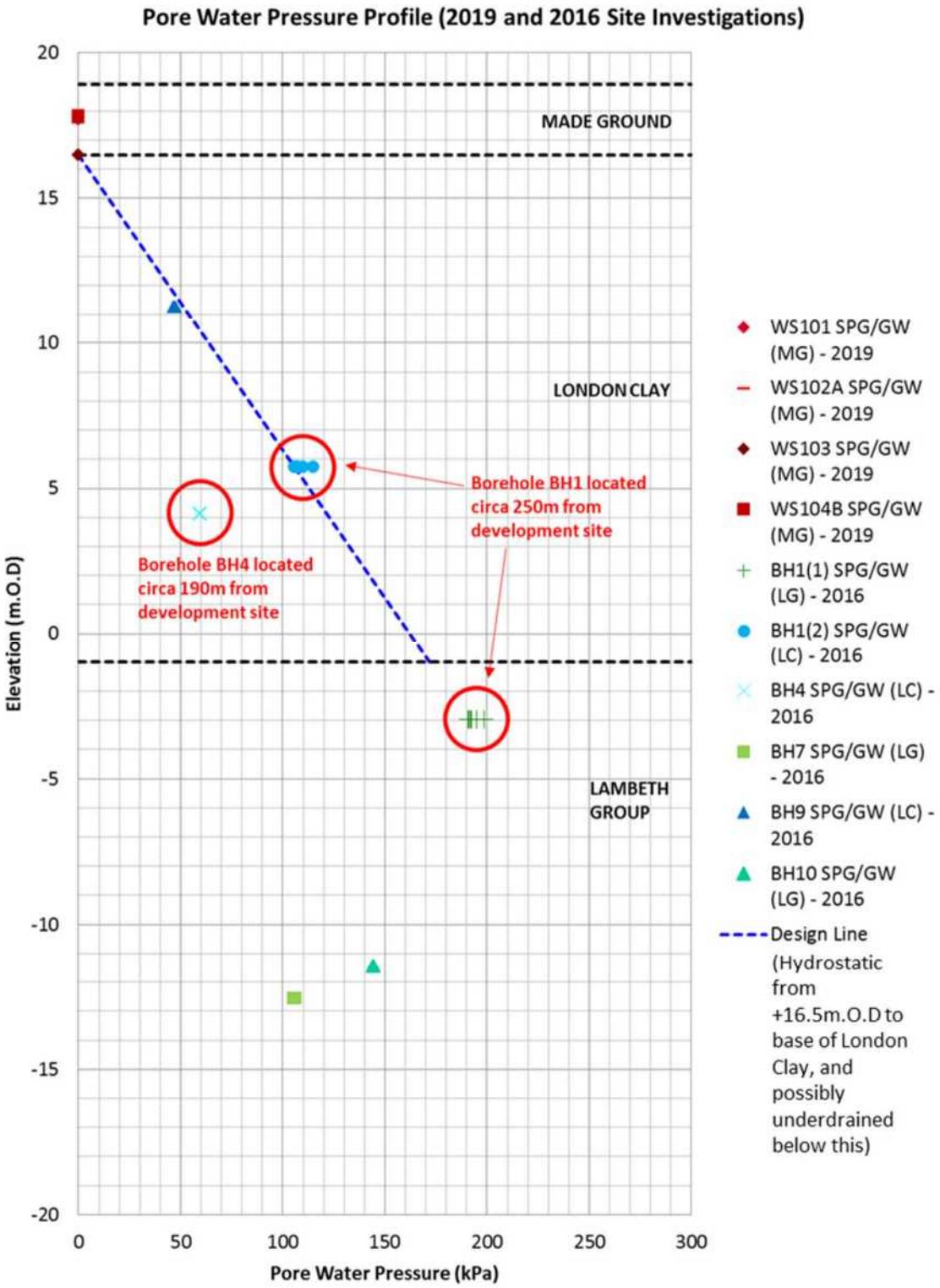


Figure 5-1 - Design pore water pressure profile

6 GROUND CONDITIONS AND MATERIAL PROPERTIES

The following sections discuss the ground conditions determined from the current and historical ground investigations and laboratory testing described in Section 3. Where necessary, determination of characteristic parameters has been based on a cautious estimate of results derived from the laboratory testing, published correlations, and field tests complemented with engineering judgement and consideration of the relevant limit state.

6.1 HARDSTANDING

Hardstanding was encountered in Window Samples WS101 and WS101A undertaken within the basketball court in the form of asphalt. The asphalt was encountered at ground level, where WS101 and WS101A both registered at +19.12m.O.D. The thickness of the asphalt was recorded as 60mm and 70mm in each respective exploratory hole.

6.2 MADE GROUND

Made Ground was encountered in every exploratory hole within the development site. Made Ground was present at ground level, except where hardstanding was present in Window Samples WS101 and WS101A. The top elevation of the Made Ground varies between +18.37m.O.D to +19.34m.O.D. The recorded thickness of the stratum ranges between 1.60m and 2.70m.

The Made Ground in the development site generally comprised three main strata frequently interbedded. Sand and gravel was typically encountered beneath the hardstanding if present. The three strata were described as follows:

- Brown clayey sandy GRAVEL with high cobble content. Gravel is subangular to angular fine to coarse brick and concrete.
- Soft brown, slightly sandy slightly gravelly silty CLAY with gravel of brick, flint, and concrete.
- Brown silty SAND and GRAVEL with occasional cobbles of concrete and brick.

Brick concrete and flagstones were noted at ground level (18.77m.O.D) according to the driller's description in historical Borehole BH9, to a depth of 1.90m below ground level (+16.87m.O.D). Below this, 0.10m of wood was encountered according to the driller's description.

Window Sample WS101A was abandoned at a depth of 1.10m below ground level (+18.02m.O.D) due to encountering a concrete obstruction. Window Sample WS104 was abandoned at a depth of 2.00m below ground level (+17.55m.O.D) due to the suspected presence of a buried service. Window Sample WS104A was abandoned at a depth of 1.10m below ground level (+17.65m.O.D) due to encountering an obstruction. Historical Window Sample WS28 was terminated in SPT due to refusal at a depth of 1.60m below ground level (+17.74m.O.D). Historical Window Sample WS29 was terminated at a depth of 0.75m below ground level (+17.62m.O.D) due to encountering a concrete obstruction.

DYNAMIC PROBE TESTS

Table 6-1 below summarises the findings of the dynamic probe tests and associated trial pits with regard to below ground obstructions.

The below results are shown in plan in Appendix B.8.

Table 6-1 – Summary of obstructions encountered during dynamic probe tests

Dynamic Probe	Elevation (m.O.D)	Depth of Obstruction (m)	Elevation of Obstruction (m.O.D)	Notes
DP102	+18.89	2.10	+16.79	Void uncovered at 0.90m depth, found to 2.10m depth where concrete obstruction / possible floor present. Hole abandoned and capped at 0.90m depth.
DP103	+18.92	1.30	+17.62	Probe test abandoned on obstruction at 1.30m depth.
DP104	+18.92	0.50	+18.62	Hole abandoned at 0.50m depth in concrete.
DP107	+18.86	0.40	+18.46	Hole abandoned at 0.40m depth on concrete obstruction.
DP108	+18.86	0.90	+17.96	Hole abandoned at 0.90m depth on concrete obstruction.
DP108A	+18.86	0.90	+17.96	Hole abandoned at 0.90m depth on concrete obstruction.
DP113	+19.14	1.60	+17.54	Hole extended by dynamic probe to refusal at 1.60m depth.
DP116	+19.16	0.60	+18.56	Pit abandoned at 0.75m depth due to concrete obstruction met at 0.60m depth.
DP117	+19.24	1.80	+17.44	Hole extended by dynamic probe to refusal at 1.80m depth.
DP118	+19.78	1.80	+17.98	Hole extended by dynamic probe to refusal at 1.80m depth.
DP119	+20.05	2.10	+17.95	Hole extended by dynamic probe to refusal at 2.10m depth.
DP120	+20.13	4.10	+16.03	Hole extended by dynamic probe to refusal at 4.10m depth.
DP121	+20.09	2.40	+17.69	Hole extended by dynamic probe to refusal at 2.40m depth.
DP122	+19.66	0.90	+18.76	Pit abandoned at 0.90m depth due to concrete slab.
		2.00	+17.66	Slab penetrated and hole extended by dynamic probe to refusal at 2.00m depth.
DP123	+19.10	1.70	+17.40	Hole extended by dynamic probe to refusal at 1.70m depth.

Dynamic Probe	Elevation (m.O.D)	Depth of Obstruction (m)	Elevation of Obstruction (m.O.D)	Notes
DP127	+19.54	2.00	+17.54	Hole extended by dynamic probe to refusal at 2.00m depth.

UNIT WEIGHT

A typical bulk unit weight of 18kN/m^3 is suggested for design purposes.

STRENGTH AND STIFFNESS

Two SPT tests were performed within the Made Ground in historical boreholes BH9 and BH10. The SPT N values obtained were 43 (concrete) and 18 (clay). No quick undrained triaxial tests were undertaken on samples of the Made Ground from historical boreholes BH7-BH10.

An angle of shearing resistance of 25° is recommended for the gravelly clay Made Ground. A drained Young's modulus of 10 MPa is suggested for design. The Made Ground should not be considered as being a suitable founding stratum.

CHEMICAL ANALYSIS AND ACEC CLASSIFICATION

Results of water soluble sulphate were obtained from 16 samples of the Made Ground from the current 2019 site investigation, and 2 soil samples of the Made Ground from historical boreholes BH9 and BH10. pH values were obtained from 17 soil samples of the Made Ground from the current 2019 site investigation, and 5 soil samples of the Made Ground from historical exploratory holes WS28, WS29, BH7, BH9, and BH10.

17 soil samples from the Made Ground were tested for organic matter from the current 2019 site investigation. The results are summarised below. 3 soil samples from the Made ground were tested for organic carbon historical exploratory holes WS28, WS29, and BH7. The results obtained were 1.19%, 0.57%, and 3.77% respectively.

Based on the results of the soil samples, the Design Sulphate Class for the Made Ground is DS-2, and the ACEC Class is AC-1s.

Table 6-2 – Summary of the chemical testing results for Made Ground (2019 and 2016)

Type	Parameter	Observed Range	Number of Tests	Characteristic Value
Soil	Water Soluble Sulphate (mg/l)	23-780	18	500
	pH	7.9-9.9	22	8.0
	Organic matter (%)	<0.4-8.1	17	2.7

Asbestos was found in one sample taken from the Made Ground in current Window Sample WS104 (1.2m depth). The Asbestos was found in the form of amosite (fibres/clumps) in the exploratory hole, with the total

asbestos recorded as <0.001%. Asbestos was also found in one sample taken from the Made Ground in historical Window Sample WS29 on site (0.3m depth). The asbestos was found in the form of chrysotile (free fibres) and amphiboles (in fines), with the total asbestos recorded as 0.005%.

6.3 LONDON CLAY

The London Clay Formation was encountered in current window samples WS103, WS104, and historical boreholes BH9 and BH10 underlying the Made Ground. The surface of this stratum was recorded at elevations ranging between +16.07m.O.D to +17.25m.O.D, with thicknesses of 16.90m and 17.55m confirmed by boreholes BH9 and BH10 respectively. The London Clay is described as weathered in the current window samples WS103 and WS104, where the thicknesses encountered were 3.50m and 0.40m respectively.

The Harwich Formation was not encountered by the exploratory holes. The London Clay Formation was described as below for the current and historical site investigations:

- ***London Clay Unit A3 approx. +16.5m.O.D to +10.0m.O.D:*** Firm to stiff brown mottled grey CLAY over stiff brown mottled orange CLAY with fine sand partings and rare fine gravel sized gypsum crystals (according to historical Borehole BH10). Occasional brown silt partings and selenite crystals were noted in current Window Sample WS103.
- ***London Clay Unit A2 approx. +10.0m.O.D to -1.0m.O.D:*** Stiff to very stiff brownish grey CLAY with rare grey silt infilled burrows. Historical Borehole BH10 notes that these rare grey silt infilled burrows are <1mm x 4mm in size, and also notes rare fine gravel sized pockets of black silt.

A claystone layer at 7.1m in Borehole BH9 is located a little above the interface between the London Clay A2 and A3 units.

MOISTURE CONTENT AND ATTERBERG LIMIT TESTS

Ten moisture content and Atterberg Limit tests were undertaken on samples of the London Clay from historical boreholes BH7, BH9, and BH10. The moisture content was found to vary between 21% and 32% in unit A3 with a decreasing trend with depth. A typical constant trend with depth was recorded in unit A2, ranging between 20% and 25%.

The results identified a liquid limit between 64% and 78% in unit A3, with a decreasing trend with depth. A constant trend was recorded in unit A2 ranging between 55% and 73%, A plastic limit between 25% and 34% was identified in unit A3 with a decreasing trend with depth. A constant trend was recorded in unit A2 ranging between 21% and 31%. A plasticity index between 39% and 48% was identified in unit A3 with a decreasing trend with depth. A constant trend was recorded in unit A2 ranging between 34% and 42%. The unit A3 tends to be slightly more plastic than the unit A2 due to the presence of greater silt and sand content in the basal unit.

The plots of the moisture content and Atterberg Limits versus elevation are presented in Appendix C.2. The plasticity chart is also plotted in Appendix C.3. This shows that the London Clay Formation comprises clay with high (CH) to very high (CV) plasticity.

UNIT WEIGHT

The unit weight of the London Clay was determined on twenty samples from historical boreholes BH7, BH8, BH9, and BH10. The bulk unit weight ranged between 18.6kN/m^3 and 19.4kN/m^3 in unit A3. An increasing trend with depth is recorded in unit A2 to a maximum of 20.6kN/m^3. The dry unit weight ranged between 14.1kN/m^3 and 15.4kN/m^3 in unit A3. An increasing trend with depth is recorded in unit A2 to a maximum of 17.2kN/m^3. The characteristic values for the bulk unit weight and dry unit weight were found to be 20kN/m^3 and 16kN/m^3. A plot of the unit weight versus elevation is provided in Appendix C.1 A bulk unit weight of 20kN/m^3 is suggested for design.

STRENGTH AND STIFFNESS

Twenty-Five SPT tests were undertaken within the London Clay across historical boreholes BH7, BH8, BH9, and BH10. SPT N-values ranged between 9 and 36, showing a general increasing trend with depth. The SPT-N values are presented against elevation in Appendix B10.

Twenty undrained triaxial tests were performed on samples of the London Clay taken across historical boreholes BH7, BH8, BH9, and BH10. The results identified the undrained shear strength varying between 80kPa and 356kPa, generally increasing with depth.

A correlation between the SPT N-value and the undrained shear strength of c_u=6.5N was used to provide a good correlation with the triaxial test results. The SPT N values show a reasonably consistent value of undrained shear strength through the London Clay unit A3. Within the London Clay unit A2, values increase from 100kPa at 10m.O.D to 300kPa AT -1m.O.D. A design line for the undrained shear strength of the London Clay is given as:

$$\textbf{Unit A3}: \; c_u = 100kPa\ from + 16.5m.O.D\ to + 10.0m.O.D$$

$$\textbf{Unit A2}: \; c_u = 100kPa\ at + 10.0m.O.D, increasing\ to\ 300kPa\ AT - 1.0m.O.D$$

An angle of drained shearing resistance of 23° and a drained effective cohesion of 5kPa is suggested for design. A drained Young's Modulus of E'=640c_u and undrained Young's Modulus of Eu=800c_u are proposed for embedded wall design. Values of E'=320c_u and Eu=400c_u may be adopted for routine foundation design, associated with average strength.

CHEMICAL ANALYSIS AND ACEC CLASSIFICATION

pH values and results of water soluble sulphate were obtained from 3 samples of the London Clay from the current 2019 site investigation, and 9 samples of the London Clay from historical boreholes BH7, BH9, and BH10. Values of total potential sulphate were calculated using data from 9 samples of the London Clay from historical boreholes BH7, BH9, and BH10.

3 soil samples from the London Clay were tested for organic matter from the current 2019 site investigation. The results are summarised below.

The Design Sulphate Class for the London Clay is DS-4, and the ACEC Class is AC-3s based on the Total Potential Sulphate values calculated, which is appropriate for foundations where the ground will be disturbed during construction (i.e. spread foundations). A reduced DS-3, AC-2s class is appropriate where the ground is not disturbed during the construction of the foundations (i.e. precast or cast-in-situ piles).

Table 6-3 – Summary of the chemical testing results for London Clay (2019 and 2016)

Type	Parameter	Observed Range	Number of Tests	Characteristic Value
Soil	Water Soluble Sulphate (mg/l)	80-2780	12	2600
	pH	7.6-8.7	12	7.7
	Total Potential Sulphate (%)	0.5-2.7	9	2.4
	Organic matter (%)	0.4-0.6	3	N/A

No asbestos was detected in the 3 soil samples of the London Clay from the current 2019 site investigation.

6.4 LAMBETH GROUP

The Lower Mottled Beds of the Lambeth Group stratum were encountered in the deep historical boreholes BH9 and BH10 within the development site. The following descriptions are given in the borehole logs:

- ***Lower Mottled Beds – Calcrete Hiatus:*** In Borehole BH9, very stiff brownish red mottled bluish grey CLAY is encountered between -0.83m.O.D and -5.73m.O.D. Below this, 0.50m of very stiff brown mottled bluish grey gravelly CLAY is encountered before the end of the borehole. Gravel is subangular to angular fine to coarse of Calcrete. In Borehole BH10, very stiff becoming hard brownish red mottled bluish grey CLAY is encountered from -1.23m.O.D to the base of the borehole at -11.73m.O.D.

UNIT WEIGHT

The unit weight of the Lambeth Group Clay was determined on six samples from historical boreholes BH7, BH8, BH9, and BH10. The bulk unit weight ranged between 18.9kN/m3 and 21.1kN/m3, and the dry unit weight ranged between 14.4 kN/m3 and 18.4kN/m3. A plot of the unit weight versus elevation is provided in Appendix C.1 A bulk unit weight of 20kN/m3 is suggested for design.

PARTICLE SIZE DISTRIBUTION ANALYSIS

Two samples within the Lambeth Group were tested using Particle Size Distribution Analysis from historical borehole BH7. The results are summarised in Table 6-4 and in Appendices C-6 to C-8 inclusive.

Table 6-4 – Summary of 2016 particle size distribution results (Lambeth Group)

Exploratory Hole	Elevation (m.O.D)	Strata	Cobbles (%)	Gravel (%)	Sand (%)	Silt (%)	Clay (%)
BH7	-4.95	Clay	0	1	72	11	16
	-7.50		0	0	30	16	54

MOISTURE CONTENT AND ATTERBERG LIMIT TESTS

Six moisture content and Atterberg Limit tests were undertaken on samples of the Lambeth Group Clay from historical boreholes BH7, BH9, and BH10. The moisture content was found to vary between 12% and 26%.

The results identified a liquid limit between 44% and 89%, a plastic limit between 17% and 35%, and a plasticity index between 24% and 54%. The samples identify as intermediate (CI) to very high plasticity clays (CV) when placed on the plasticity chart (see: Appendix C.3).

STRENGTH AND STIFFNESS

Fourteen SPT tests were undertaken within the Lambeth Group across historical boreholes BH7, BH8, BH9, and BH10. SPT-N values ranged between 28 and 55, with five values extrapolated within a range of 51 to 71. A consistent trend with depth is interpreted from the base of the London Clay. The SPT-N values are presented against elevation in Appendix B10.

Six undrained triaxial tests were performed on samples of the Lambeth Group Clay taken across historical boreholes BH7, BH8, BH9, and BH10. The results identified the undrained shear strength varying between 113kPa and 720kPa.

A correlation between the SPT N-value and the undrained shear strength of c_u=6.5N was used 9see: Appendix C.5). A design line for the undrained shear strength of the Lambeth Group is given as:

$$c_u = 300kPa\ from - 1.0m.O.D$$

An angle of drained shearing resistance of 27° and a drained effective cohesion of 5kPa is suggested for design. A drained Young's Modulus of E'=640c_u and undrained Young's Modulus of Eu=800c_u are proposed for embedded wall design. Values of E'=320c_u and Eu=400c_u may be adopted for routine foundation design, associated with average strength.

CHEMICAL ANALYSIS AND ACEC CLASSIFICATION

pH values and results of water soluble sulphate were obtained from 6 samples of the Lambeth Group from historical boreholes BH7, BH9, and BH10.

Values of total potential sulphate were calculated for the soil samples and 2 of the 6 samples yielded amounts of oxidisable sulphides greater than 0.3%. The soluble sulphate content of the soil samples was found to be low, and the Lambeth Group will not likely be disturbed by the construction works due to the depth of the strata and due to the likelihood of the construction methodology involving cast-in-situ piles. Therefore, according to BRE Special Digest 1:2005 (Concrete in aggressive ground) it is not necessary to consider a higher Design Sulphate Class corresponding to the level of total potential sulphate.

Based on the results of the soil samples, the Design Sulphate Class for the Lambeth Group is DS-1, and the ACEC Class is AC-1s.

Table 6-5 – Summary of the chemical testing results for the Lambeth Group (2016)

Type	Parameter	Observed Range	Number of Tests	Characteristic Value
Soil	Water Soluble Sulphate (mg/l)	66-317	6	300
	pH	8.8-9.6	6	8.9
	Total Potential Sulphate (%)	0.1-0.6	6	0.6

7 SUMMARY OF THE GROUND PROFILE AND PARAMETERS

Table 7-1 summarises the aforementioned elevations and geotechnical parameters for each stratum.

Table 7-1 – Geotechnical design profile

Strata	Top Elev. (m.O.D)	γ_{BULK} (kN/m^2)	c' (kPa)	f ' (°)	c_u (kPa)	E' (kPa)	E_u (kPa)	DS Class	ACEC Class
Made Ground[1]	+18.9	18	-	25	-	10,000	-	DS-2	AC-1s
London Clay	+16.5	20	5	23	See note (2)	$320c_u$[3] $640c_u$[4]	$400c_u$[3] $800c_u$[4]	DS-4	AC-3s
Lambeth Group	-1.0	20	5	27	300	$320c_u$[3] $640c_u$[4]	$400c_u$[3] $800c_u$[4]	DS-1	AC-1s

Notes:

(1) Various obstructions present within the Made Ground.

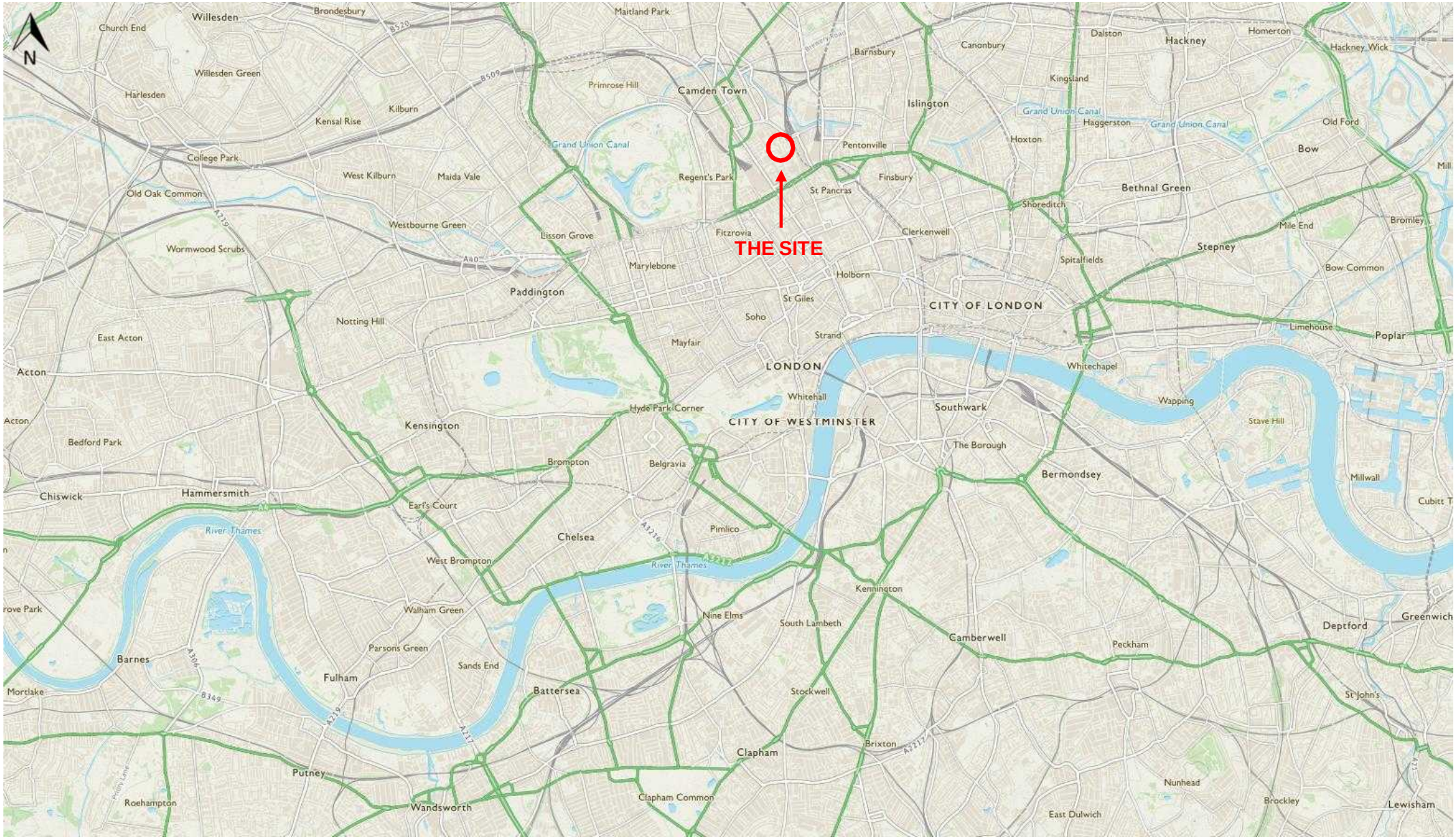
(2) c_u = 100kPa from +16.5m.O.D to +10.0m.O.D, increasing to 300kPa at -1.0m.O.D.

(3) For routine foundation design.

(4) For retaining wall design.

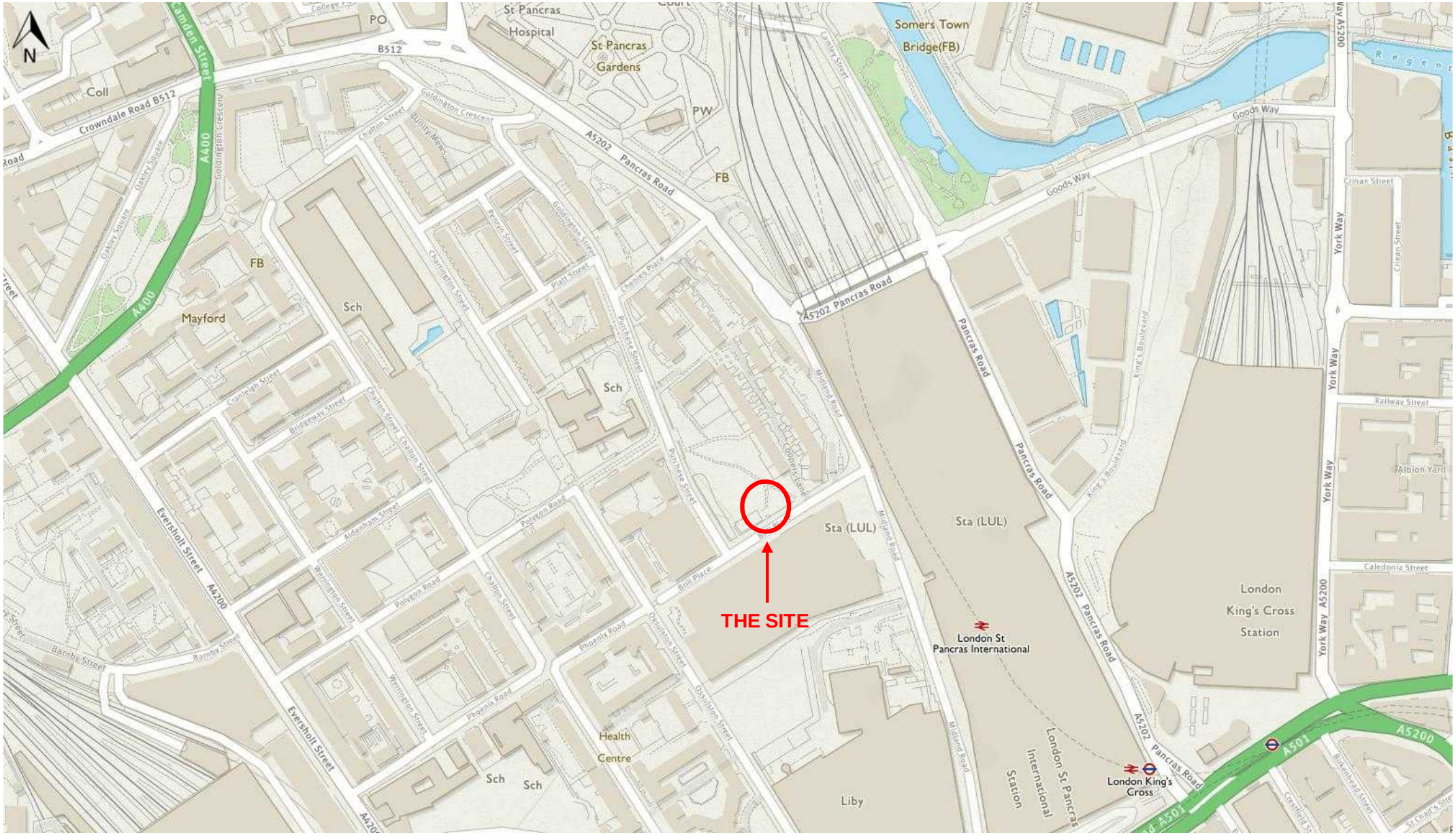
Appendix A

SITE LOCATION PLANS



WSP House
70 Chancery Lane
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.1
Project	Brill Place, London	Drawn by	SE
Title	Site Location Plan	Checked by	JR



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Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.2
Project	Brill Place, London	Drawn by	SE
Title	Site Location Plan	Checked by	JR

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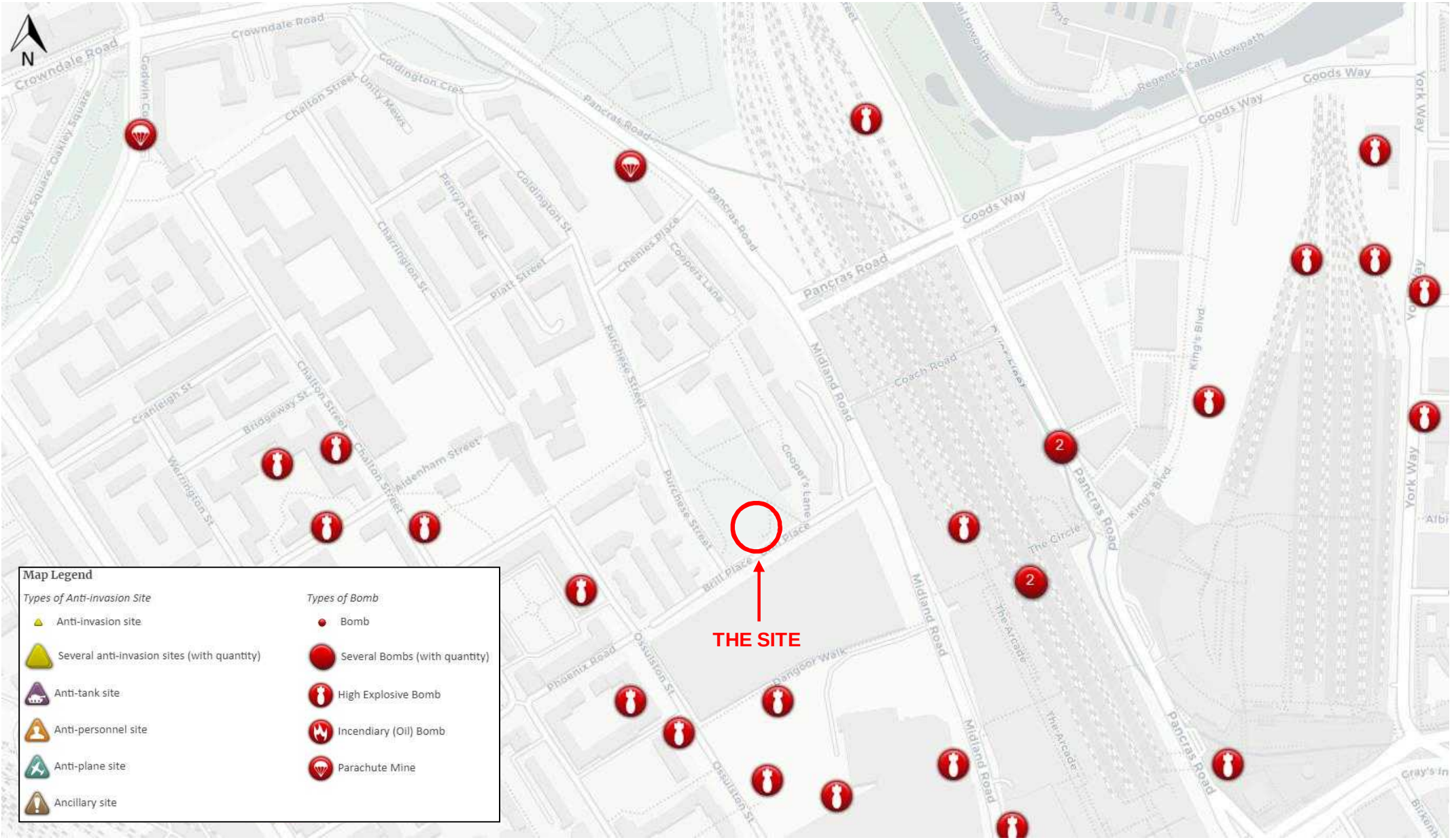
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.3
Project	Brill Place, London	Drawn by	SE
Title	Aerial Photograph of Site	Checked by	JR



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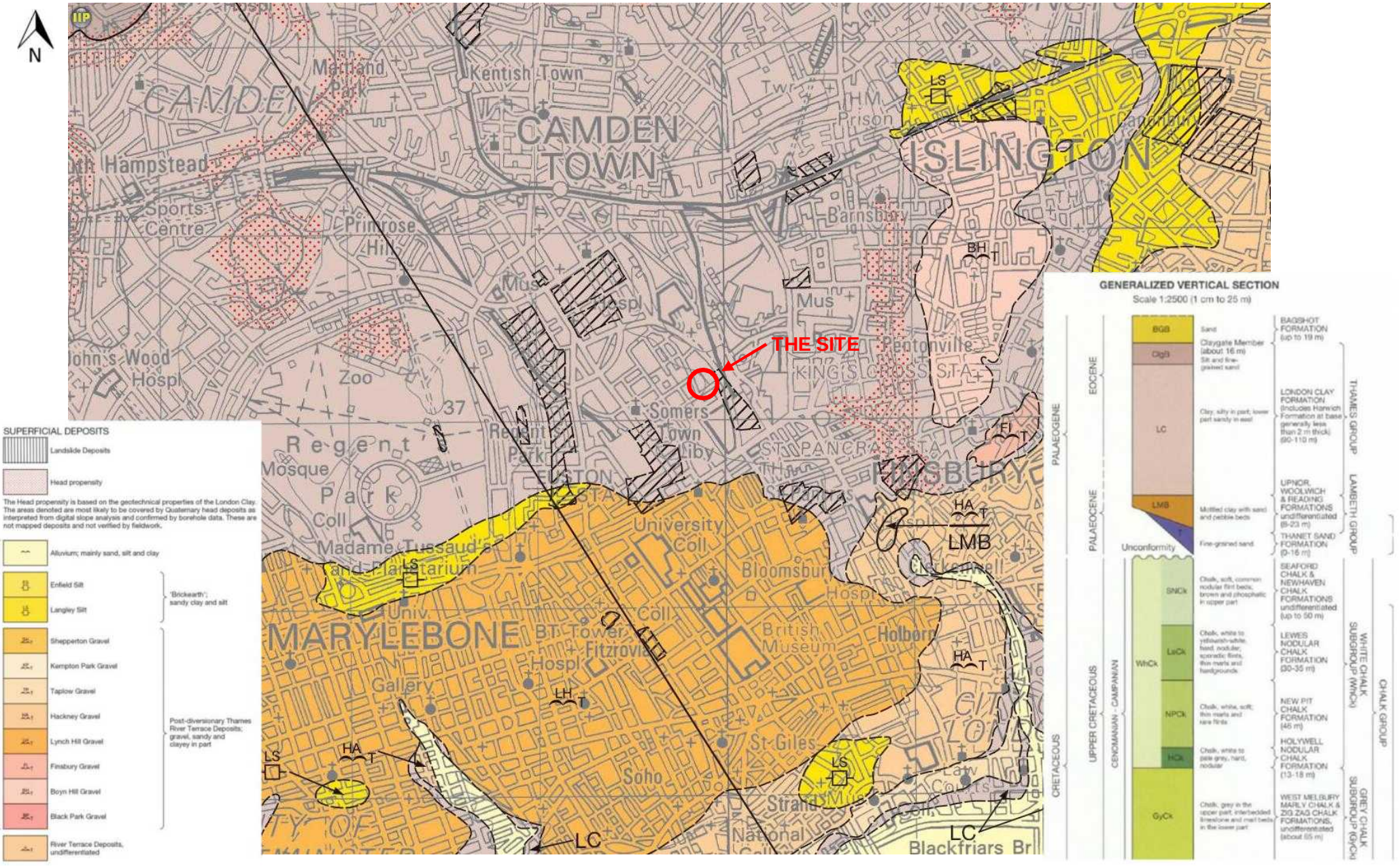
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.4
Project	Brill Place, London	Drawn by	SE
Title	UXO Location Plan (source: http://bombsight.org/)	Checked by	JR



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London, WC2A 1AF
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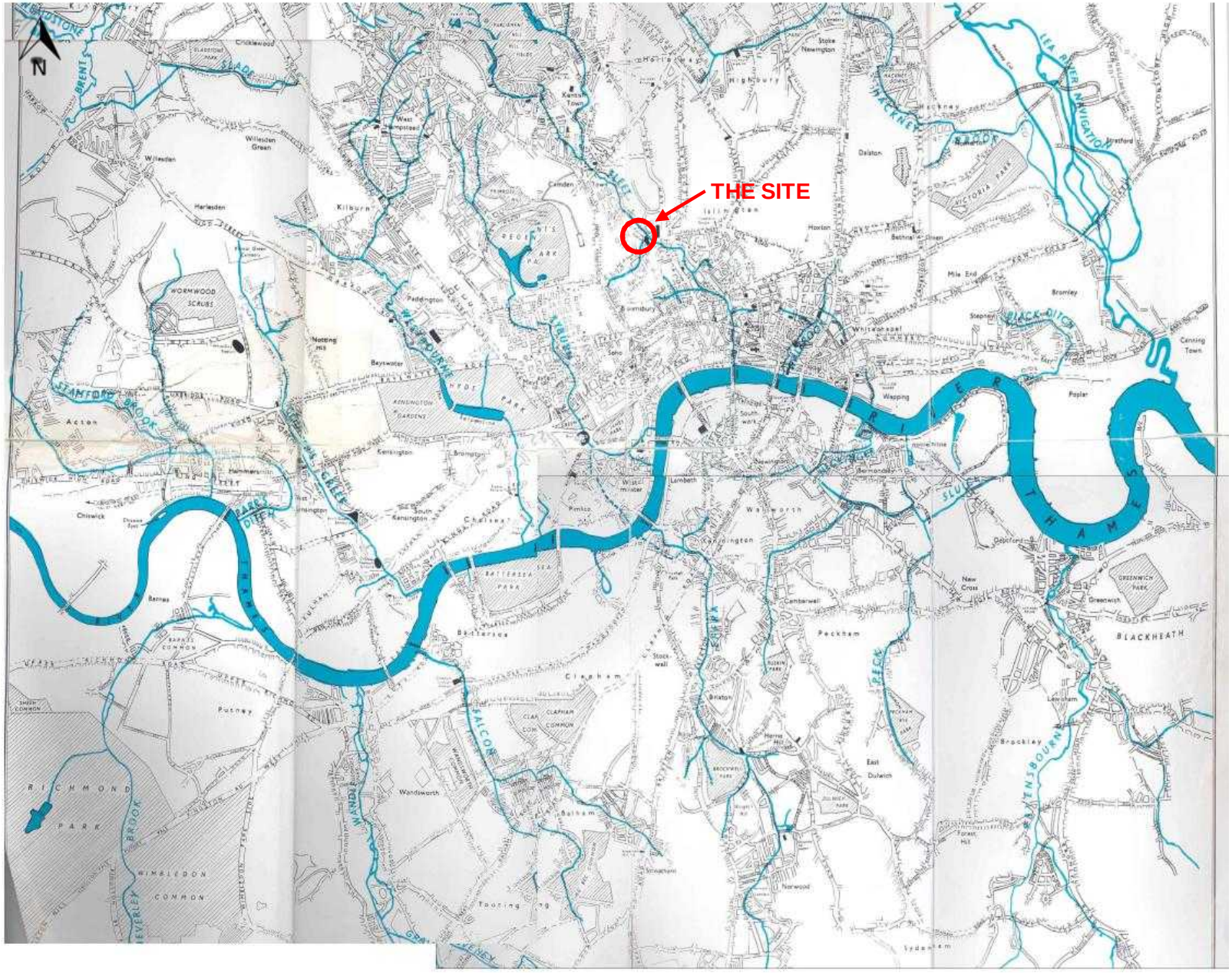
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.5
Project	Brill Place, London	Drawn by	SE
Title	Site Location (British Geological Survey – North London Map)	Checked by	JR



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Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.6
Project	Brill Place, London	Drawn by	SE
Title	Lost Rivers Map (Barton, 1992)	Checked by	JR

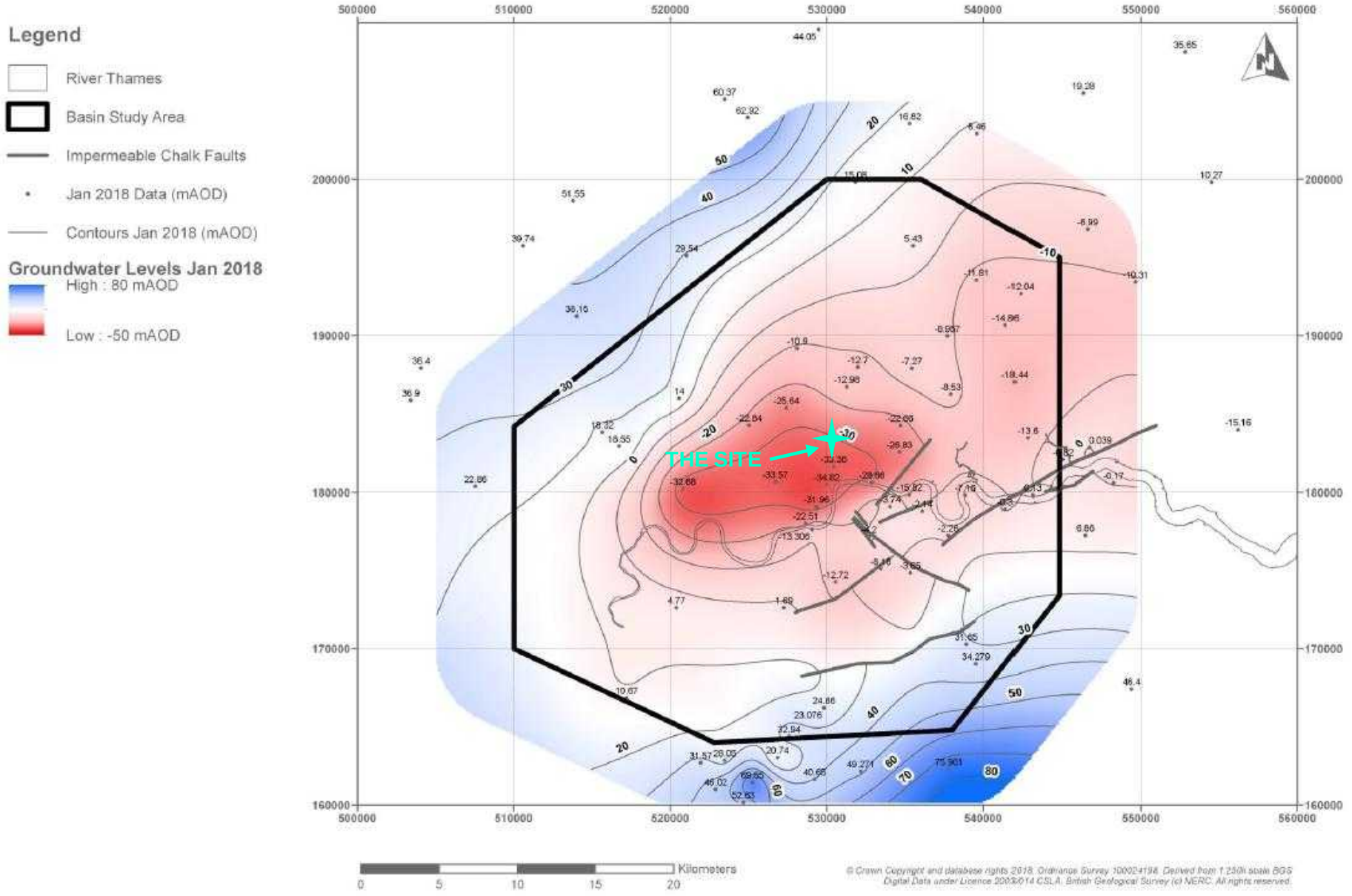

Figure 11 Groundwater Level Contours for January 2018

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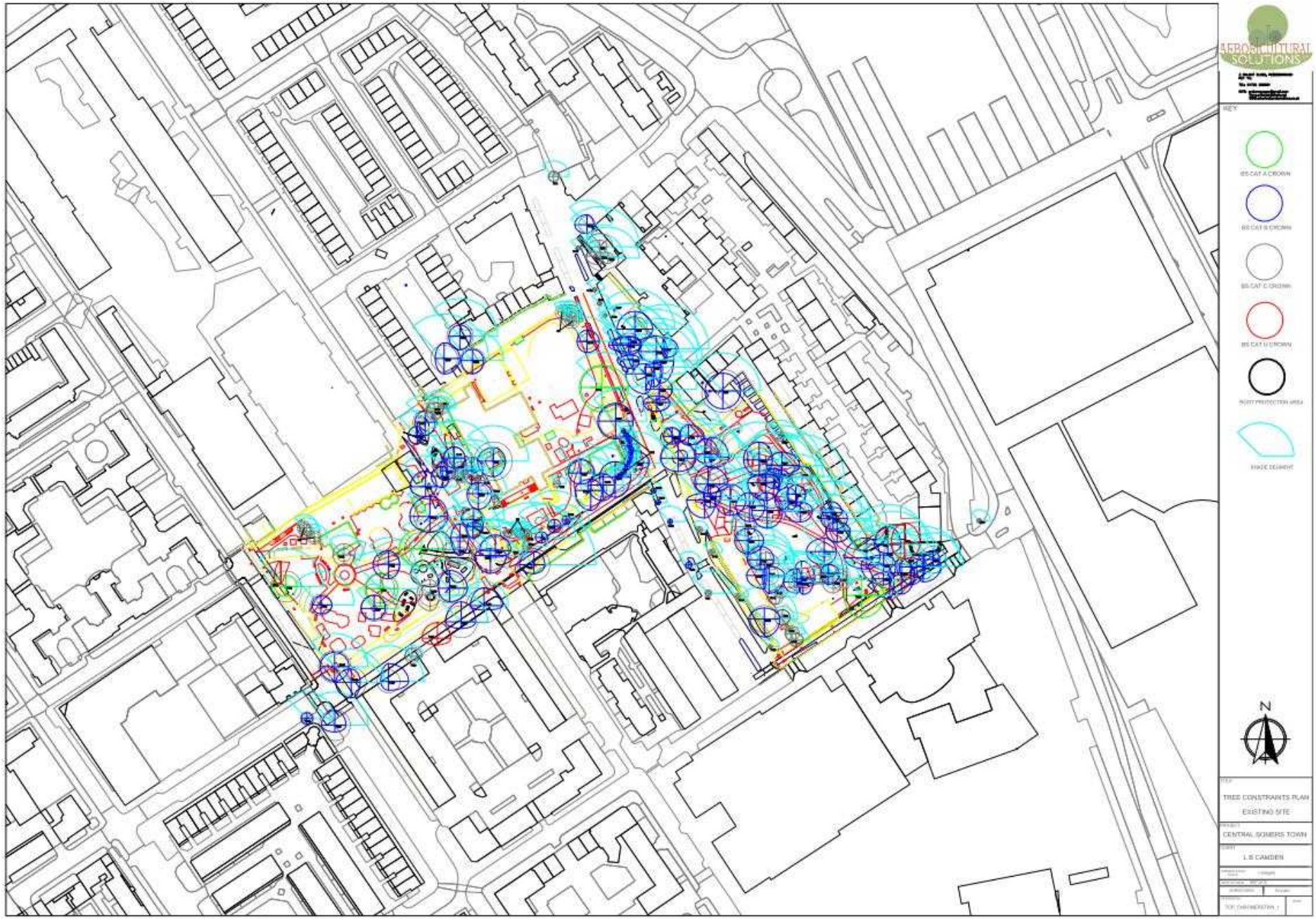
70 Chancery Lane
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.7
Project	Brill Place, London	Drawn by	SE
Title	Site Location (Groundwater Level Contours – Chalk Aquifer)	Checked by	JR
Extract from Environment Agency – Management of the London Basin Chalk Aquifer, August 2018			



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Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.8
Project	Brill Place, London	Drawn by	SE
Title	Tree Constraints Plan – Existing Site	Checked by	JR

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Fax: 0207 314 5111

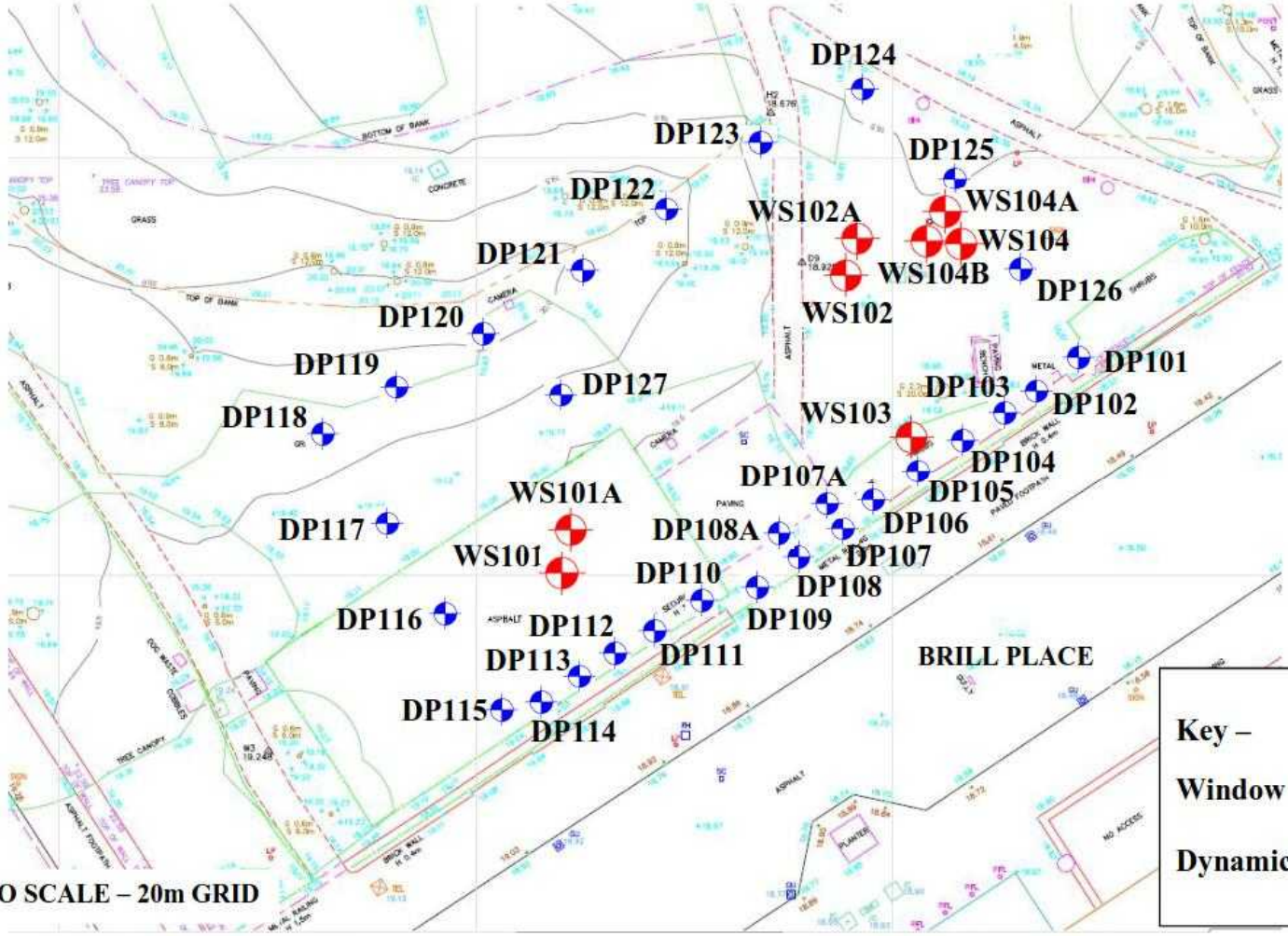
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix A.9
Project	Brill Place, London	Drawn by	SE
Title	Tree Constraints Plan – Proposed Site	Checked by	JR

Appendix B

SITE INVESTIGATION AND FIELD TEST RESULTS

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED
Peterborough Tel : 01733 566566

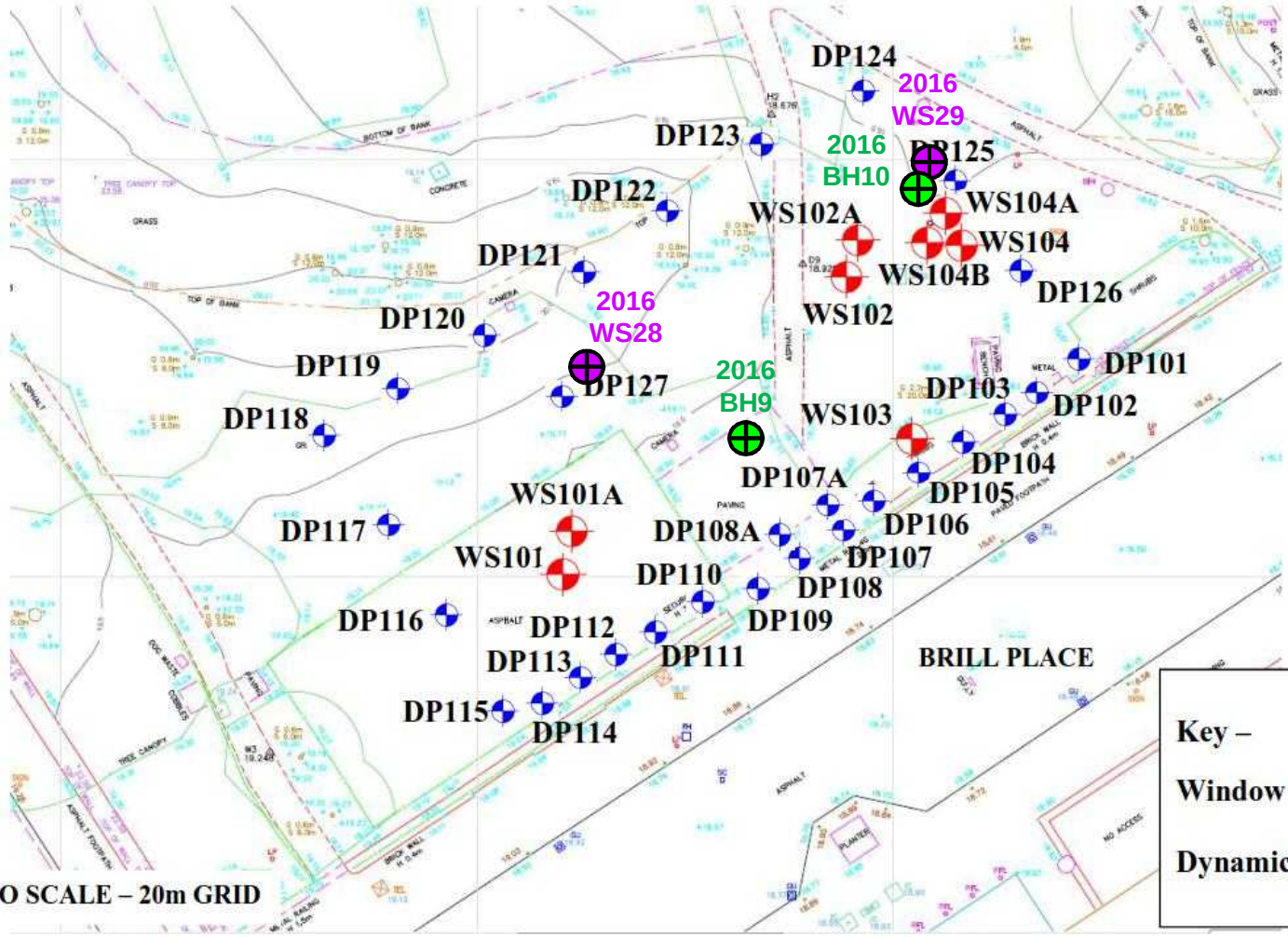
Project No.
C14727

WSP House,
70 Chancery Lane,
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.1
Project	Brill Place, London	Drawn by	SE
Title	Site Investigation Plan (Source: Ground Engineering Factual Report)	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Project: Brill Place, London NW1 **Client: ED Jersey Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C14727**

WSP House,
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London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.2
Project	Brill Place, London	Drawn by	SE
Title	Site Investigation Plan: 2019 and 2016 Investigations	Checked by	JR

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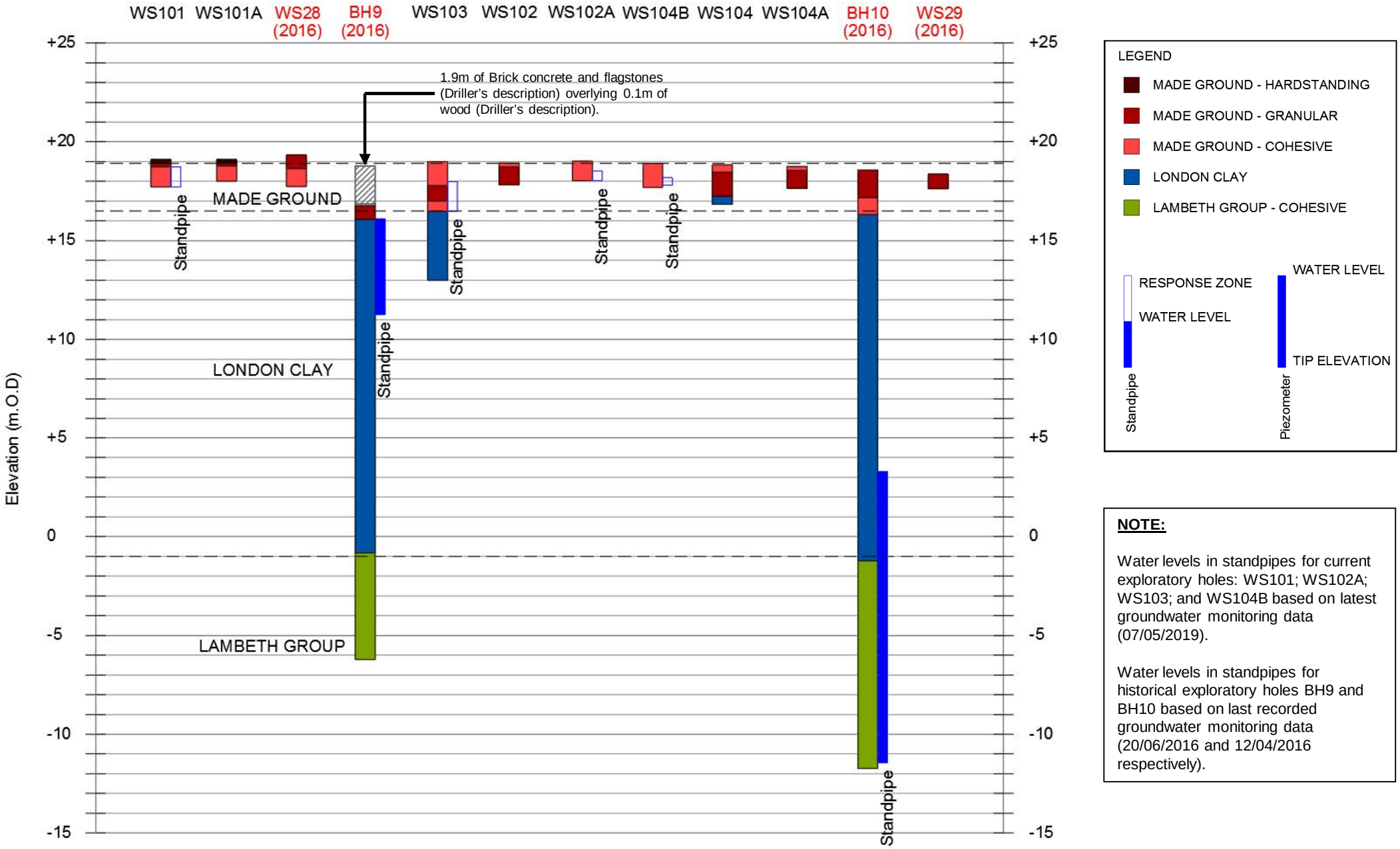
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.3
Project	Brill Place, London	Drawn by	SE
Title	Historical 2016 SI Plan (Source: ESG Factual and Interpretative Report)	Checked by	JR

Note: Indicative current development site location has been outlined on the above plan for information.



NOTE:

Water levels in standpipes for current exploratory holes: WS101; WS102A; WS103; and WS104B based on latest groundwater monitoring data (07/05/2019).

Water levels in standpipes for historical exploratory holes BH9 and BH10 based on last recorded groundwater monitoring data (20/06/2016 and 12/04/2016 respectively).

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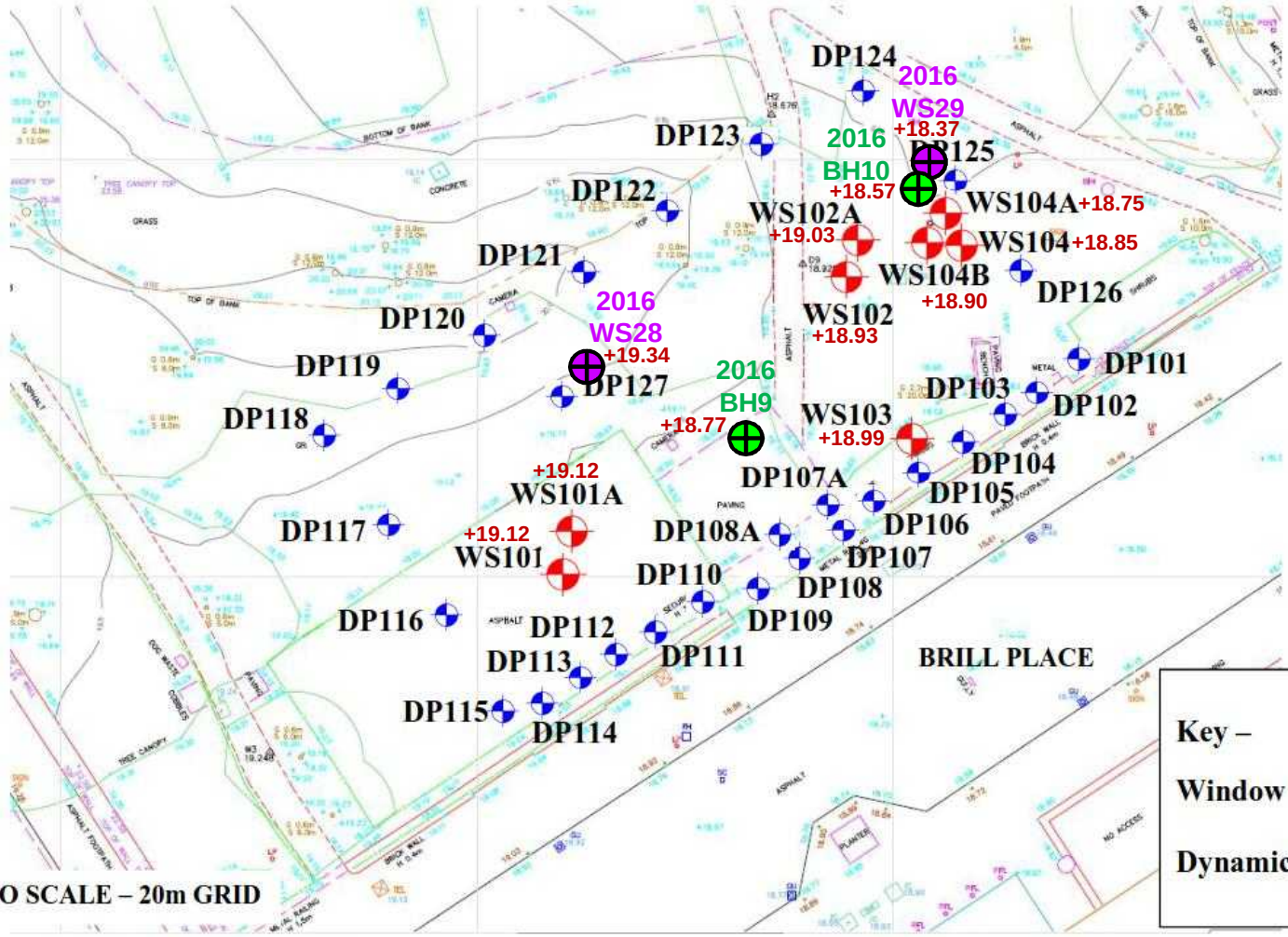
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.4
Project	Brill Place, London	Drawn by	SE
Title	Exploratory holes (2019 and 2016 site investigations)	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



N

Elevation (m.O.D) of the top of the exploratory hole – Hardstanding / Made Ground

Key –

Window Sample Borehole

Dynamic Probe

Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED
Peterborough Tel : 01733 566566

Project No. C14727

WSP House,
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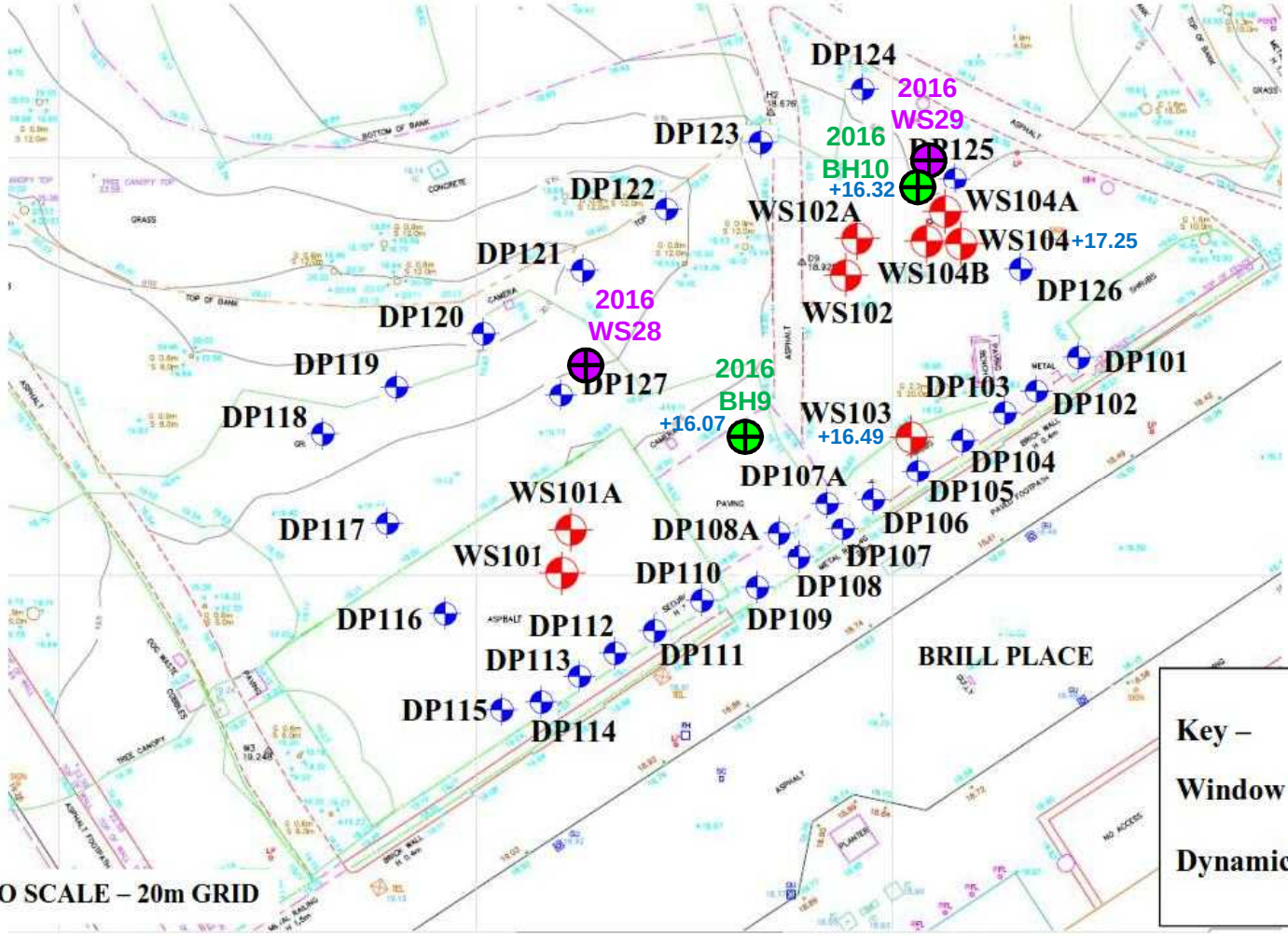
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.5
Project	Brill Place, London	Drawn by	SE
Title	Top elevation (m.O.D) of exploratory hole – Hardstanding / Made Ground	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED
Peterborough Tel : 01733 566566

Project No.
C14727

WSP House,
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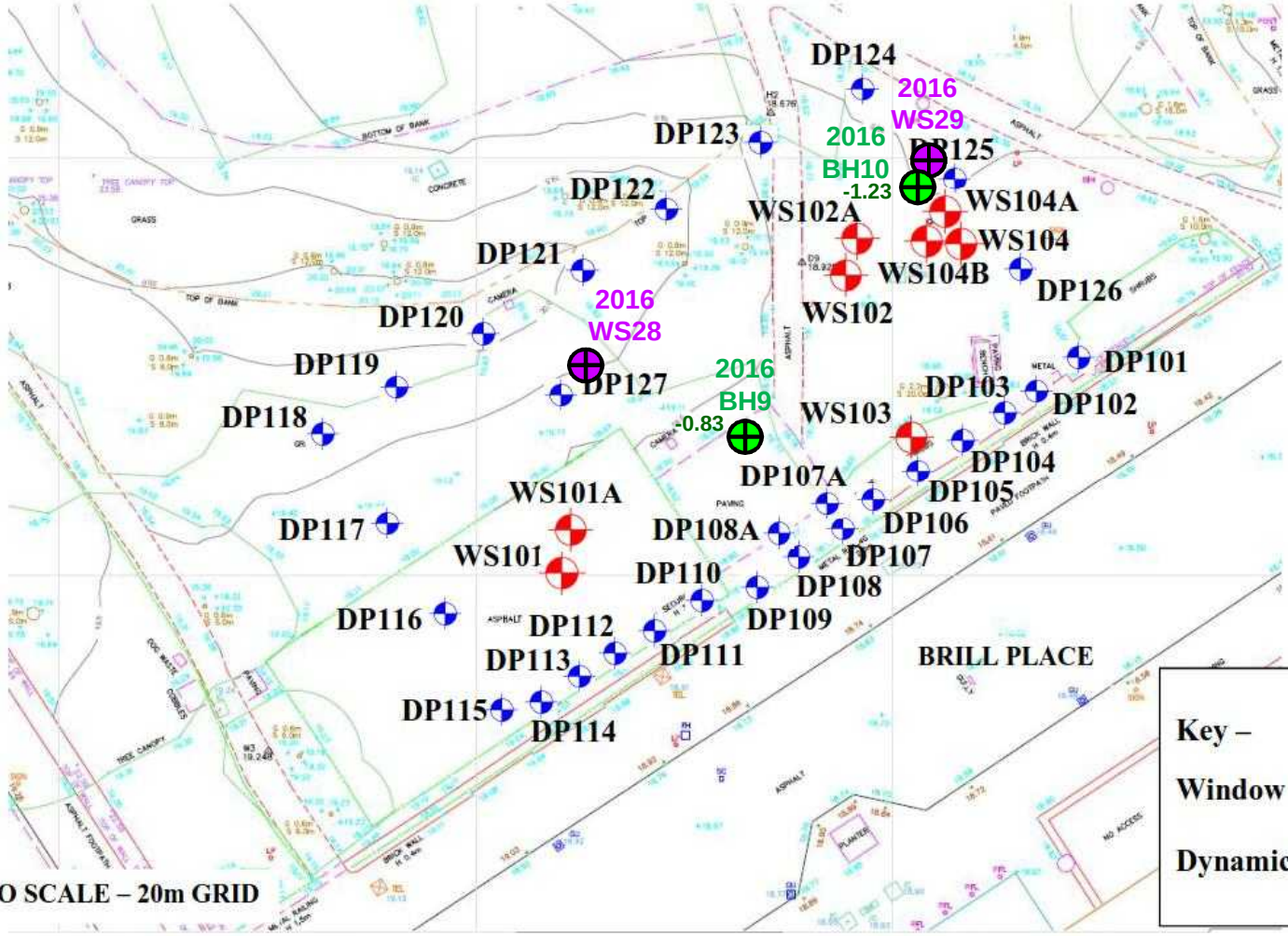
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.6
Project	Brill Place, London	Drawn by	SE
Title	Elevation (m.O.D) of the top of the London Clay	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Elevation (m.O.D) of the top of the Lambeth Group

Key –

Window Sample Borehole

Dynamic Probe

Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED
Peterborough Tel : 01733 566566

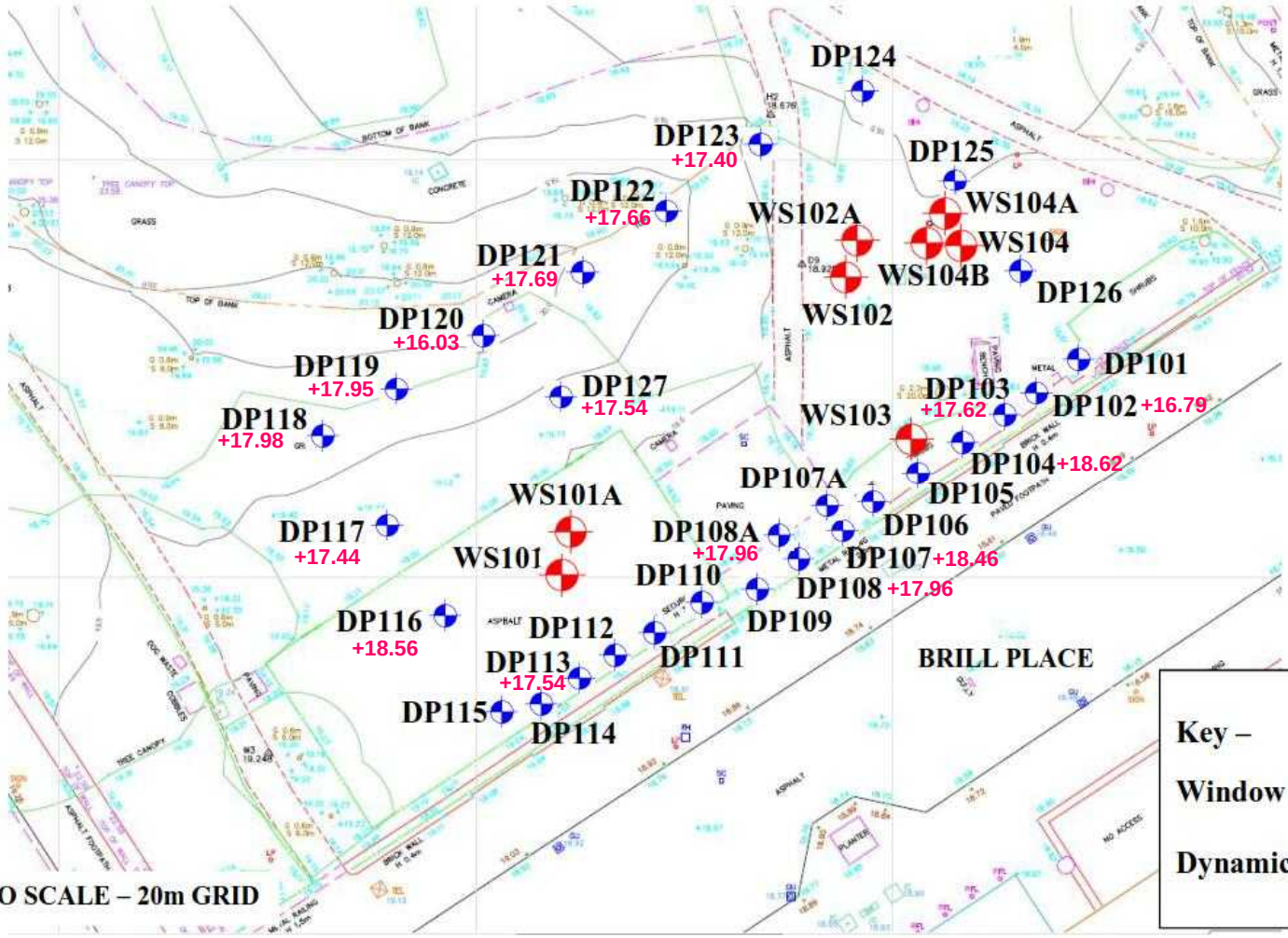
Project No. C14727

WSP House,
70 Chancery Lane,
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.7
Project	Brill Place, London	Drawn by	SE
Title	Elevation (m.O.D) of the top of the Lambeth Group	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Project: Brill Place, London NW1 **Client: ED Jersey Limited**	**GROUND ENGINEERING LIMITED** Peterborough Tel : 01733 566566	**Project No.** **C14727**

WSP House,
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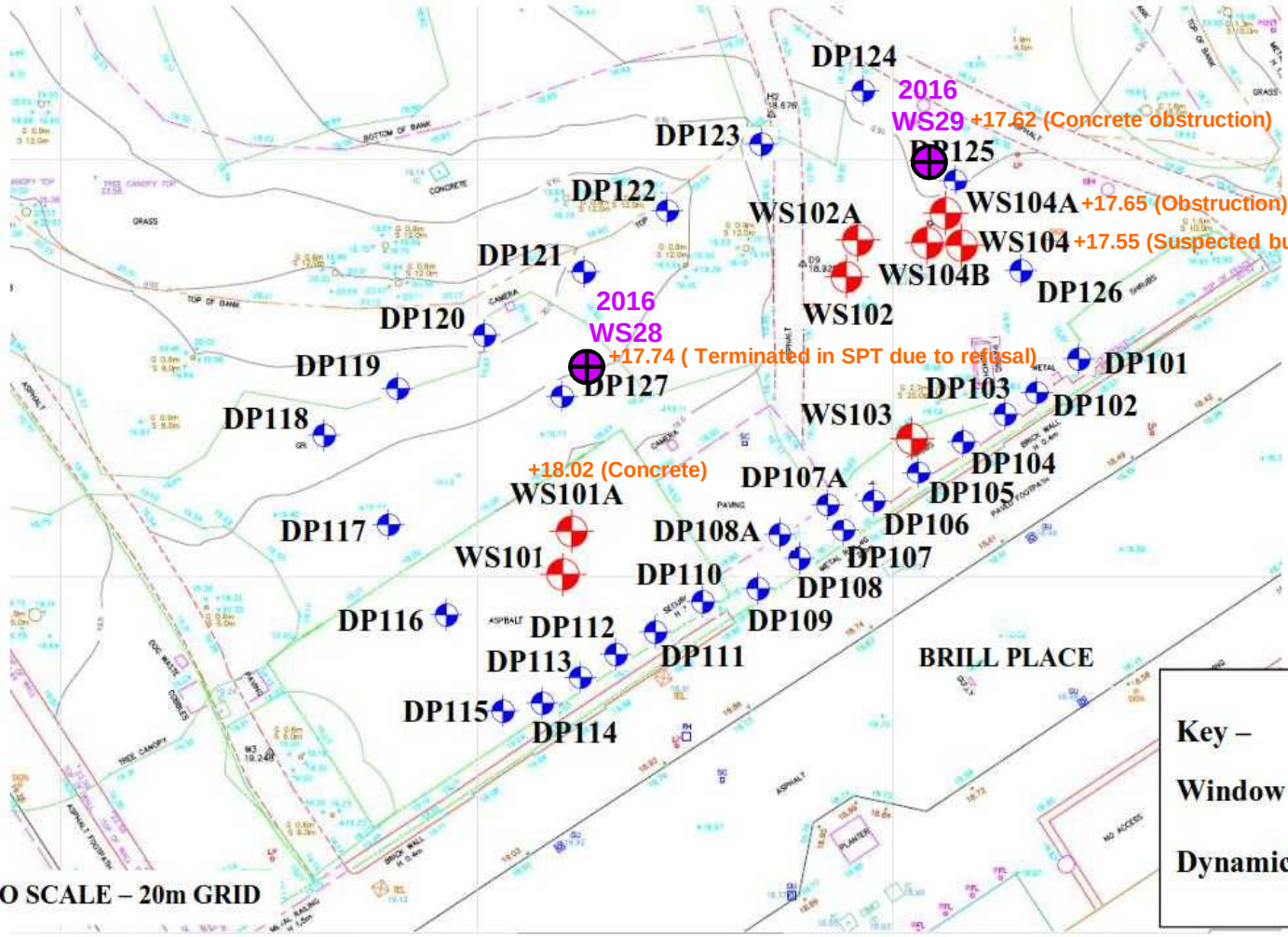
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.8
Project	Brill Place, London	Drawn by	SE
Title	Elevation (m.O.D) of obstructions encountered by dynamic probes	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Elevation (m.O.D) of obstructions encountered by window samples

Key –

Window Sample Borehole

Dynamic Probe

Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED
Peterborough Tel : 01733 566566

Project No.
C14727

WSP House,
70 Chancery Lane,
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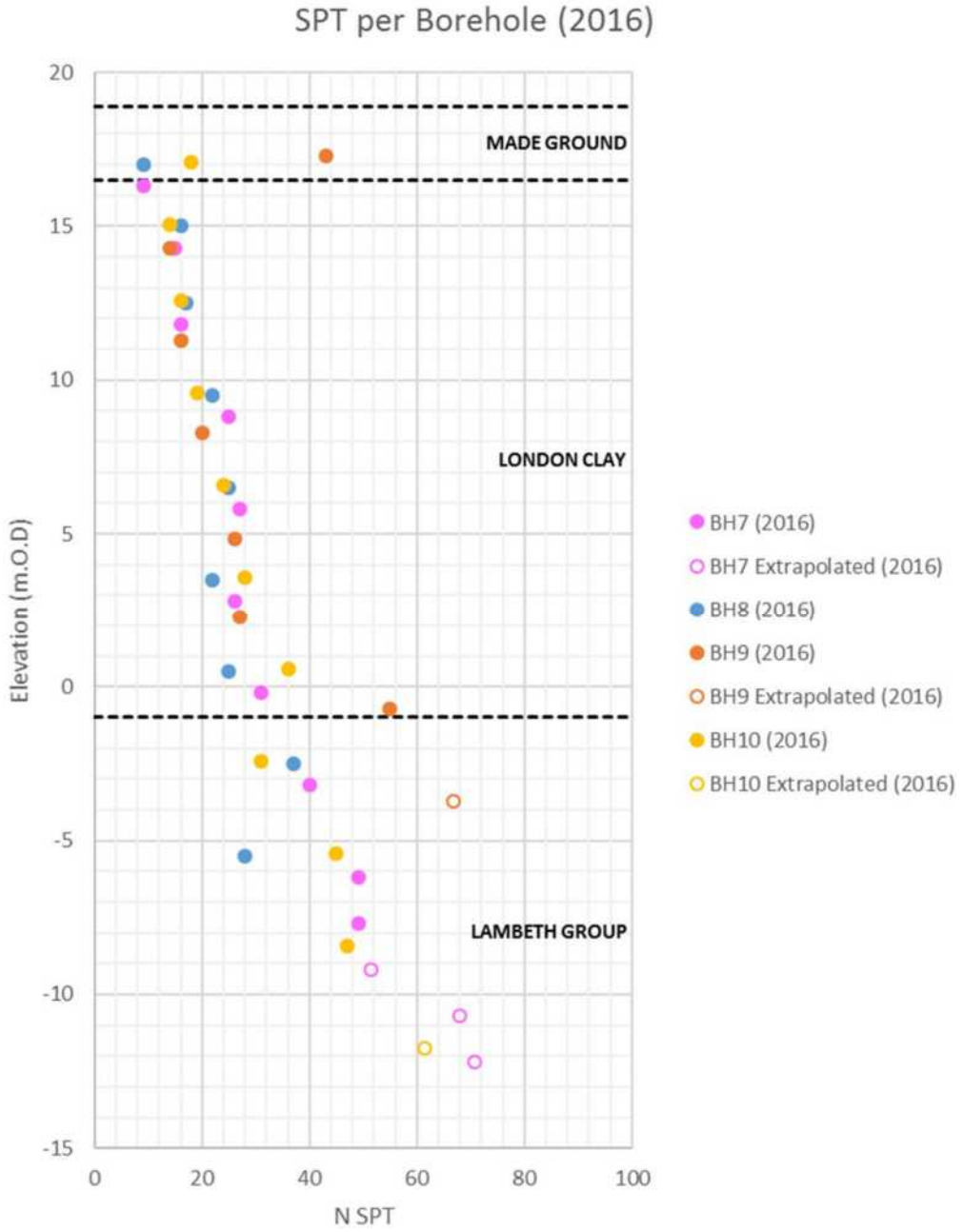
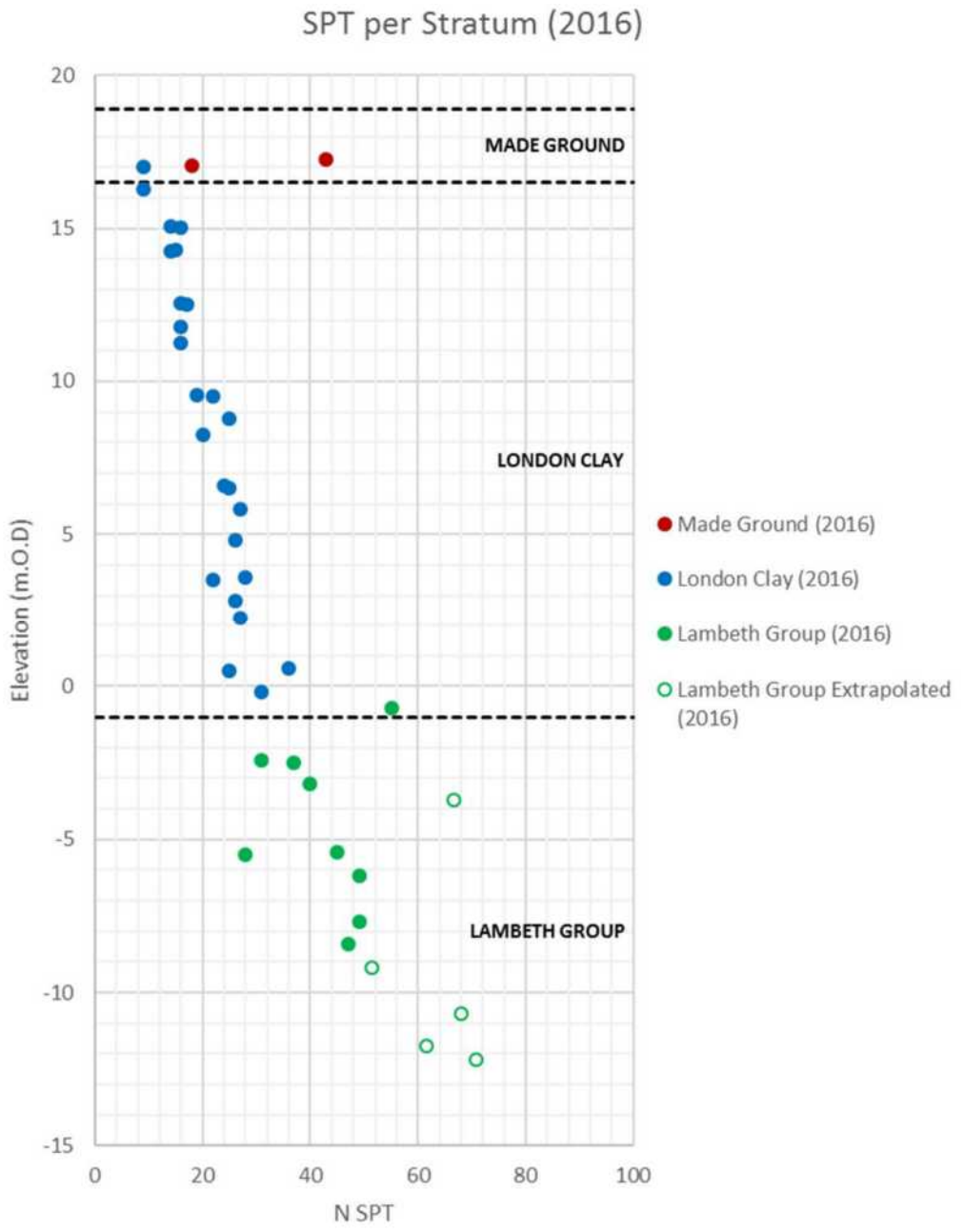
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.9
Project	Brill Place, London	Drawn by	SE
Title	Elevation (m.O.D) of obstructions encountered by window samples	Checked by	JR





WSP House,
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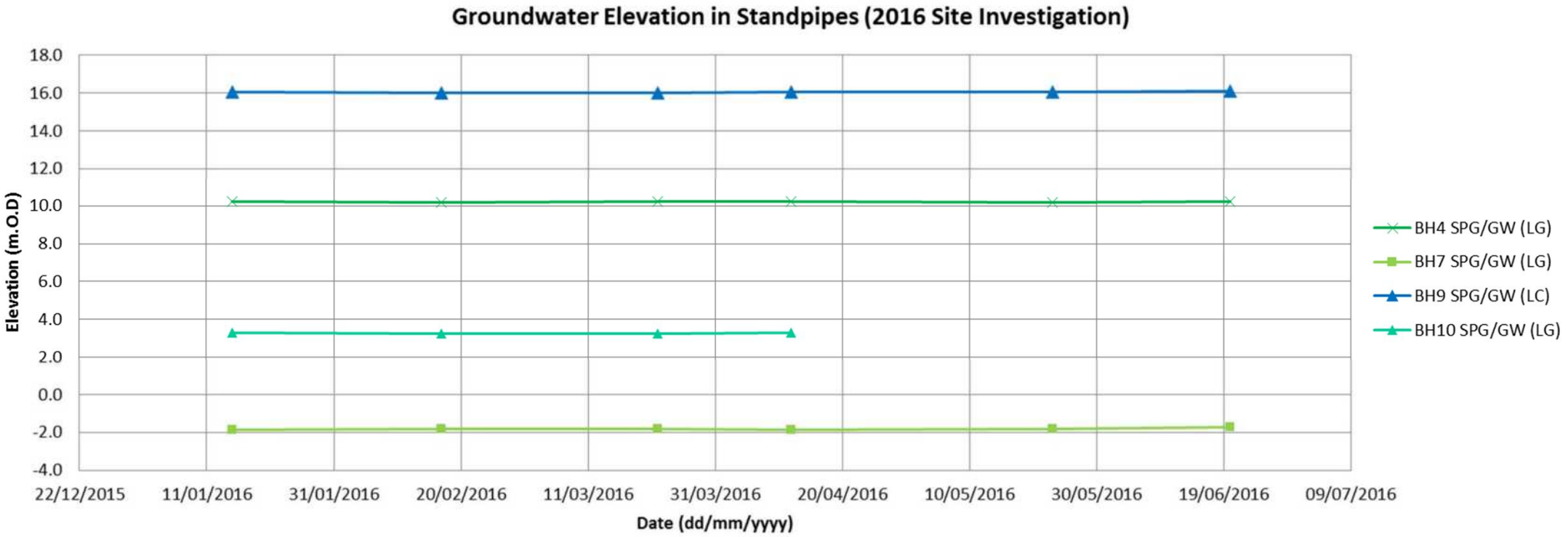
Fax: 0207 314 5111

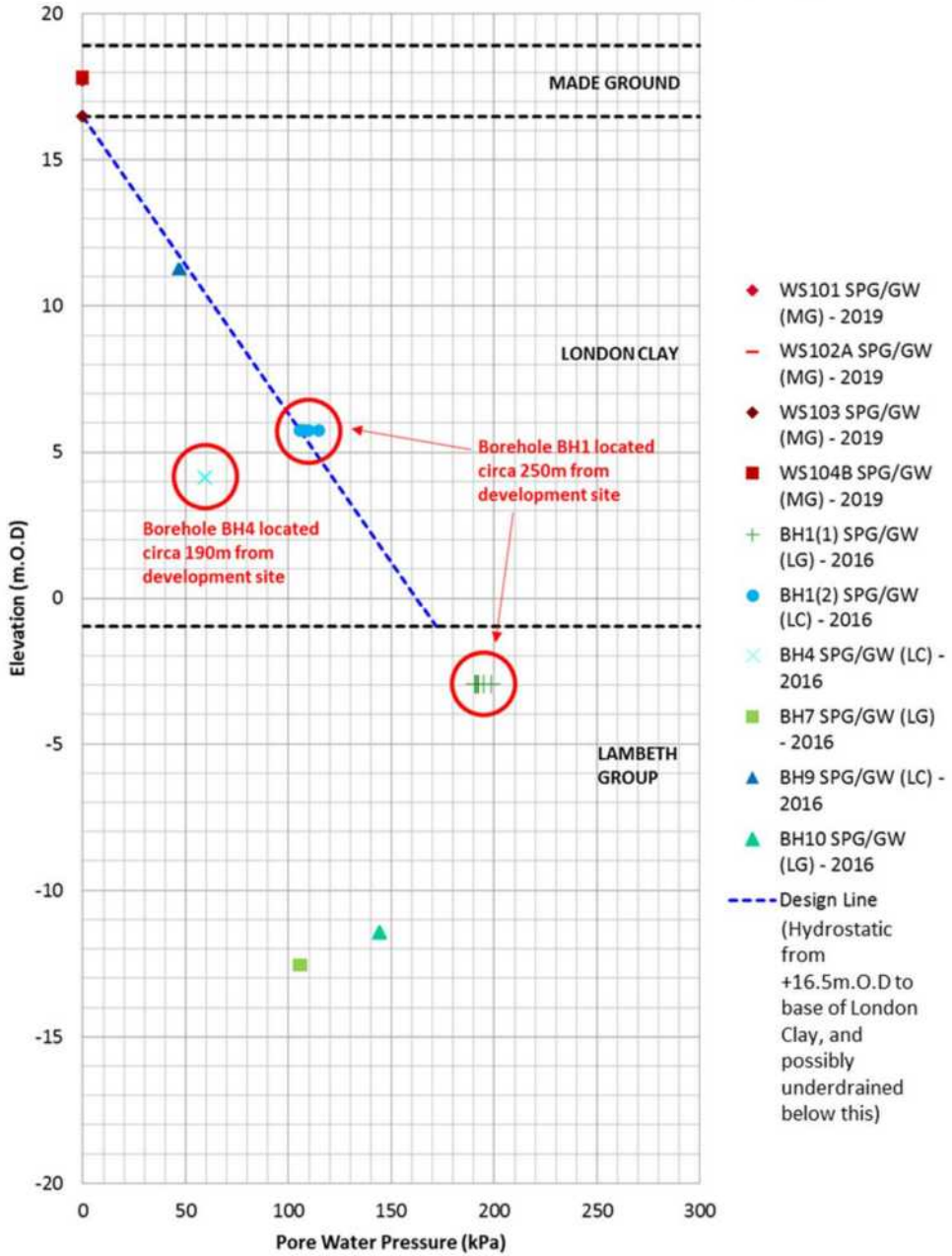
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.10
Project	Brill Place, London	Drawn by	SE
Title	Uncorrected SPT N-values (2016 site investigation)	Checked by	JR



WSP House,
70 Chancery Lane,
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.11
Project	Brill Place, London	Drawn by	SE
Title	Groundwater Monitoring – Standpipes (2016 Site Investigation)	Checked by	JR

Pore Water Pressure Profile (2019 and 2016 Site Investigations)



WSP House,
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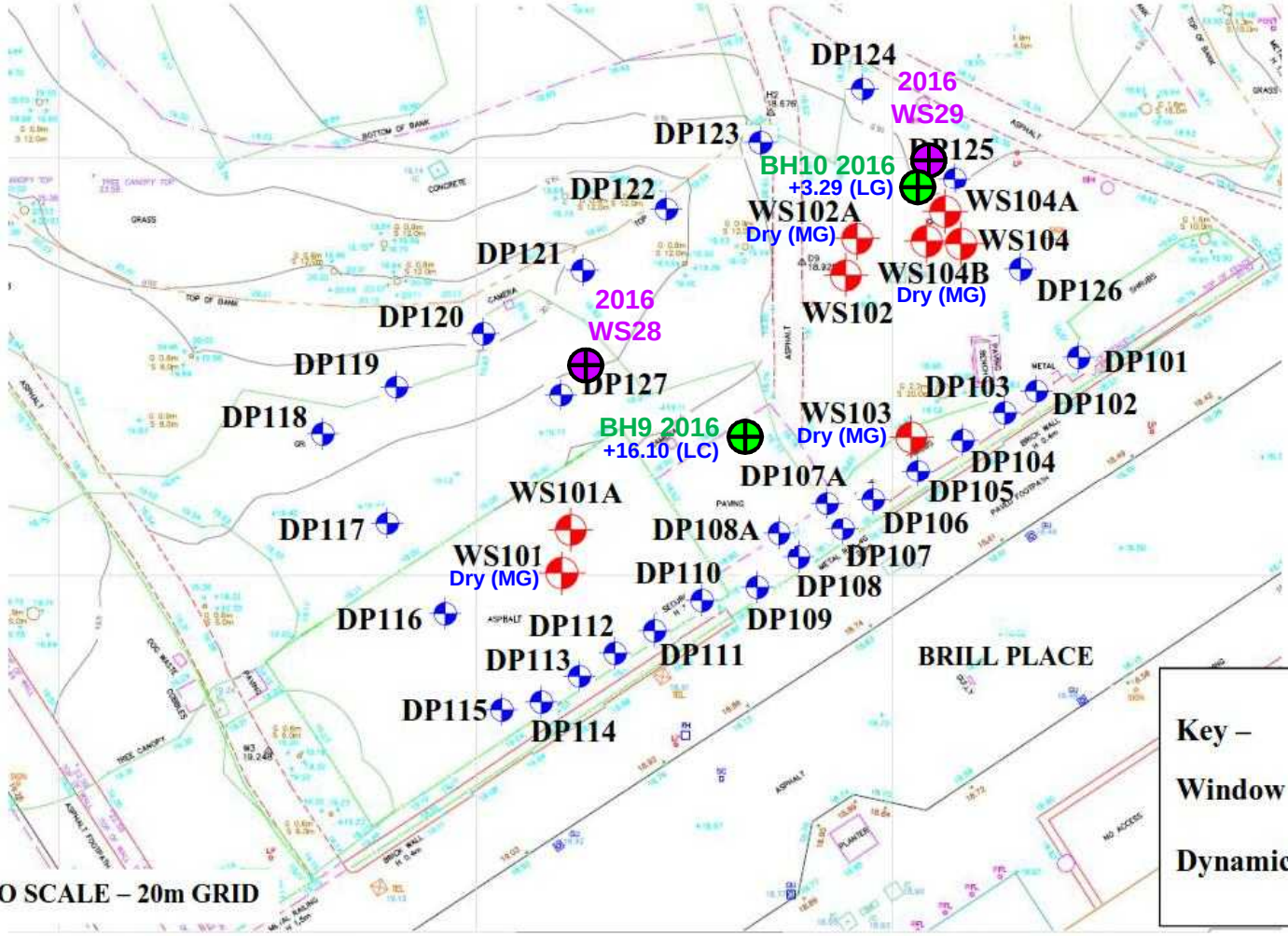
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.12
Project	Brill Place, London	Drawn by	SE
Title	Design Pore Water Pressure Profile	Checked by	JR

Exploratory Hole Location Plan

Based on a plan provided by the Engineer



NOTE:

Water levels in standpipes for current exploratory holes: WS101; WS102A; WS103; and WS104B based on latest groundwater monitoring data (07/05/2019).

Water levels in standpipes for historical exploratory holes BH9 and BH10 based on last recorded groundwater monitoring data (20/06/2016 and 12/04/2016 respectively).

Key –

Window Sample Borehole

Dynamic Probe

Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED

Peterborough Tel : 01733 566566

Project No.

C14727

WSP House,
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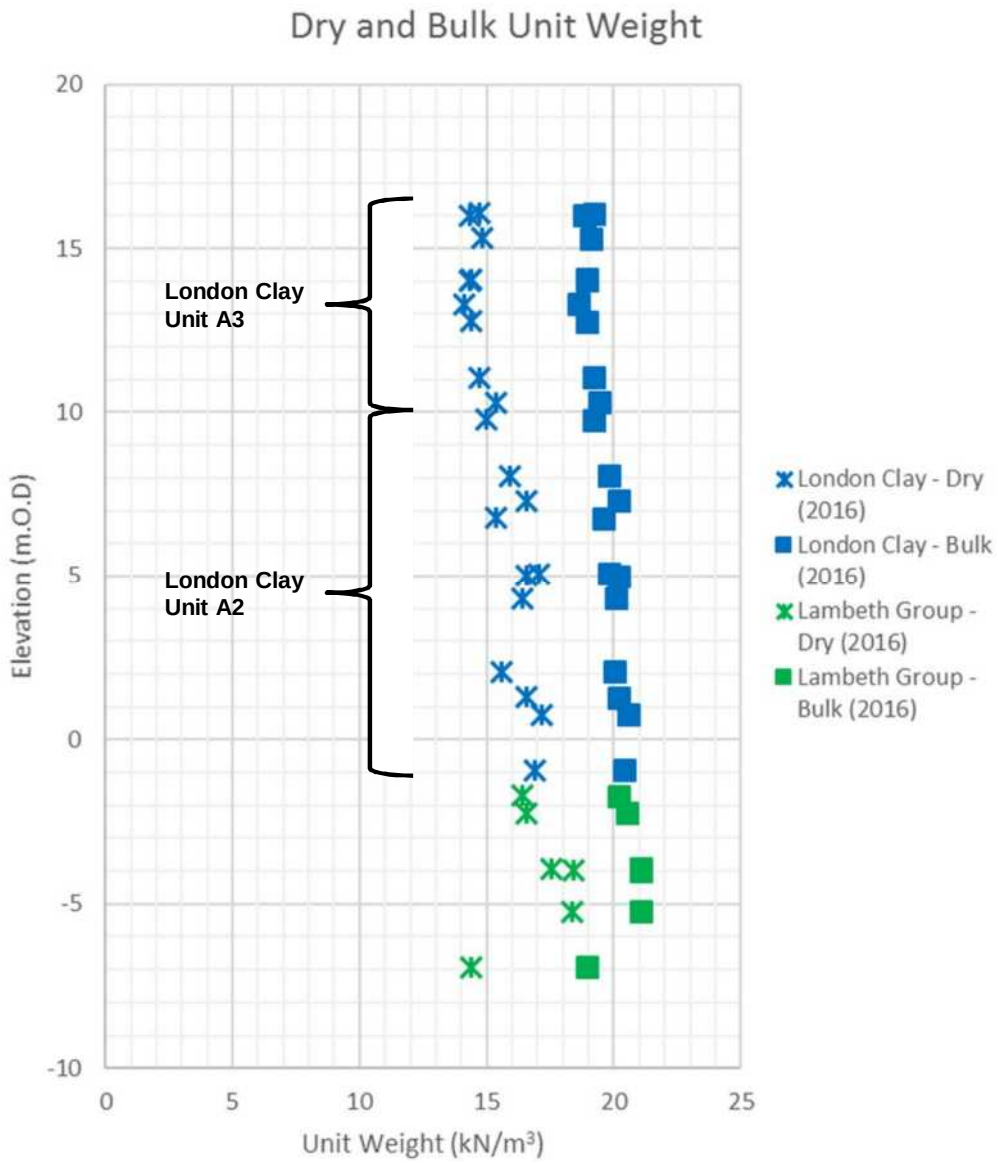
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix B.13
Project	Brill Place, London	Drawn by	SE
Title	Groundwater Elevation in 50mm Standpipes (m.O.D) – 2019 & 2016 SI data	Checked by	JR

Appendix C

LABORATORY TEST RESULTS



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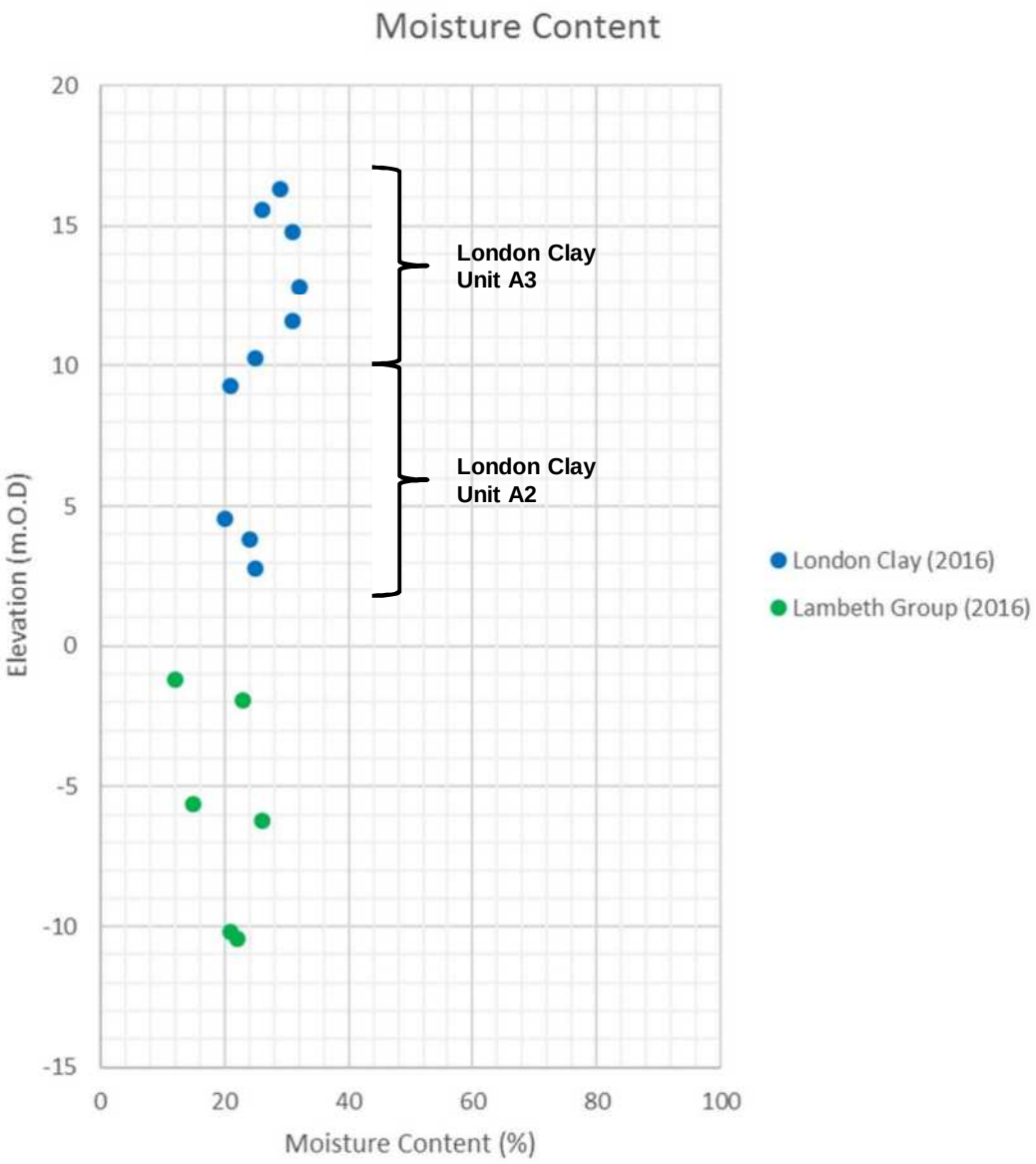
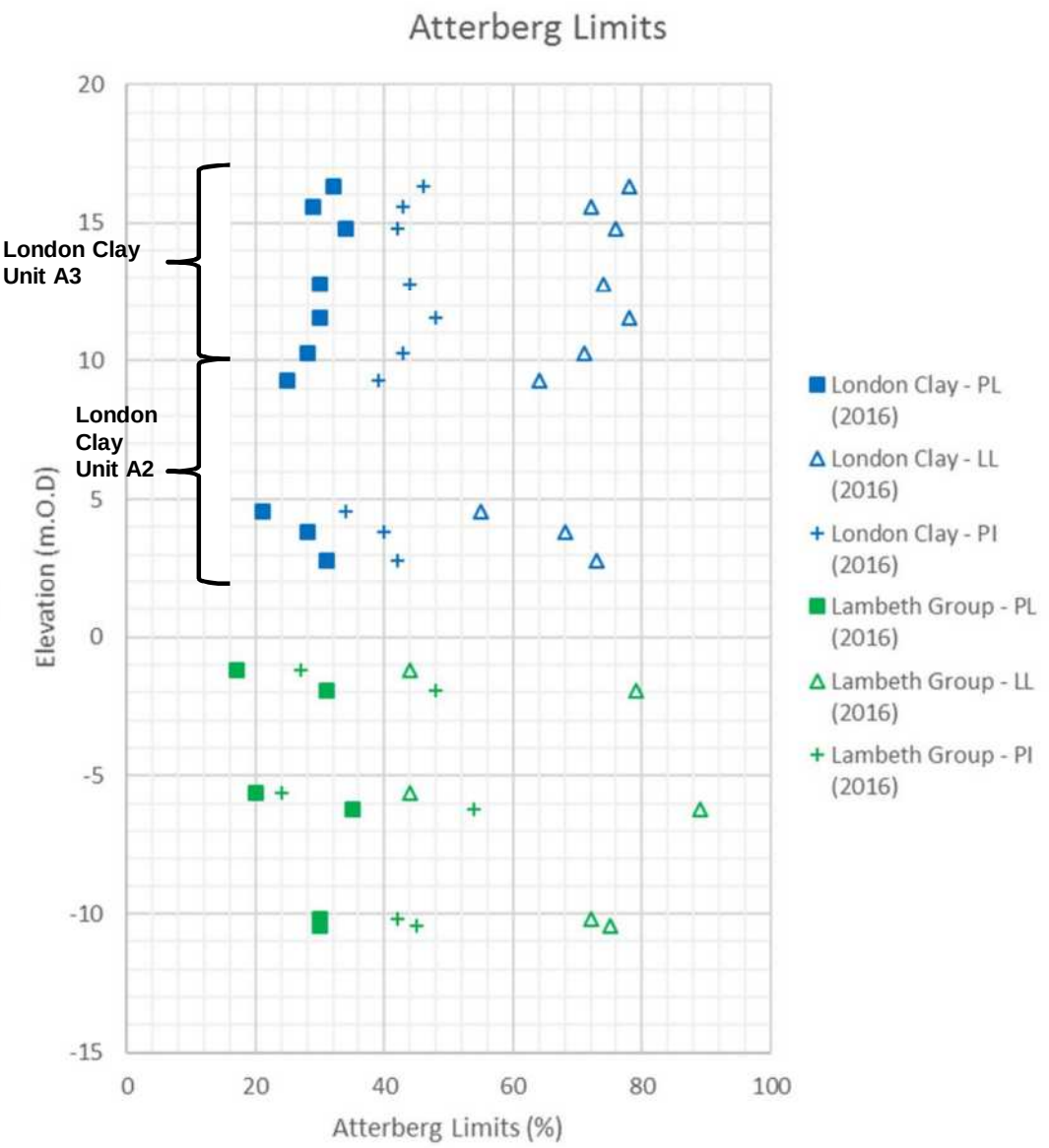
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.1
Project	Brill Place, London	Drawn by	SE
Title	Dry and Bulk Unit Weight of Soil vs. Elevation (2016 Site Investigation data)	Checked by	JR

Note: Samples were considered from Boreholes BH7, BH8, BH9, and BH10 in the above plot





WSP House,
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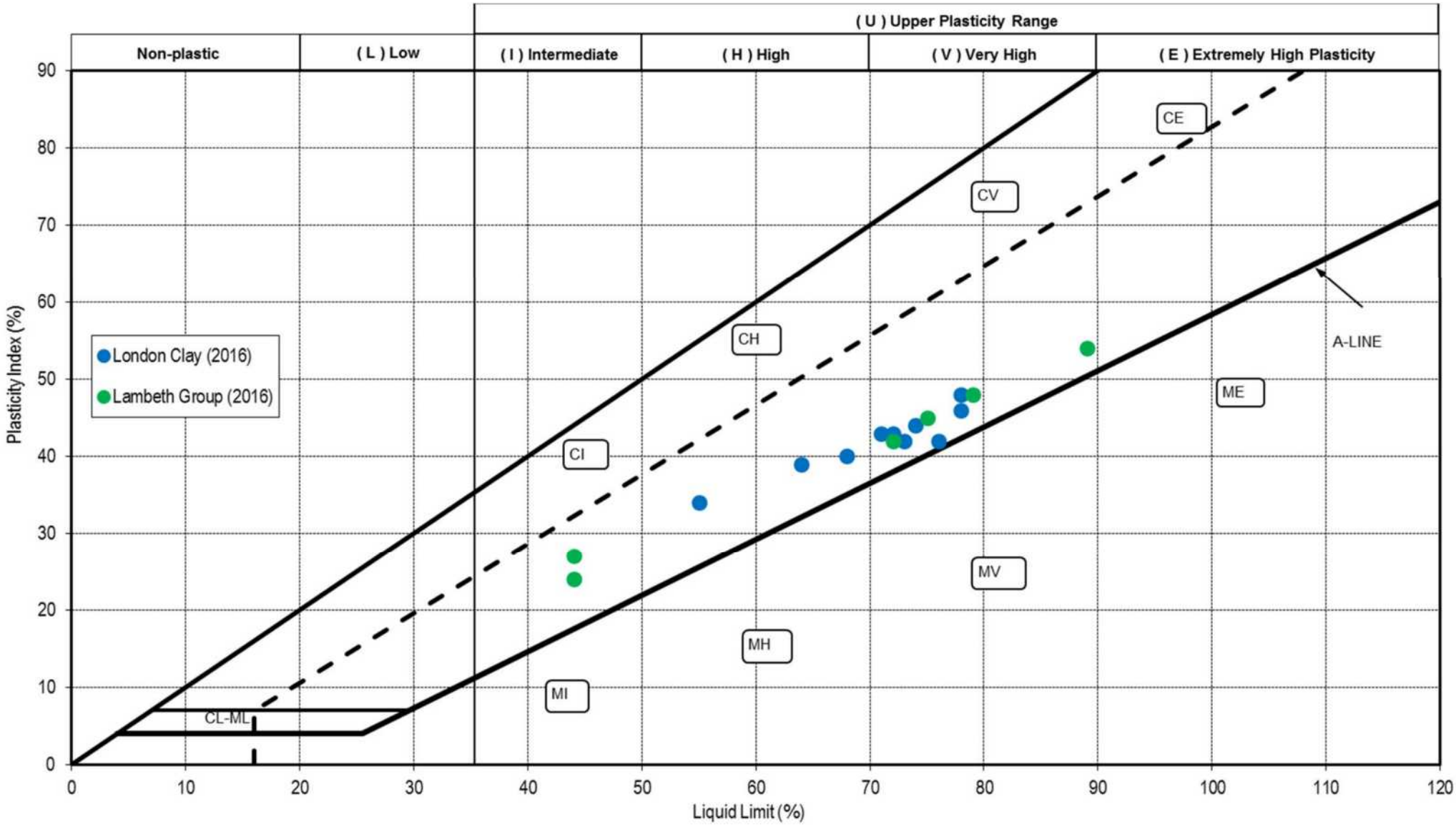
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.2
Project	Brill Place, London	Drawn by	SE
Title	Moisture Content and Atterberg Limits vs. Elevation (2016 SI data)	Checked by	JR

Note: Samples were considered from Boreholes BH7, BH9, and BH10 in the above plots



WSP House,
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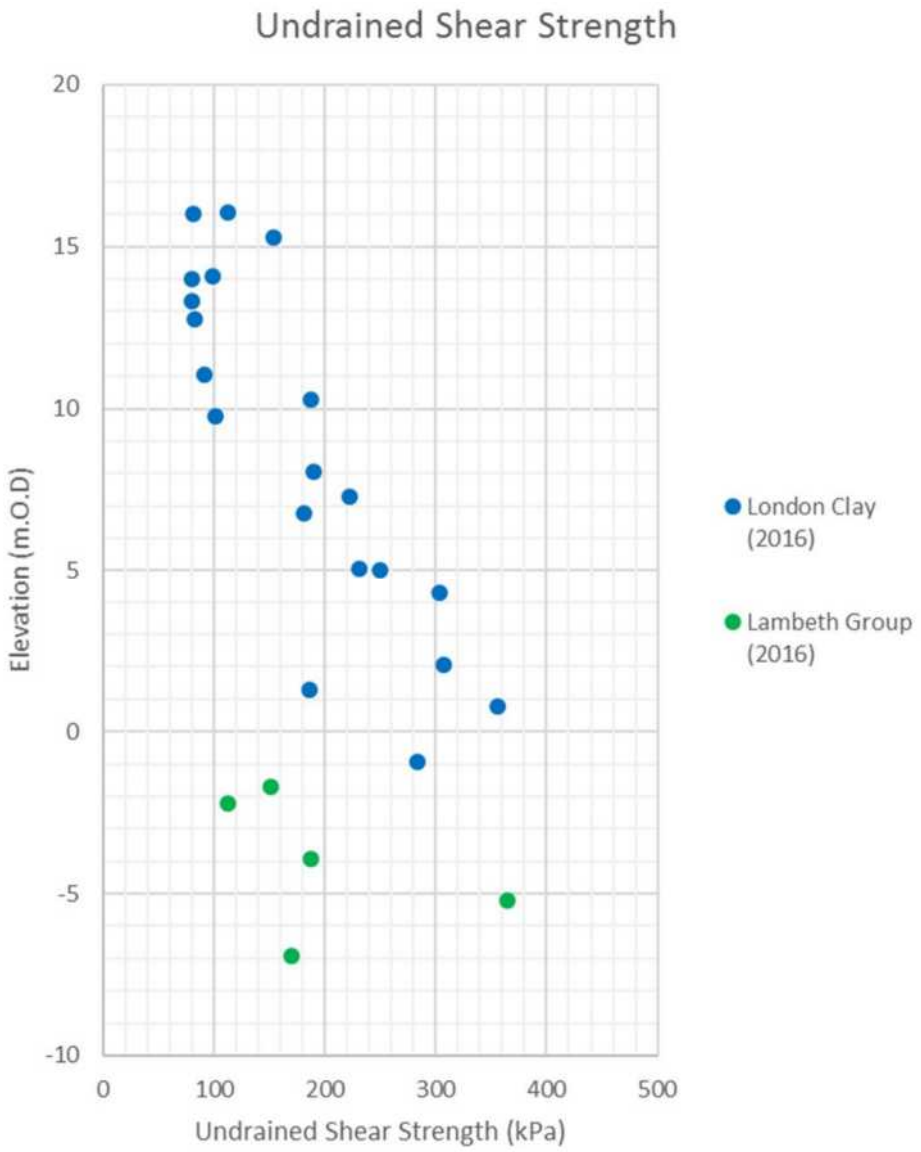
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.3
Project	Brill Place, London	Drawn by	SE
Title	Plasticity Chart (2016 Site Investigation data)	Checked by	JR

Note: Samples were considered from Boreholes BH7, BH9, and BH10 in the above plot



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Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.4
Project	Brill Place, London	Drawn by	SE
Title	Undrained Shear Strength vs. Elevation (2016 Site Investigation data)	Checked by	JR

Note: Samples were considered from Boreholes BH7, BH8, BH9, and BH10 in the above plot

London Clay

SPT Correlation
c_u = 6.5N

Design Line

Unit A3: c_u = 100kPa from +16.5m.O.D to +10.0m.O.D

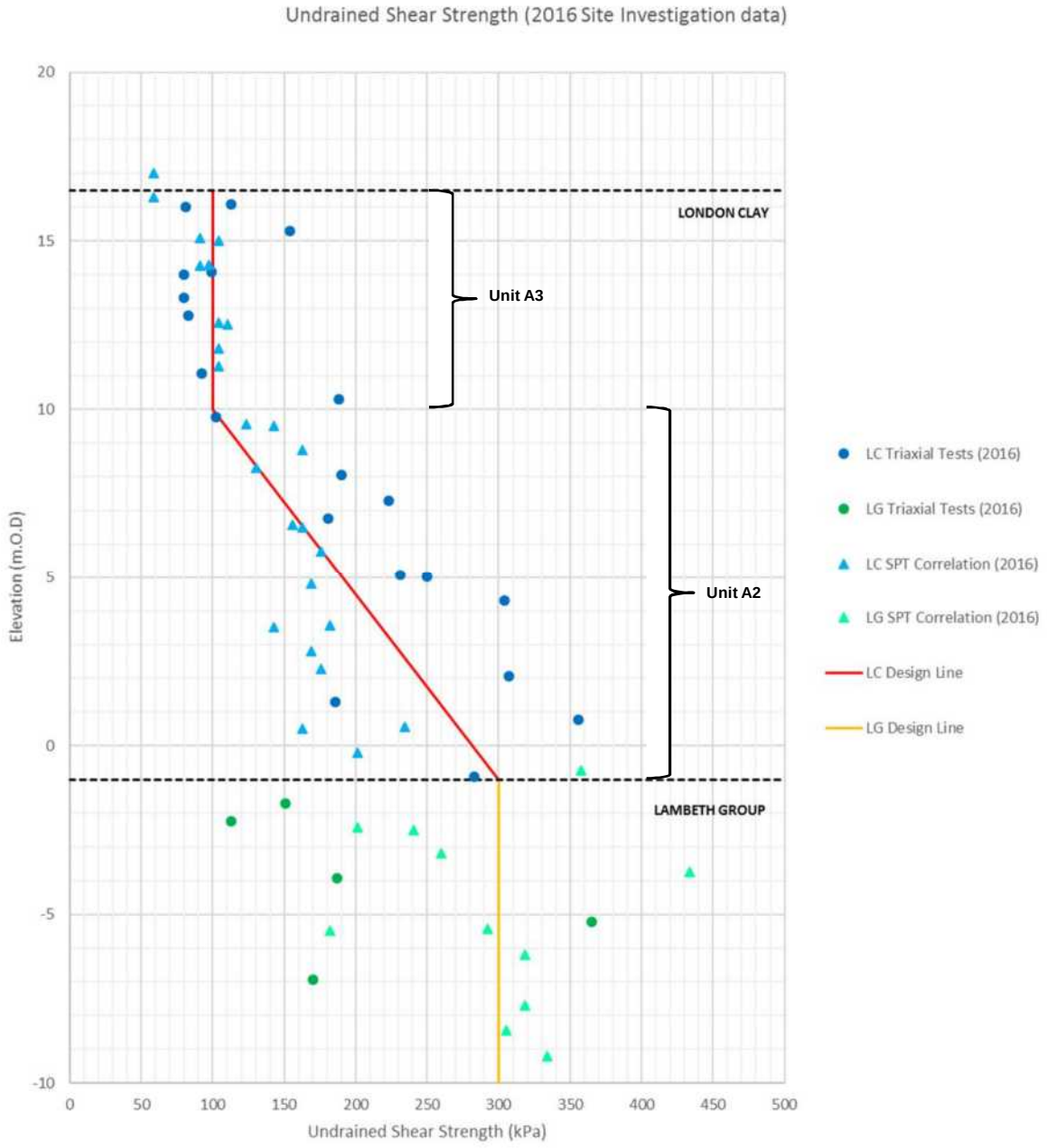
Unit A2: c_u = 100kPa at +10.0m.O.D increasing to 300kPa at -1.0m.O.D

Lambeth Group

SPT Correlation
c_u = 6.5N

Design Line

c_u = 300kPa



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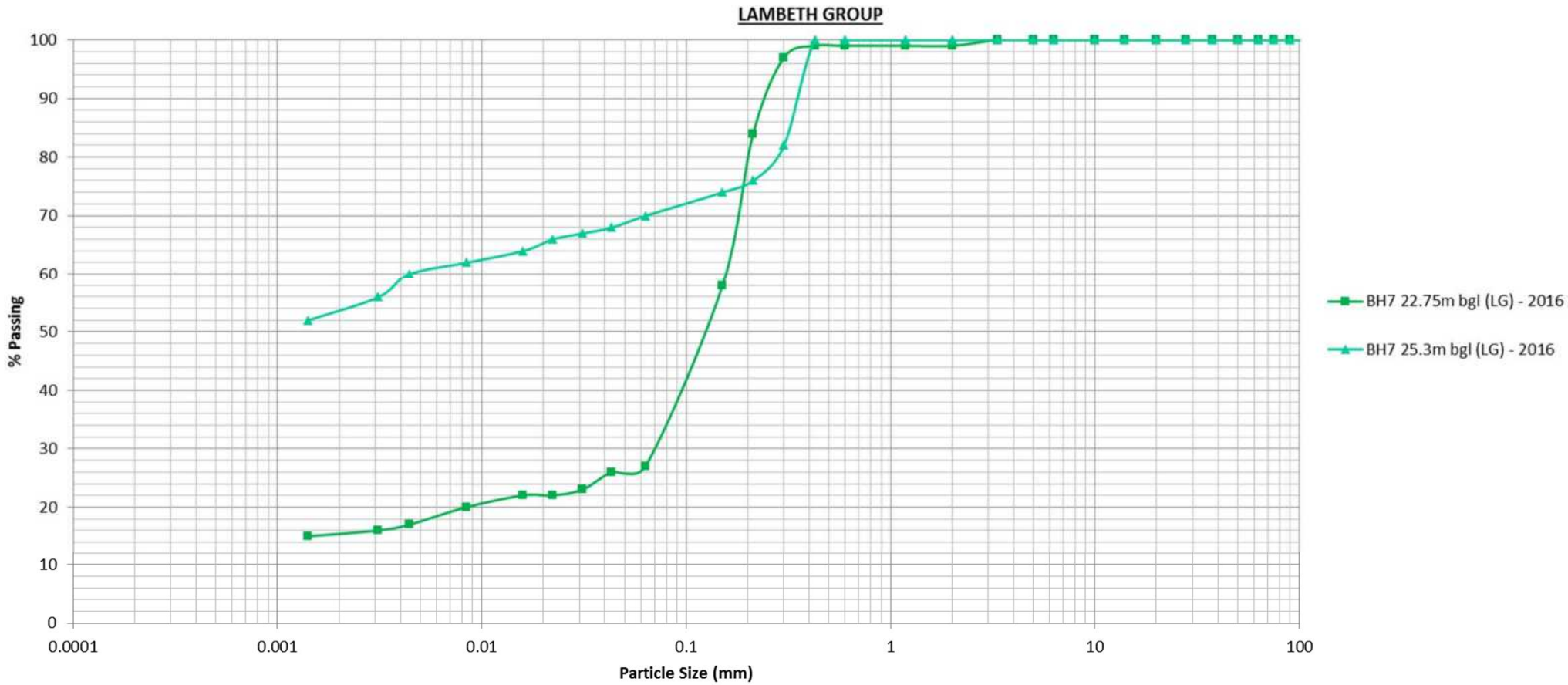
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.5
Project	Brill Place, London	Drawn by	SE
Title	Undrained Shear Strength vs. Elevation: Lab and SPT data correlation	Checked by	JR

Note: Samples were considered from Boreholes BH7, BH8, BH9, and BH10 in the above plot (2016 Site Investigation data)



CLAY	F	M	C	F	M	C	F	M	C	COBBLES
	SILT			SAND			GRAVEL			

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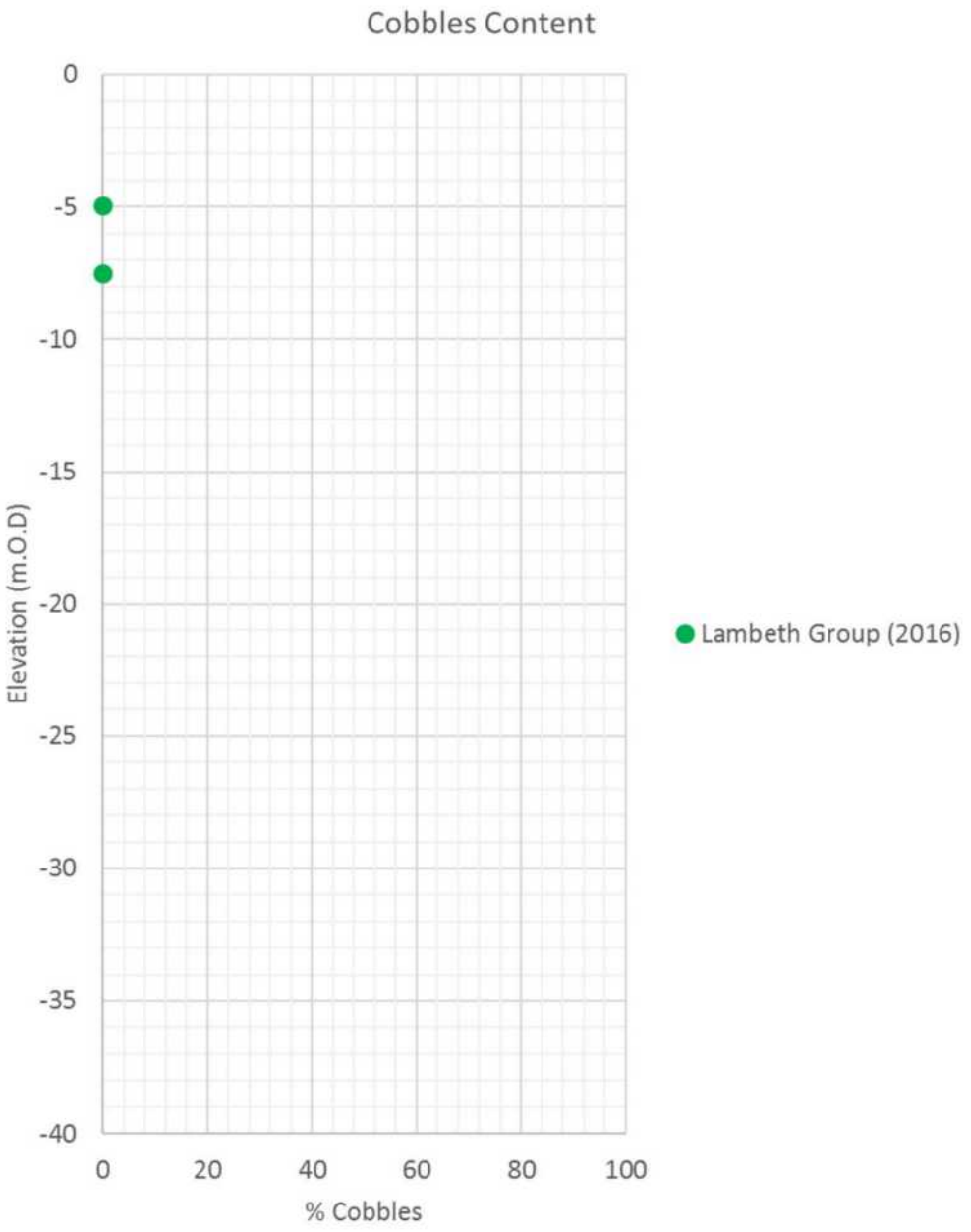
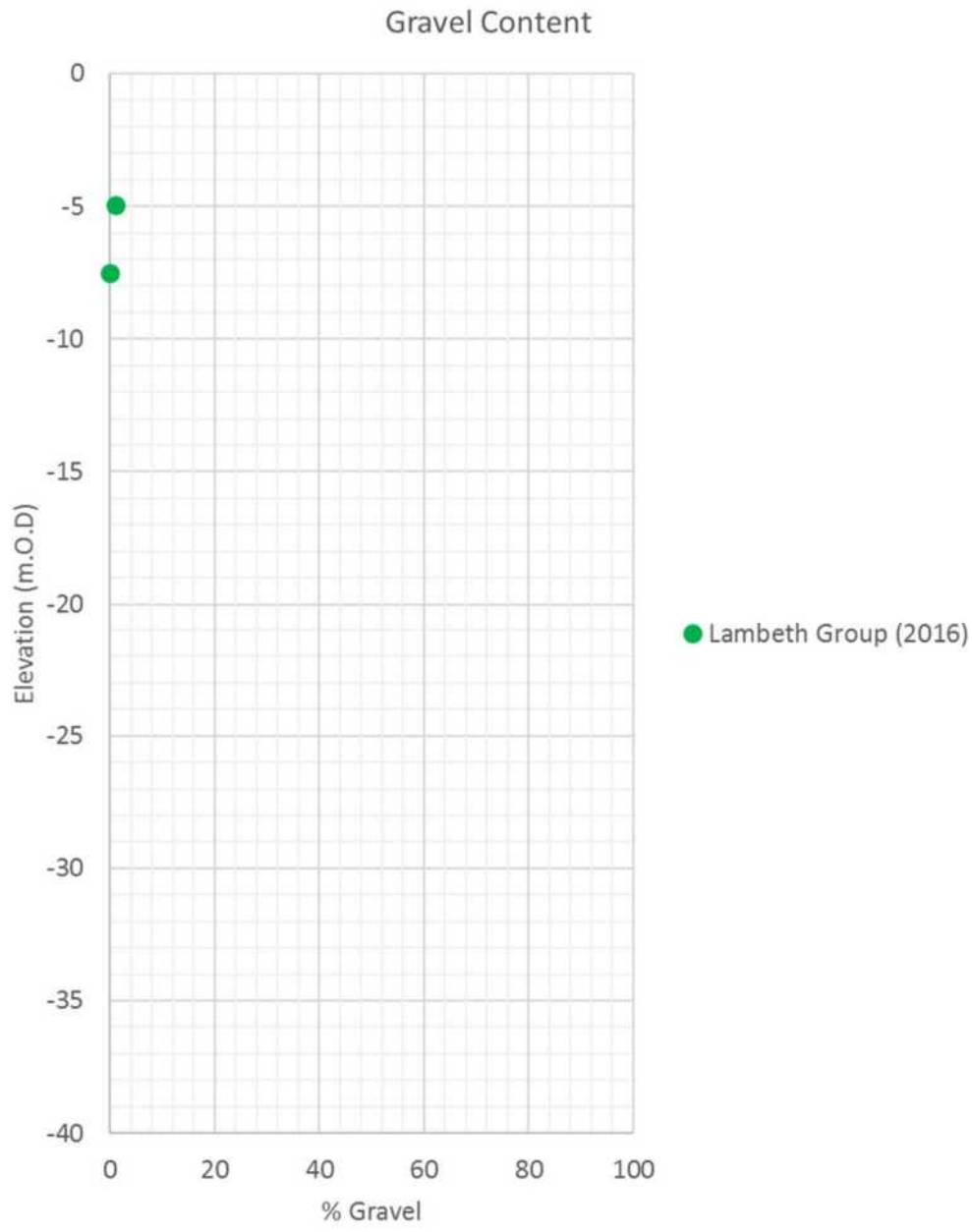
Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.6
Project	Brill Place, London	Drawn by	SE
Title	Sieve Analysis – Lambeth Group (2016 Site Investigation data)	Checked by	JR





WSP House,
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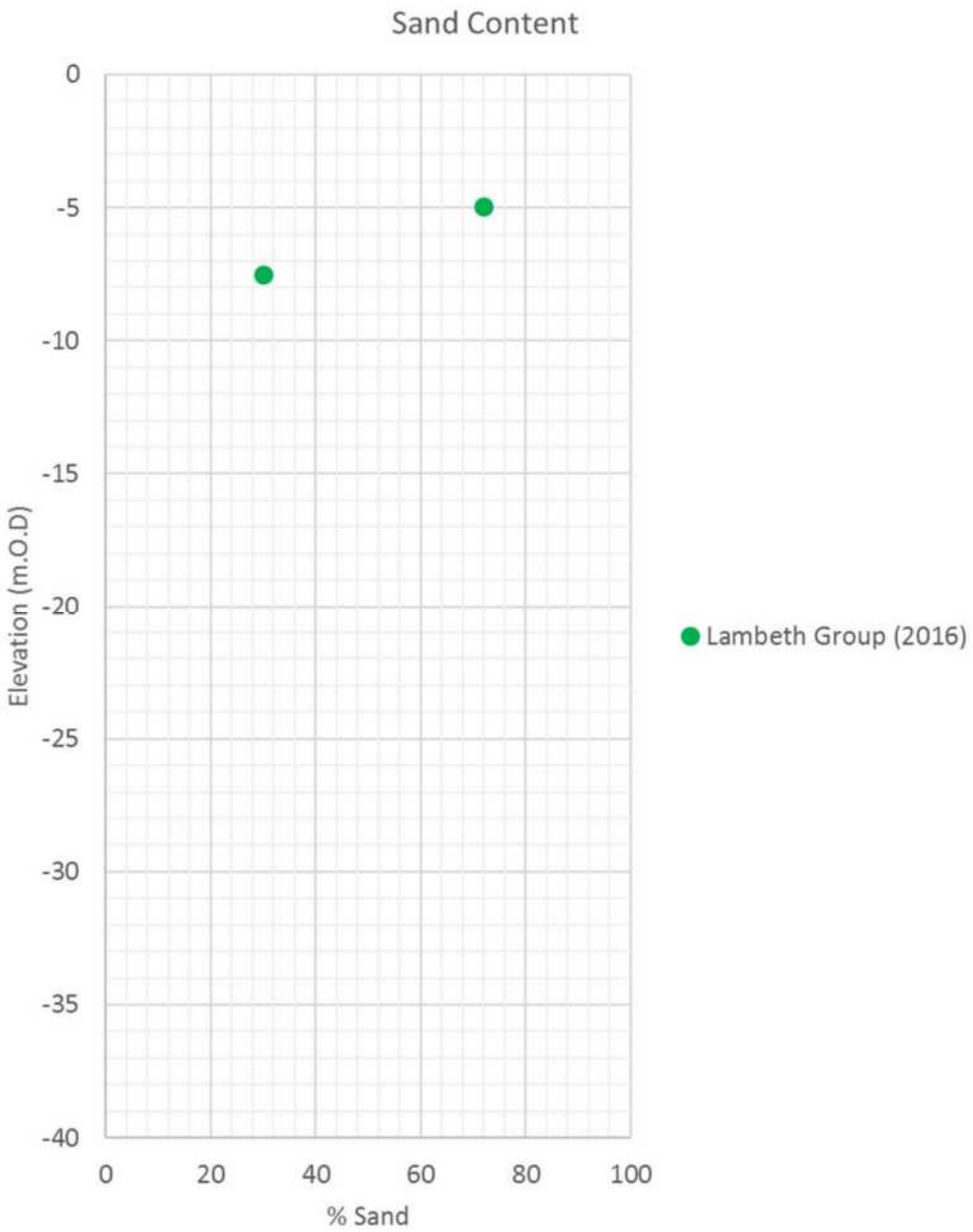
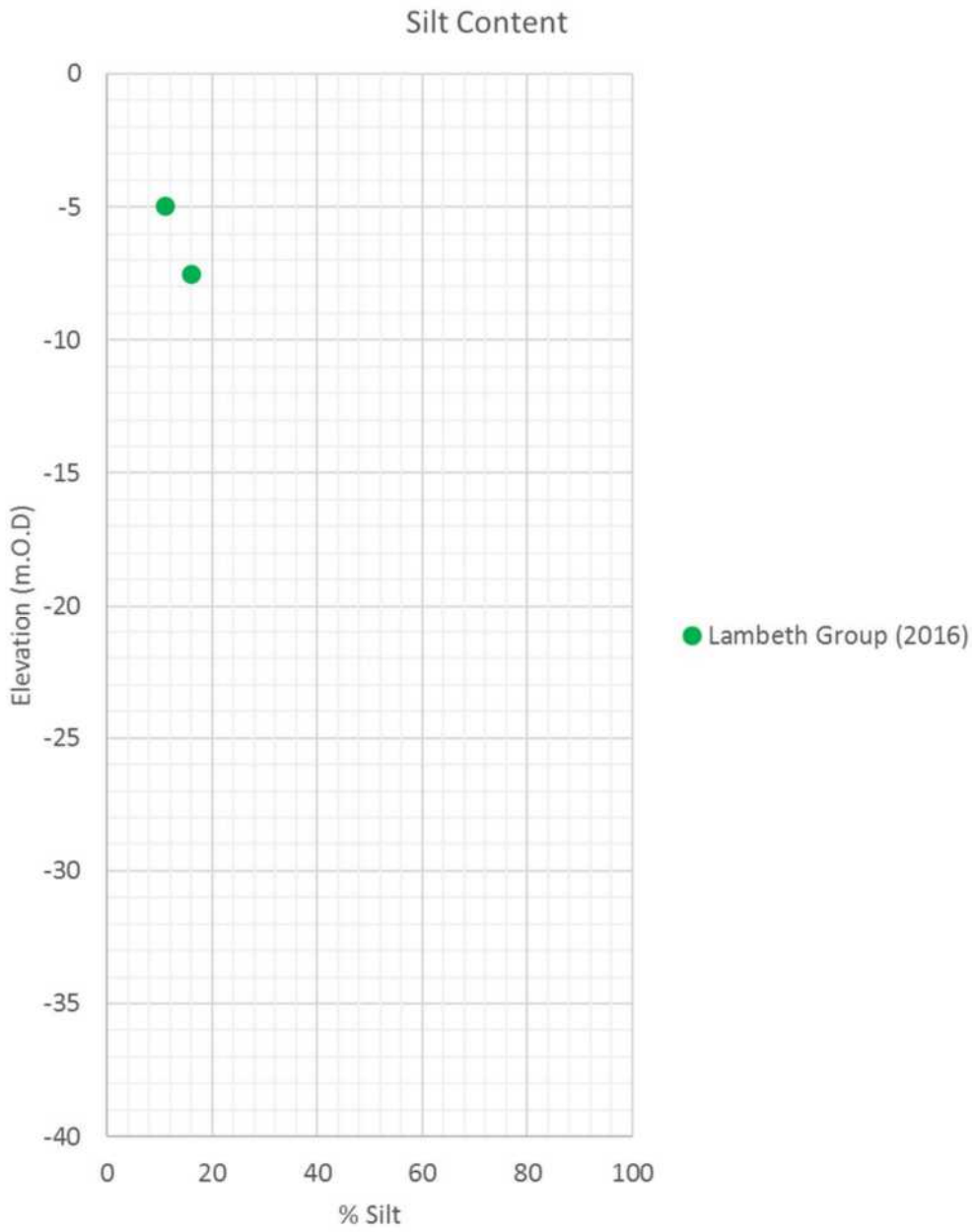
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.7
Project	Brill Place, London	Drawn by	SE
Title	Sieve Analysis – Lambeth Group (2016 Site Investigation data)	Checked by	JR

Note: Samples were considered from Borehole BH7 in the above plots





WSP House,
70 Chancery Lane,
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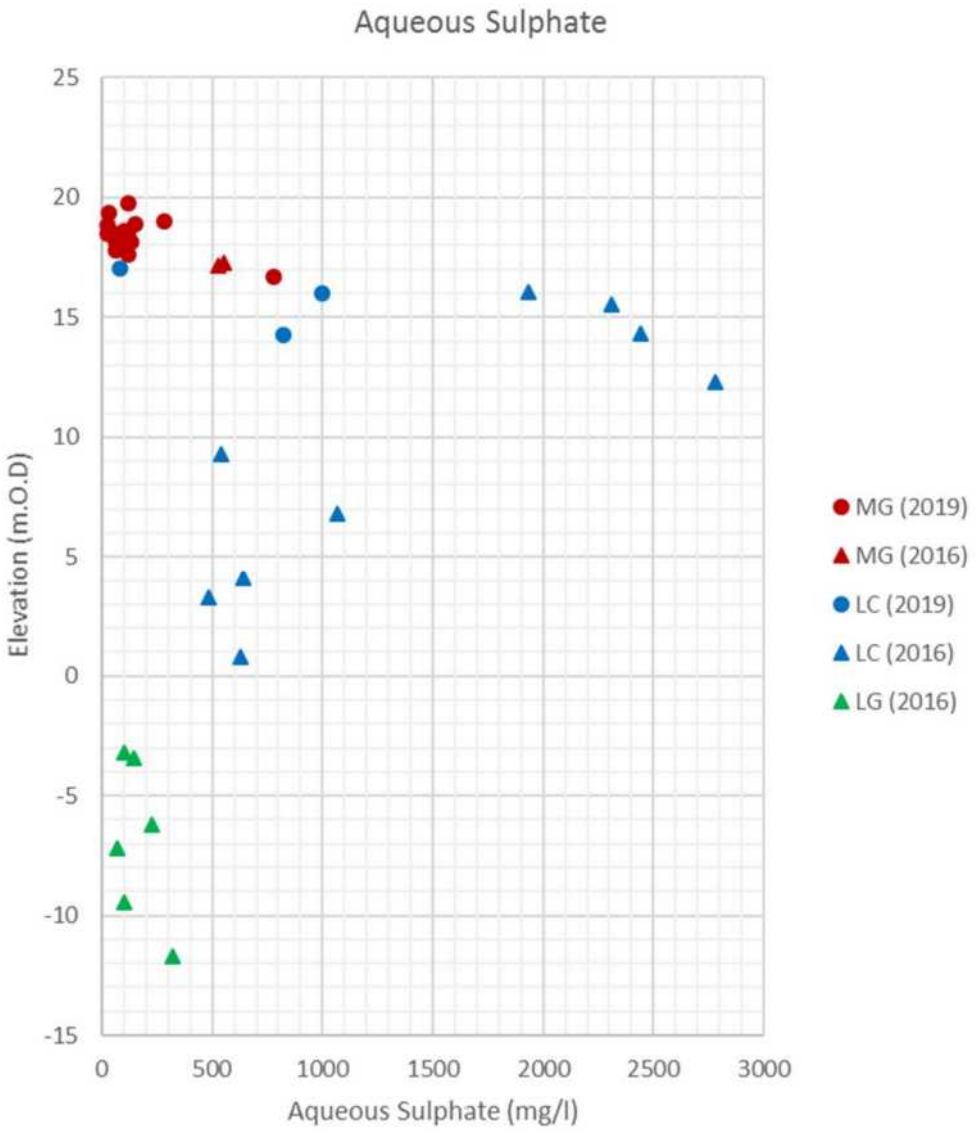
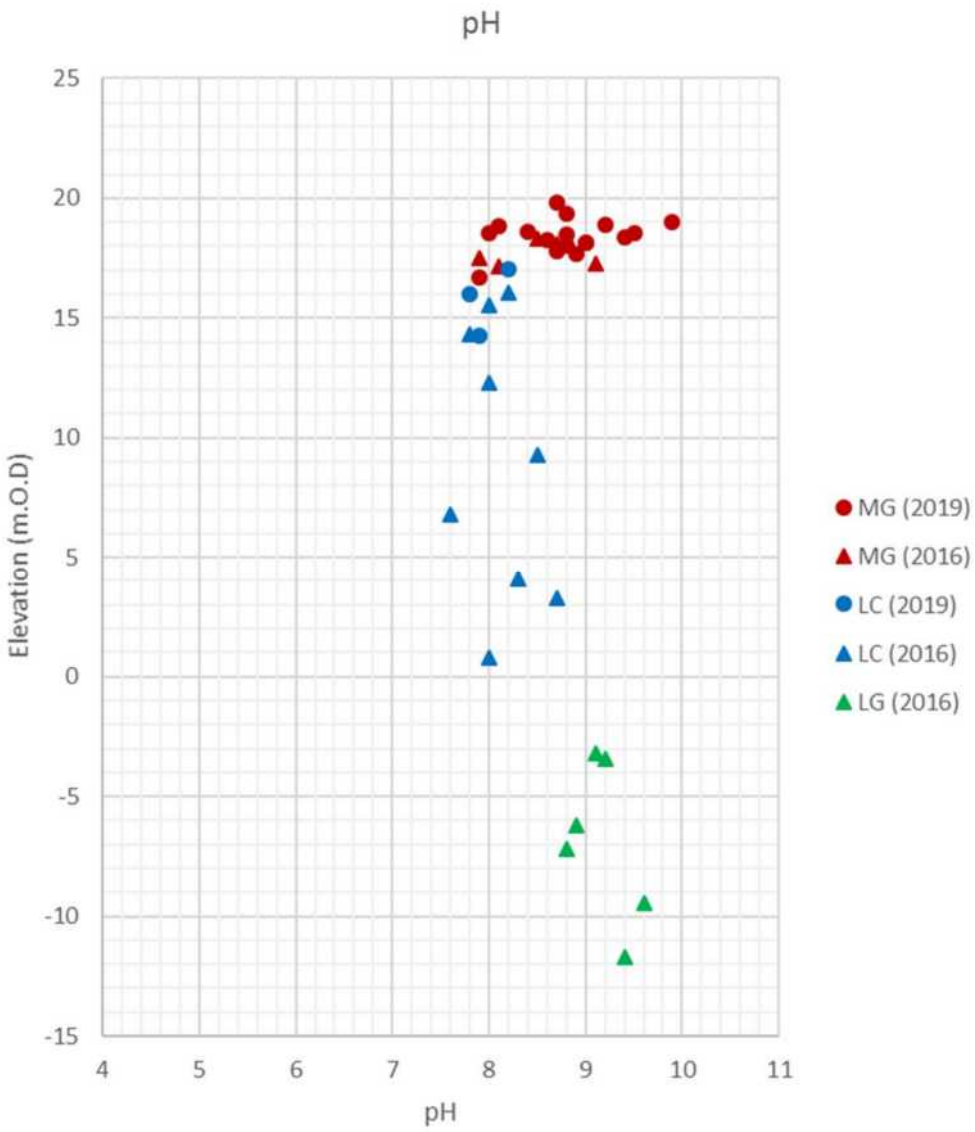
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.8
Project	Brill Place, London	Drawn by	SE
Title	Sieve Analysis – Lambeth Group (2016 Site Investigation data)	Checked by	JR

Note: Samples were considered from Borehole BH7 in the above plots





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Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	LBS Properties	Figure No.	Appendix C.9
Project	Brill Place, London	Drawn by	SE
Title	Water Soluble Sulphate and pH of Soil vs. Elevation (2019 & 2016 SI data)	Checked by	JR

Note: Samples were considered from all current (2019) exploratory holes and historic (2016) exploratory holes BH7, BH9, BH10, WS28, and WS29.

Appendix D

FACTUAL REPORT

GROUND ENGINEERING LIMITED

Newark Road
Peterborough PE1 5UA
Tel: 01733 566566

GROUND INVESTIGATION REPORT

BRILL PLACE

LONDON NW1

(Factual)

Report Reference No. C14727

On behalf of:-

ED Jersey Limited
c/o WSP
WSP House
70 Chancery Lane
London
WC2A 1AF

June 2019

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LOCATION, TOPOGRAPHY AND GEOLOGY OF THE SITE	2
SITE WORK	3
LABORATORY TESTING	7
EXPLORATORY HOLE LOCATION PLAN	
EXPLORATORY HOLE RECORDS	
MONITORING RESULTS	

APPENDICES

APPENDIX 1 ï CHEMICAL TEST RESULTS

ED JERSEY LIMITED

WSP
CONSULTING ENGINEERS

FACTUAL REPORT ON A GROUND INVESTIGATION AT BRILL PLACE LONDON NW1

Report Reference No. C14727 **June 2019**

INTRODUCTION

ED Jersey Limited, the client, intends to develop part of the southern end of the small public park at Brill Place, London NW1 for residential purposes. The proposed 22-storey Brill Place Tower scheme comprises a contemporary parkside building of 54 private residential apartments, with flexible floor space and a café at ground level.

The site is part of a larger redevelopment scheme for Central Somers Town, which was the subject of factual and interpretative site investigation reports by ESG in 2016.

Ground Engineering Limited was instructed by the client to carry out a further ground investigation under the direction of Consulting Engineers, WSP, to determine the nature and chemical characteristics of the soils beneath the site, and the presence of below ground obstructions around the proposed building footprint, in relation to the proposals and produce a factual report. In addition to chemical testing, gas and groundwater monitoring was to be included. No geotechnical laboratory testing was required within the current scope of works.

LOCATION, TOPOGRAPHY AND GEOLOGY OF THE SITE

Brill Place Park is located immediately north-west of the Brill Place roadway and opposite the Francis Crick Institute building within the Somers Town district of the London Borough of Camden, London NW1. The site is situated approximately 80m west of St. Pancras mainline railway station and is centred at National Grid Reference is TQ 52980 83130.

At the time of the investigation the 33m by 19m rectangular site was wholly within the southern end of Brill Place Park. The site was mainly grass traversed by asphalt surfaced footpaths, and contained a small, enclosed rectangular asphalt surfaced games court within its south-western quarter.

A number of semi-mature and mature trees were present within the park and the site.

A section of the Thames Water Fleet Storm Relief Sewer (Main Line) is known to locally run beneath the eastern side of Brill Place Park. It is understood that this approximately 2m diameter brick sewer has an invert level at 5.43mOD, hereabouts, so about 13m below ground level.

The ground level within the southern end of the park lies at about 19mOD to 20mOD. The park is gently undulating and locally slopes down towards the south-east. The surrounding ground levels generally fall gently north-eastwards towards the culverted River Fleet. The latter formerly flowed south-eastwards approximately 160m north-east of the site.

The 2006 geological map for the area at 1:50,000 scale, Sheet 256, shows the site to be directly underlain by the solid geology of the London Clay Formation. The 2016 site investigation, by others, confirmed the presence of the London Clay beneath an often significant thickness of made ground in part associated with the site's former use as a coal yard associated with the St. Pancras terminus.

SITE WORK

Four window sample boreholes (WS101 to WS104) and twenty-seven dynamic probe tests (DP101 to DP 127) were undertaken at positions agreed with the Engineer. Four additional window sample boreholes (WS101A, WS102A, WS104A & WS104B), and two additional dynamic probe tests (DP107A & DP108A), were also undertaken, in an attempt to complete boreholes/probe tests close to original borehole/probe tests that had been aborted due to near surface obstructions.

The exploratory hole positions are depicted on the site plan at the rear of this report. The site work was undertaken under the supervision of a Geo-environmental Engineer from Ground Engineering Limited. The works were carried out making due reference to generic and site specific risk assessments, and method statements. The intrusive works were undertaken within a working area delineated by Heras fencing and barriers.

The investigation was undertaken following the WSP specification and the protocols detailed in British Standards (BS) ôCode of Practice for Site Investigationsô (BS5930:1999), ôMethods of test for soils for engineering purposesô (BS1377:1990), and ôInvestigation of Potentially Contaminated Sitesô (BS10175:2001).

A licence was obtained from the London Borough of Camden Parks Department by the client to undertake the works within the existing public park.

Services information was provided prior to the start of the investigation and was referenced in relation to the exploratory hole positions prior to boring and a scan was undertaken using a cable avoidance tool (CAT). This included details of the Thames Water Fleet Storm Relief Sewer (Main Line).

The National Grid Coordinates and elevation of each exploratory hole position was determined by a surveyor using on-site measurements and base stations detailed on a topographical site survey plan provided by the client.

Unexploded Ordnance

An unexploded ordnance (UXO) risk assessment was previously obtained for the site by the client, which indicated a medium probability of encounter with unexploded World War II ordnance. An EOD specialist was employed to provide drilling personnel with an on-site pre-start briefing, and undertake periodic magnetometry testing within the starter pits and boreholes.

Tree Roots

The location of the boreholes within a park that contained trees with protection orders meant that the supervising Geo-environmental Engineer briefed the technicians undertaking the starter pits, at the exploratory hole positions, that live roots greater than 25mm diameter were not to be severed. If such a root was encountered the pits were either to be extended to avoid the root, and the root protected whilst excavation continued, or the hole position was to be relocated. In the event, neither of these measures was necessary, as roots greater than 25mm diameter were not met within the window sample borehole or dynamic probe test starter pits.

Window Sample Boreholes

A total of eight window sample boreholes were undertaken by a dynamic sampling rig on 10th and 11th April 2019. Asphalt hardstanding was cored, where present, using diamond drilling equipment. Starter pits were then dug to 1.00m to 1.20m below ground level using hand tools, in order to ensure the absence of buried services.

The dynamic/window sampling equipment consisted of 1.00m long drive-in samplers of specially constructed and strengthened 87mm to 57mm diameter steel sample tubes with a plastic core-liner. The samplers were driven into the ground by an automatic trip hammer weighing 63.50kg falling freely through 750mm. Upon extraction a continuous profile of the soil was obtained in the plastic liners (U) inserted in the samplers. The boreholes were cased to support the sides within coarse grained soils.

Only one of the eight attempted boreholes were completed at the intended depth of 6.00m (WS103), whilst the remaining holes/starter pits were abandoned at depths between 1.00m and 2.00m due to obstructions (suspected foundations, floor slabs or buried services) or very dense ground. Indeed, in WS102 a sampler barrel was irreparably deformed by attempting to drive the sampler into the ground at 1.10m depth.

Where recovered, the window sample liners were split, sub-sampled and described on site by the supervising Geo-environmental Engineer. In made ground and the top of the underlying natural strata, representative disturbed samples were taken from the starter pits and liners, and placed in polycarbonate pots and amber glass jars (D samples), or sealed in large plastic bags (B samples).

On abandonment/completion of boring at WS101, WS102A, WS103 and WS104B, 50mm diameter HDPE standpipe piezometers were installed to instructed depths between 1.00m and 2.50m. The annulus around each pipe was backfilled with pea gravel and a bentonite seal placed around the top of the installations within 0.50m to 1.00m of ground level. A protective stopcock cover was concreted into the ground flush with the surface over each installation. The remaining window sample boreholes were backfilled with bentonite and the surface layers were reinstated.

The window sample borehole records give the descriptions and depths of the various strata encountered, the samples taken and the groundwater conditions observed during boring, on completion and subsequently within the standpipes.

Dynamic Probe Tests

A total of twenty-nine dynamic probe tests were attempted by a second dynamic sampling rig between 8th and 10th April 2019. Asphalt hardstanding was cored, where present, using diamond drilling equipment. Starter pits were then dug to 1.00m to 1.20m below ground level using hand tools, in order to ensure the absence of buried services. A number of these starter pits were abandoned after uncovering buried obstructions. At positions WS107A and WS

108A, obstructions were met at 0.40m and 0.90m depth, and the holes relocated 1.00m distant at locations WS107 and WS 108. These second attempt at WS108 was similarly unsuccessful and abandoned.

Where starter pits were successfully completed, the holes were continued by dynamic probing using the super heavy dynamic sampling rig. The test comprised driving a 90º cone, 150mm^2 in area, on 35mm diameter rods using a 63.5kg hammer falling through 750mm. The blow count was recorded for every 100mm of penetration (N100). The results are presented as a plot of hammer blow counts against depth and follow the respective record for each probe test starter pit.

Thirteen of the twenty-nine probe tests were successfully completed at 5.00m below ground level, whilst the remainder of the probes refused on obstructions at depths between 1.30m and 4.10m, and were abandoned.

On completion the probe holes were backfilled with silica gravel and the starter pits/surface layers reinstated.

Monitoring

The water levels in the standpipe piezometers were subsequently monitored on six occasions between 18th April and 7th May 2019. In addition, during these six post fieldwork visits, a GFM 430 instrument was used to monitor methane, carbon dioxide and oxygen gas levels within the standpipes, together with ambient barometric pressure and flow rate.

The results have been tabulated to the rear of the exploratory hole records, whilst the groundwater observations (dry in all standpipes during each visit) have been added to the borehole records.

LABORATORY TESTING

The samples were inspected in the laboratory and assessments of the soil characteristics have been taken into account during preparation of the exploratory hole records. The soil sample descriptions are in accordance with BS5930:2015. The chemical testing schedule was devised by WSP and the testing was completed within a UKAS accredited laboratory. The results of the chemical tests are presented in Appendix 1. No geotechnical testing was required as part of this investigation.

Twenty soil samples recovered from the exploratory holes were tested for a suite comprising; total concentrations of arsenic, boron, cadmium, chromium, hexavalent chromium, copper, lead, mercury, nickel, zinc, pH, soluble sulphate, organic matter, speciated total petroleum hydrocarbons (TPH) Criteria Working Group (CWG) including benzene, toluene, ethylbenzene and xylene (BTEX) and methyl tertiary-butyl ether (MTBE), speciated polyaromatic hydrocarbons (PAH), phenols and free cyanide. In addition these samples were tested for selenium and speciated phenols.

The twenty samples were also screened for the presence/absence of asbestos containing material (ACM). In the single instance where ACM was present, it was identified by an analysing chemist using optical microscopy, and quantified by gravimetry.

Six selected samples of soil were also scheduled for a full Waste Acceptance Criteria (WAC) CEN Leachate Suite at 10l/kg.

In the absence of groundwater within the borehole installations it was not possible to undertake any groundwater testing, as had originally been contemplated by the Engineer.

GROUND ENGINEERING LIMITED

pp

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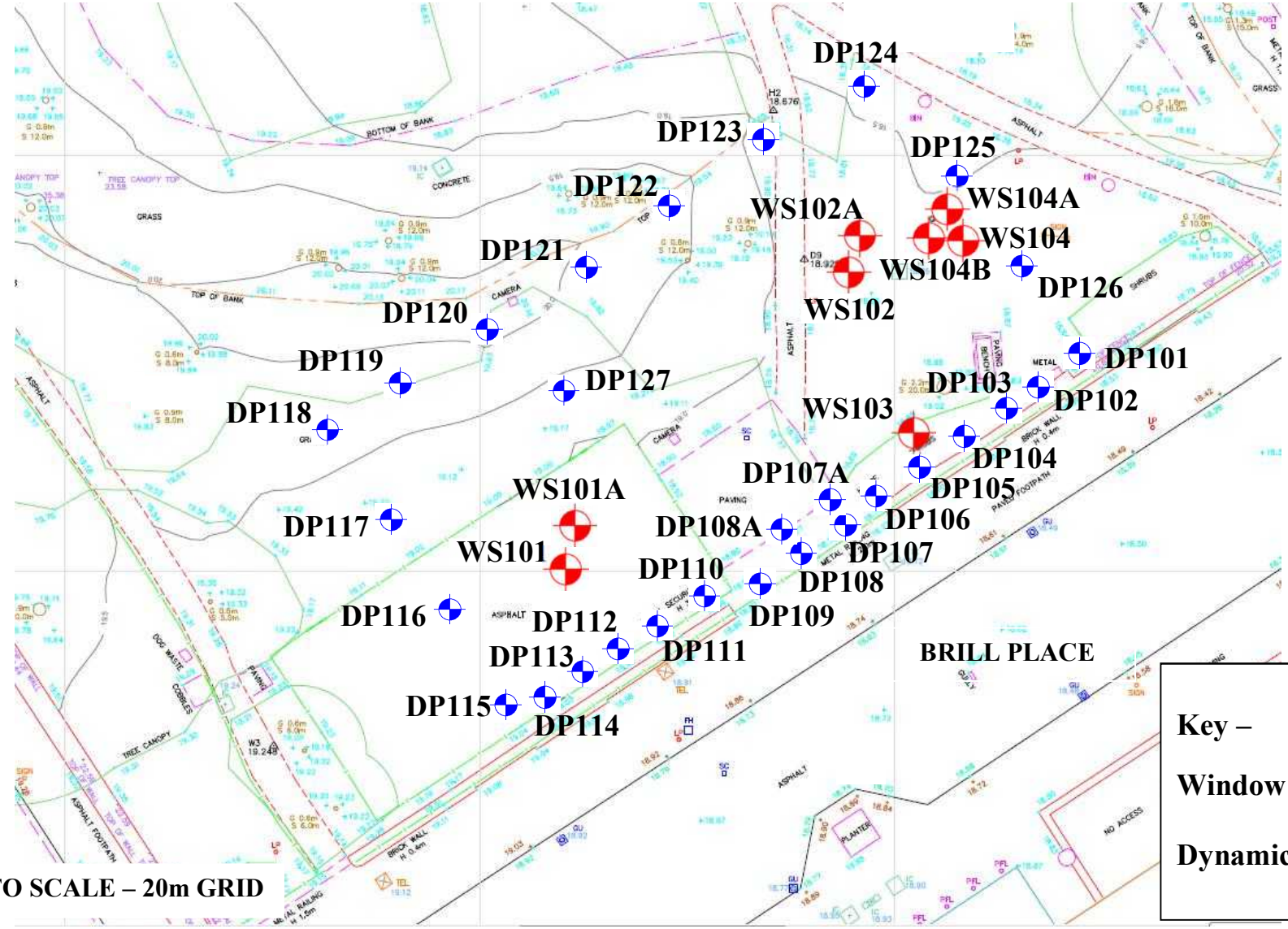
Exploratory Hole Location Plan

Based on a plan provided by the Engineer



Project: Brill Place, London NW1

Client: ED Jersey Limited

GROUND ENGINEERING LIMITED

Peterborough Tel : 01733 566566

Project No.

C14727

GROUND ENGINEERING LIMITED

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE WS101

Date: 11/04/19

Hole Size: 100mm dia to 1.40m

529865 mE 183120 mN
Ground Level: 19.12m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
					MADE GROUND - Dark grey and black ASPHALT.		0.06	19.06
					MADE GROUND - Brown SAND AND GRAVEL. Gravel of angular to sub-rounded concrete.		0.15	18.97
					MADE GROUND - CONCRETE slab.		0.20	18.92
0.30	D1				MADE GROUND - Light brown and red brown SAND AND GRAVEL. Gravel of angular to sub-rounded concrete and brick.		0.40	18.72
0.50	D2				MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, brick, ash and flint.			
0.80	D3							
							0.90	18.22
1.00	D4				MADE GROUND - Dark grey and blue grey mottled, slightly sandy, slightly gravelly, ashy SILT. Gravel of angular to sub-rounded brick and concrete.		1.10	18.02
1.30	D5				MADE GROUND - Soft, brown, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, flint and brick.			
							1.40	17.72
					Hole abandoned at 1.40m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. No live roots observed
3. Unable to advance sampler below 1.40m, borehole abandoned
4. Gas monitoring standpipe installed to 1.40m depth
5. Standpipe also dry on 4th and 7th May 2019

Project No 14727

Scale 1:25

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▽c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						11/04/19	1.40		dry
						18/04/19	1.40	0.40	dry
						23/04/19	1.40	0.40	dry
						26/04/19	1.40	0.40	dry
						29/04/19	1.40	0.40	dry

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Site: **BRILL PLACE, LONDON NW1**

Date: 11/04/19

Hole Size: 100mm dia to 1.10m

WINDOW SAMPLE WS101A

529865 mE 183121 mN

Ground Level: 19.12m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Dark grey and black ASPHALT.		0.07	19.05
				MADE GROUND - Brown SAND AND GRAVEL. Gravel of angular to sub-rounded concrete and igneous rock.		0.15	18.97
0.30	D2			MADE GROUND - CONCRETE paving slab.		0.20	18.92
				MADE GROUND - Light brown and red brown SAND AND GRAVEL. Gravel of angular to sub-rounded brick and concrete.		0.35	18.77
0.60	D3			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded concrete, brick, flint, ash and concrete cobbles.		0.75	18.37
1.00	D4			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded brick, concrete, flint and much ash.		1.10	18.02
				MADE GROUND - CONCRETE.			
				Hole abandoned at 1.10m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.10m depth
2. No live roots observed
3. Hole abandoned on concrete obstruction at 1.10m depth

Project No 14727

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▽c Depth to Water on completion
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M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						11/04/19	1.10		dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE WS102

Date: 10/04/19

Hole Size: 100mm dia to 1.10m

529878 mE 183134 mN

Ground Level: 18.93m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Firm, brown, slightly sandy, gravelly, silty CLAY. Gravel of angular to sub-rounded brick, concrete, limestone and ash.		0.20	18.73
0.40	D2			MADE GROUND - Brown and grey, silty, sandy GRAVEL with occasional granite cobbles. Gravel of angular to sub-rounded brick, concrete and granite.			
0.70	D3						
1.00	D4					1.10	17.83
				Hole abandoned at 1.10m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.10m depth
2. No live roots observed
3. Unable to advance sampler below 1.10m depth, hole abandoned

Project No 14727

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KEY
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▽ Water Strike
▽c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						10/04/19	1.10		dry

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Site: **BRILL PLACE, LONDON NW1**

Date: 11/04/19

Hole Size: 100mm dia to 1.00m

WINDOW SAMPLE WS102A

529878 mE 183136 mN

Ground Level: 19.03m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.20	D1				MADE GROUND - Soft, brown and dark brown mottled, slightly gravelly, silty CLAY. gravel of angular to sub-rounded flint, concrete, brick and ash.		0.30	18.73
0.50	D2				MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded concrete, brick, flint and ash.			
1.00	D3						1.00	18.03
					Hole abandoned at 1.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.00m depth
2. Live roots observed to at least 1.00m depth
3. Unable to advance hole below 1.00m depth, borehole abandoned
4. Gas monitoring standpipe installed to 1.00m depth
5. Standpipe also dry on 4th and 7th May 2019

Project No 14727

Scale 1:25

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Depth m Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
11/04/19	1.20		dry
18/04/19	1.00	0.50	dry
23/04/19	1.00	0.50	dry
26/04/19	1.00	0.50	dry
29/04/19	1.00	0.50	dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE WS103

Date: 10/04/19

Hole Size: 100mm dia to 6.00m

529880 mE 183127 mN

Ground Level: 18.99m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.10	D1				MADE GROUND - Firm, friable, brown and dark brown mottled, slightly sandy, slightly gravelly to gravelly, silty CLAY with occasional granite cobbles. Gravel of angular to sub-rounded brick, flint, concrete, ash and mortar.			
0.40	D2							
0.50-0.80	B1							
0.70	D3							
1.00	D4							
							1.20	17.79
1.30	D5				MADE GROUND - Brown, orange brown and grey, silty SAND AND GRAVEL. Gravel of concrete, brick, ash, flint, quartz, clinker and wood fragments.			
1.50	D6							
2.00	D7						2.00	16.99
					MADE GROUND - Firm, brown, orange brown and grey mottled, slightly gravelly CLAY. Gravel of brick, flint and concrete.			
2.30	D8							
2.40	D9						2.50	16.49
					Stiff, brown, orange brown and grey mottled, with occasional orange brown silt partings.			
2.70	D10							
3.00	D11				(WEATHERED LONDON CLAY)			
3.30	D12							
							3.50	15.49
3.60	D13				Stiff, closely fissured, brown and orange brown mottled CLAY with blue grey stained fissure planes, and occasional orange brown silt partings.			
3.80	W1		▼c		(WEATHERED LONDON CLAY)			
3.90	D14							
							4.10	14.89
4.20	D15				Stiff, closely fissured, brown CLAY with orange brown stained fissure planes, occasional orange brown silt partings, and occasional selenite crystals.			
					(WEATHERED LONDON CLAY)			
4.70	D16							
							5.00	13.99

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Live roots observed to 2.00m depth
3. Gas monitoring standpipe installed to 2.50m depth

Project No 14727

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KEY
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W - Water Sample
▼ Water Strike
▼c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
10/03/19	6.00		3.80
18/04/19	2.50	1.00	dry
23/04/19	2.50	1.00	dry
26/04/19	2.50	1.00	dry
29/04/19	2.50	1.00	dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE WS103

Date: 10/04/19

Hole Size: 100mm dia to 6.00m

529880 mE 183127 mN

Ground Level: 18.99m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
5.10	D17				Stiff, closely fissured, brown CLAY with orange brown stained fissure planes, occasional orange brown silt partings, and occasional selenite crystals.		5.00	13.99
5.40	D18				(WEATHERED LONDON CLAY)			
5.90	D19						6.00	12.99
					Hole completed at 6.00m depth			

REMARKS

Project No 14727

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KEY

D - Disturbed Sample
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W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes

No	Depth m Struck	Rose to	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Casing	Water
04/05/19	2.50	1.00	dry
07/05/19	2.50	1.00	dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE WS104

Date: 10/04/19

Hole Size: 100mm dia to 2.00m

529882 mE 183135 mN
Ground Level: 18.85m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Dark brown and dark grey mottled, sandy, gravelly SILT. Gravel of angular to sub-rounded flint, brick and concrete.		0.15	18.70
0.30	D2			MADE GROUND - Firm, brown and dark brown mottled, slightly sandy, gravelly CLAY with occasional granite and concrete cobbles. Gravel of angular to sub-rounded brick and concrete.		0.40	18.45
0.50-0.80	B1			MADE GROUND - Dark brown, silty SAND AND GRAVEL with occasional cobbles of concrete and brick. Gravel of angular to sub-rounded brick, concrete and ash.			
0.60	D3						
0.90	D4						
1.20	D5					1.30	17.55
1.40	D6			MADE GROUND - Orange brown SAND AND GRAVEL. (Suspected service trench 'pea gravel')		1.60	17.25
1.80	D7			Firm, brown, orange brown and grey mottled, silty CLAY. (WEATHERED LONDON CLAY)		2.00	16.85
				Hole abandoned at 2.00m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. Live roots observed to 0.50m depth
3. Borehole abandoned at 2.00m, unstable 'pea gravel' encountered 1.30m to 1.60m, suspected buried service. Unable to use casing to support hole sides as could damage service
4. Hole position moved to WS104A

Project No 14727

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▼c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▼s Standpipe Level

Groundwater Strikes						Groundwater Observations			
		Depth m					Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						10/04/19	2.00		dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE
WS104A

Date: 10/04/19

Hole Size: 100mm dia to 1.10m

529881 mE 183137 mN
Ground Level: 18.75m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Firm, dark brown, slightly sandy, gravelly, silty CLAY.		0.20	18.55
0.40	D2			MADE GROUND - Brown, silty SAND AND GRAVEL with occasional concrete cobbles. Gravel of angular to sub-rounded brick and concrete.			
0.50-0.80	B1						
0.70	D3						
1.05	D4					1.00	17.75
				MADE GROUND - Orange brown and light brown SAND.		1.10	17.65
				Hole abandoned at 1.10m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.10m depth
2. Live roots observed to 0.50m depth
3. Hole abandoned at 1.10m due to obstruction and relocated to position WS104B

Project No 14727

Scale 1:25

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▽c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes						Groundwater Observations			
	Depth m						Depth m		
No	Struck	Rose to	Rate	Cased	Sealed	Date	Hole	Casing	Water
						10/04/19	1.10		dry

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Site: **BRILL PLACE, LONDON NW1**

WINDOW SAMPLE
WS104B

Date: 11/04/19

Hole Size: 100mm dia to 1.20m

529879 mE 183135 mN
Ground Level: 18.90m. O.D.

Samples and in-situ Tests			(Date) Water	Inst.	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result						
0.20	D1				MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded brick, flint, concrete and ash.		0.30	18.60
0.50	D2				MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, brick, ash, flint and granite.			
1.00	D3						1.20	17.70
					Hole abandoned at 1.20m depth			

REMARKS
1. Starter pit excavated from 0.00m to 1.20m depth
2. No live roots observed
3. Unable to advance sampler below 1.20m depth, hole abandoned
4. Gas monitoring standpipe installed to 1.10m depth
5. Standpipe also dry on 4th and 7th May 2019

Project No 14727

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KEY
D - Disturbed Sample
B - Bulk Sample
U - Undisturbed Sample
W - Water Sample
▽ Water Strike
▽c Depth to Water on completion
J - Jar Sample
M - Mackintosh Probe
V - Vane Shear Test Cohesion ( ) kPa
P( ) - Hand Penetrometer Cohesion ( ) kPa
▽s Standpipe Level

Groundwater Strikes

No	Struck (Depth m)	Rose to (Depth m)	Rate	Cased	Sealed

Groundwater Observations

Date	Depth m Hole	Depth m Casing	Depth m Water
11/04/19	1.20		dry
18/04/19	1.10	0.60	dry
23/04/19	1.10	0.60	dry
26/04/19	1.10	0.60	dry
29/04/19	1.10	0.60	dry

GROUND ENGINEERING LIMITED

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP101

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529890 mE 183131 mN
Ground Level: 18.85m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, dark brown and brown mottled, slightly sandy, slightly gravelly, silty CLAY with many brick cobbles. Gravel of angular to sub-rounded brick, flint, concrete, ash and glass.			
0.70	D2						
1.10	D3						
						1.20	17.65
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 1.00m depth
2. Pit dry
3. Pit sides stable
4. Pit extended by dynamic probe to 5.00m depth

Project No	
14727	
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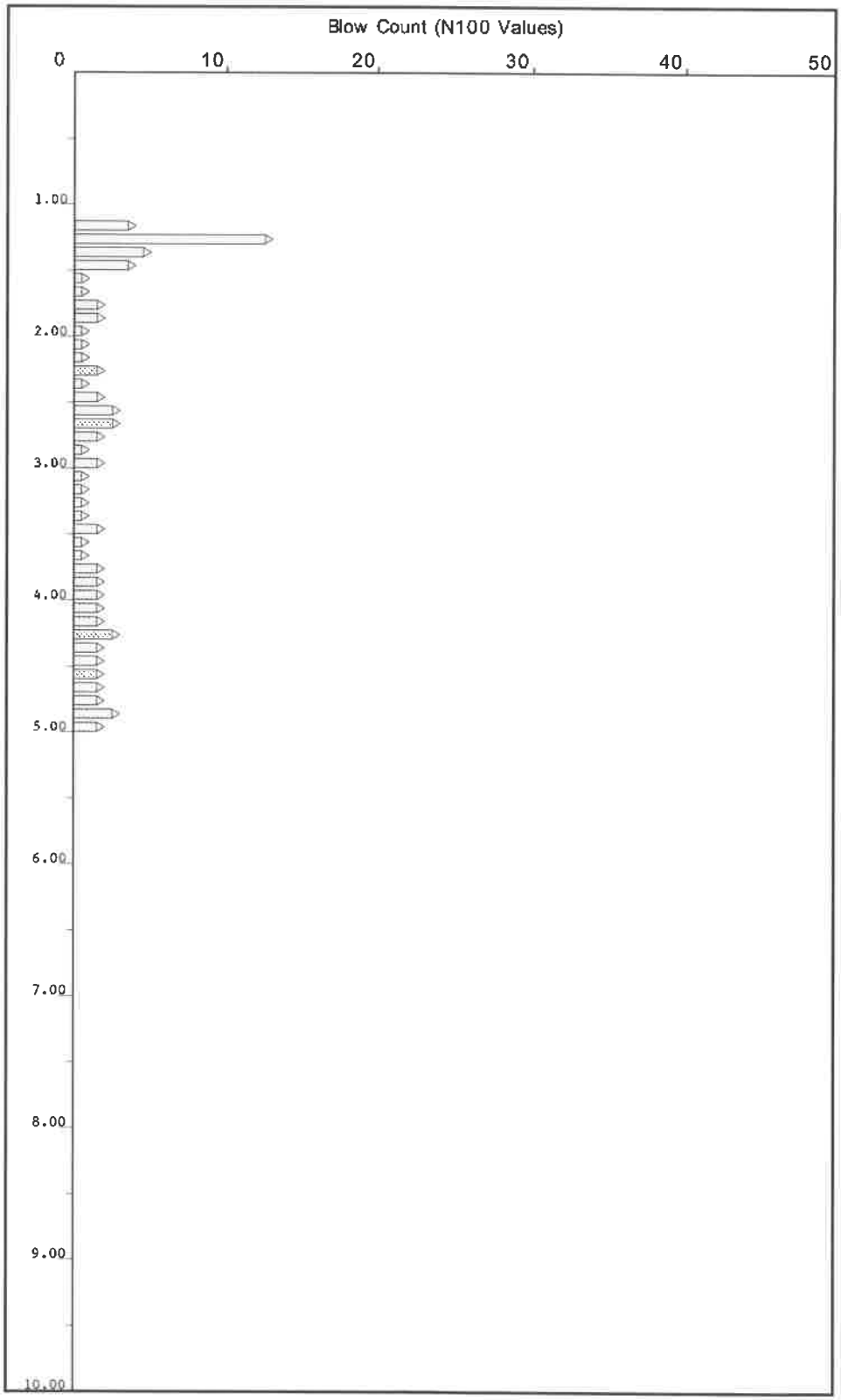
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP101 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		4
.3		13
.4		5
.5		4
.6		1
.7		1
.8		2
.9		2
2.0		1
.1		1
.2		1
.3		2
.4		1
.5		2
.6		3
.7		3
.8		2
.9		1
3.0		2
.1		1
.2		1
.3		1
.4		1
.5		2
.6		1
.7		1
.8		2
.9		2
4.0		2
.1		2
.2		2
.3		3
.4		2
.5		2
.6		2
.7		2
.8		2
.9		3
5.0		2



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP102

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 2.10m D.

529886 mE 183129 mN

Ground Level: 18.89m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.40	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY with some cobbles of brick and concrete. Gravel of angular to sub-rounded brick, concrete, flint and ash			
0.80	D2					0.90	17.99
				VOID			
						2.10	16.79
				MADE GROUND - CONCRETE.			
				Hole abandoned at 2.10m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to at least 0.90m depth
2. Pit dry
3. Pit sides stable
4. Void uncovered at 0.90m depth, found to 2.10m depth where concrete obstruction/possible floor present
5. Hole abandoned and capped at 0.90m depth

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Site: BRILL PLACE, LONDON NW1

TRIAL PIT
DP103

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529884 mE 183128 mN
Ground Level: 18.92m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.50	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY with some cobbles of brick and concrete. Gravel of angular to sub-rounded brick, concrete, flint and ash.			
1.00	D2					1.20	17.72
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Probe test abandoned on obstruction at 1.30m depth

Project No 14727

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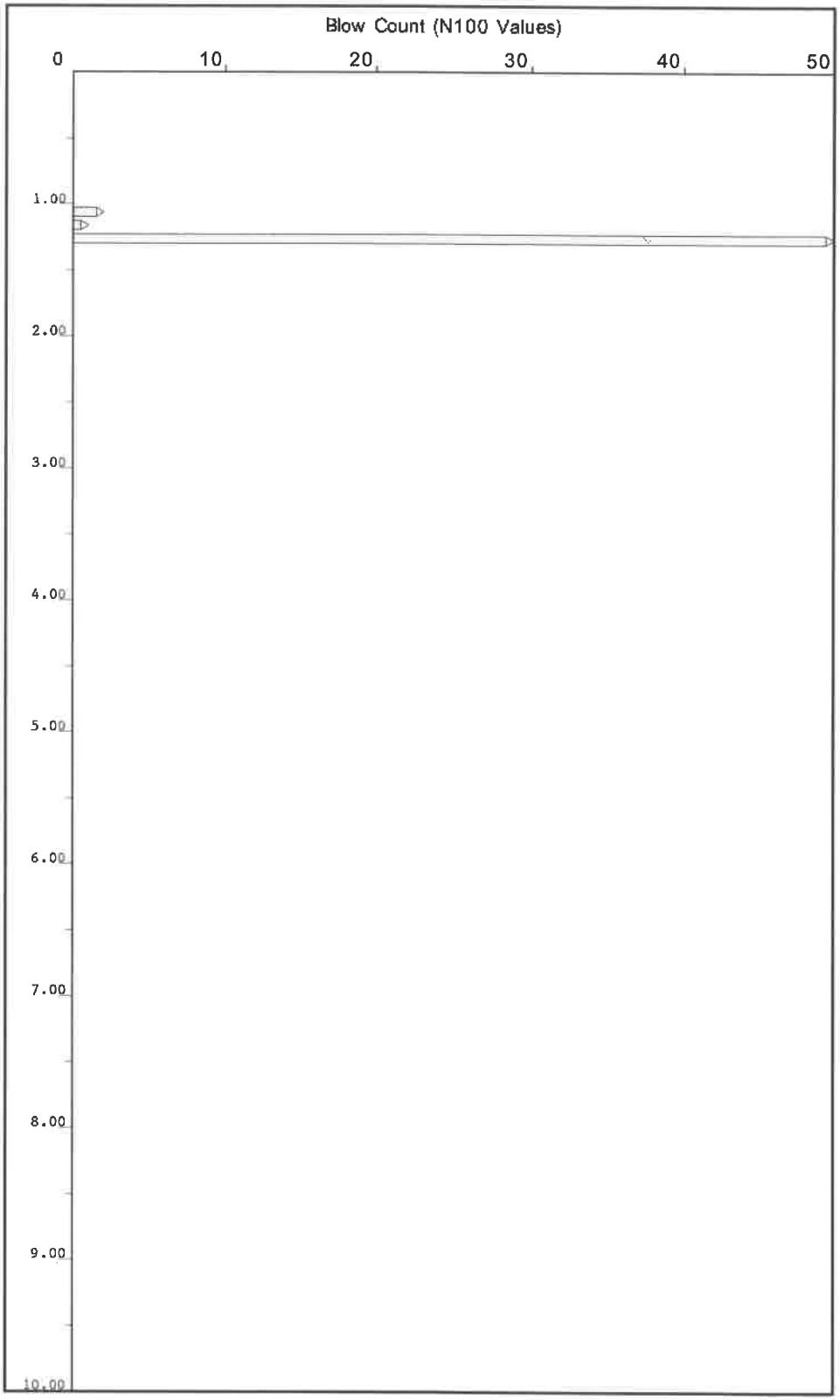
GROUND ENGINEERING LIMITED Tel: 01733-566586 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP103 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		2
.2		1
.3		50



Remarks :	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

GROUND ENGINEERING LIMITED

Tel: 01733-565565
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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP104

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 0.50m D.

529886 mE 183127 mN

Ground Level: 18.92m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to rounded brick, concrete, flint and ash.		0.30	18.62
				MADE GROUND - CONCRETE.		0.50	18.42
				Pit abandoned at 0.50m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to 0.30m depth
2. Pit dry
3. Pit sides stable
4. Hole abandoned at 0.50m depth in concrete

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP105

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529881 mE 183125 mN
Ground Level: 18.89m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, brick, flint and ash.			
0.70	D2						
1.10	D3						
						1.20	17.69
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 1.20m depth
2. Pit dry
3. Pit sides stable
4. Pit extended by dynamic probe to 5.00m depth

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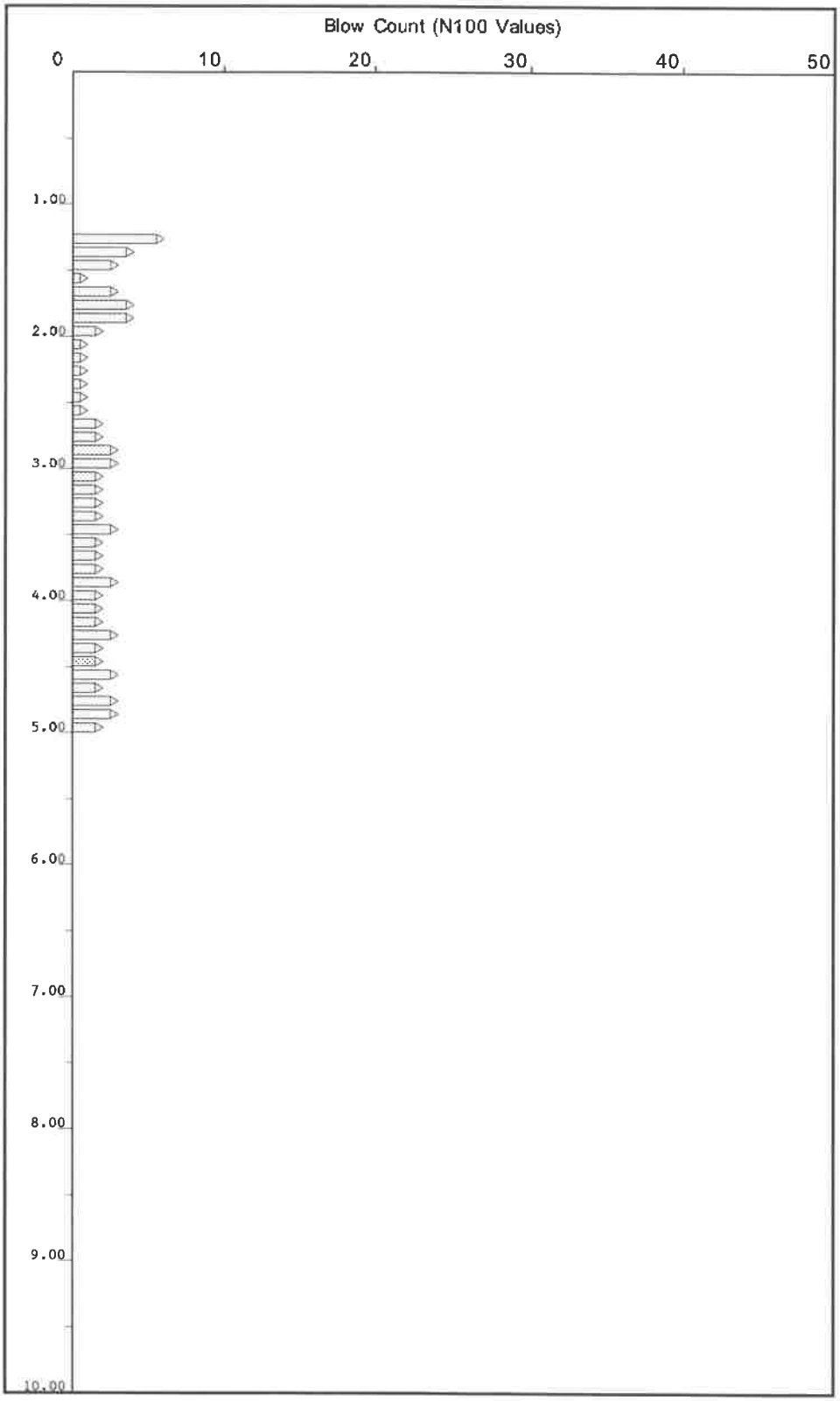
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP105 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		6
.3		4
.4		3
.5		1
.6		3
.7		4
.8		4
.9		2
2.0		1
.1		1
.2		1
.3		1
.4		1
.5		1
.6		1
.7		2
.8		2
.9		3
3.0		3
.1		2
.2		2
.3		2
.4		2
.5		3
.6		2
.7		2
.8		2
.9		3
4.0		2
.1		2
.2		2
.3		3
.4		2
.5		2
.6		3
.7		2
.8		3
.9		3
5.0		2



Remarks :			
	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP106

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529879 mE 183124 mN
Ground Level: 18.82m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.50	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, brick, flint and ash.			
1.00	D2					1.20	17.62
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 1.10m depth
2. Pit dry
3. Pit sides stable
4. Pit extended by dynamic probe to 5.00m depth

Project No	
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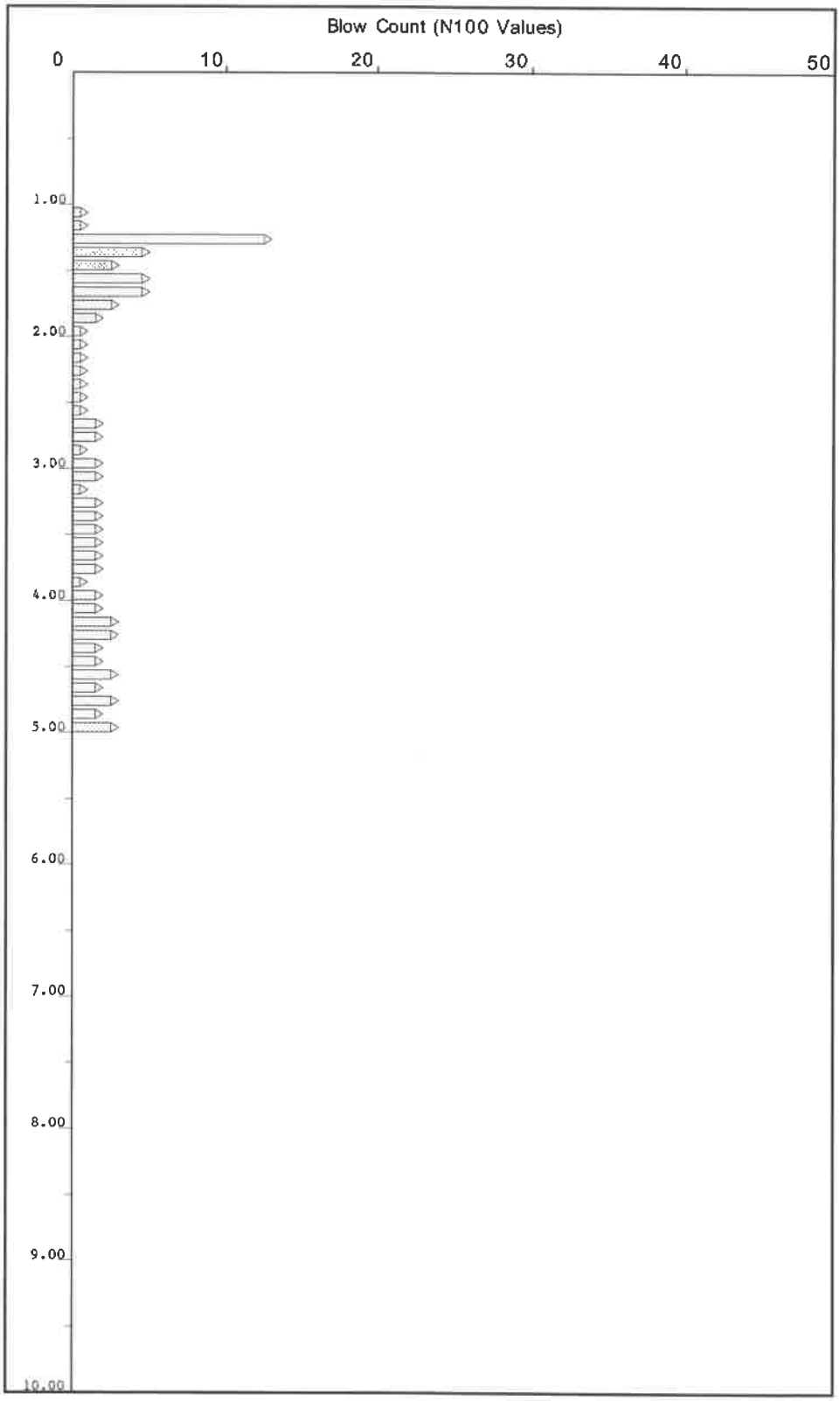
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP106 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

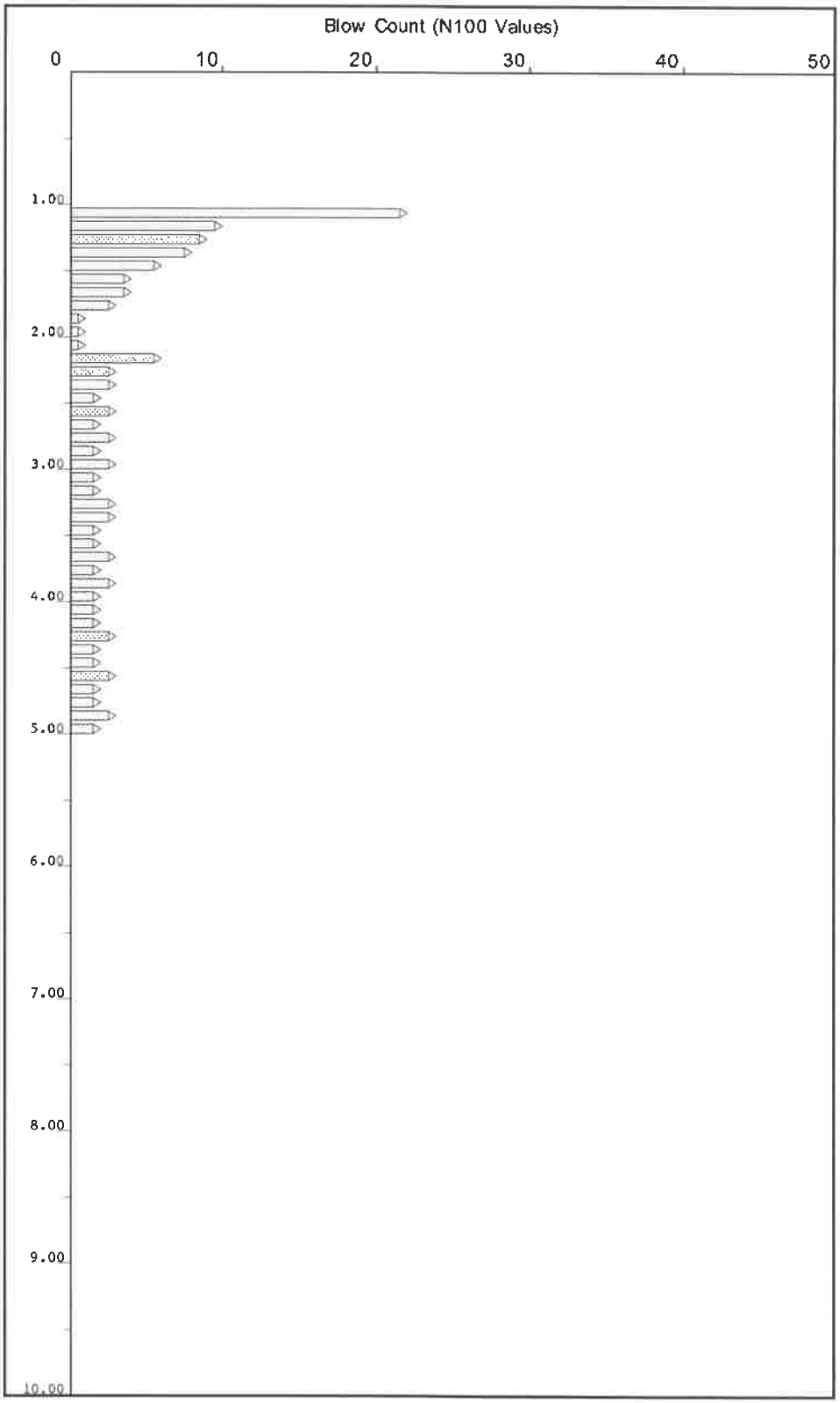
Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		1
.2		1
.3		13
.4		5
.5		3
.6		5
.7		5
.8		3
.9		2
2.0		1
.1		1
.2		1
.3		1
.4		1
.5		1
.6		1
.7		2
.8		2
.9		1
3.0		2
.1		2
.2		1
.3		2
.4		2
.5		2
.6		2
.7		2
.8		2
.9		1
4.0		2
.1		2
.2		3
.3		3
.4		2
.5		2
.6		3
.7		2
.8		3
.9		2
5.0		3



Remarks :			14727
	Hammer	63.5 kg	
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP107 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		22
.2		10
.3		9
.4		8
.5		6
.6		4
.7		4
.8		3
.9		1
2.0		1
.1		1
.2		6
.3		3
.4		3
.5		2
.6		3
.7		2
.8		3
.9		2
3.0		3
.1		2
.2		2
.3		3
.4		3
.5		2
.6		2
.7		3
.8		2
.9		3
4.0		2
.1		2
.2		2
.3		3
.4		2
.5		2
.6		3
.7		2
.8		2
.9		3
5.0		2



Remarks :			
	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP107

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 0.40m D.

529877 mE 183123 mN
Ground Level: 18.86m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick, concrete and ash.		0.40	18.46
				MADE GROUND - CONCRETE.			
				Pit abandoned at 0.40m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to at least 0.40m depth
2. Pit dry
3. Pit sides stable
4. Hole abandoned at 0.40m depth on concrete obstruction and relocated to position DP107

Project No 14727

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Site: BRILL PLACE, LONDON NW1

TRIAL PIT
DP107A

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529876 mE 183124 mN
Ground Level: 18.86m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some cobbles of brick and concrete. Gravel of angular to sub-rounded flint, brick and ash.			
0.80	D2						
1.10	D3					1.20	17.66
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 0.70m depth
2. Pit dry
3. Pit sides stable
4. Pit extended by dynamic probe to 5.00m depth

Project No 14727

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP108

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 0.90m D.

529875 mE 183122 mN
Ground Level: 18.86m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.40	D1			MADE GROUND - Orange brown and light brown, slightly clayey, sandy GRAVEL. Gravel of angular to sub-rounded flint, brick and concrete.		0.50	18.36
0.80	D2			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick, concrete and ash.		0.90	17.96
				MADE GROUND - OBSTRUCTION Pit abandoned at 0.90m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole abandoned at 0.90m depth on concrete obstruction

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP108A

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 0.90m D.

529875 mE 183123 mN
Ground Level: 18.86m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some cobbles of brick and concrete. Gravel of angular to sub-rounded flint, brick, concrete and ash.			
0.50	D2						
0.80	D3					0.90	17.96
				MADE GROUND - CONCRETE.			
				Pit abandoned at 0.90m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 0.50m depth
2. Pit dry
3. Pit sides stable
4. Hole abandoned at 0.90m depth on concrete obstruction

Project No	
14727	
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GROUND ENGINEERING LIMITED

Tel: 01733-566566
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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP109

Date: 08/04/19

Pit Size: 0.30m L x 0.30m W x 1.00m D.

529874 mE 183120 mN
Ground Level: 18.88m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick and concrete.		0.30	18.58
0.70	D2			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded brick, concrete, flint and ash.		1.00	17.88
				Pit completed at 1.00m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

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14727	
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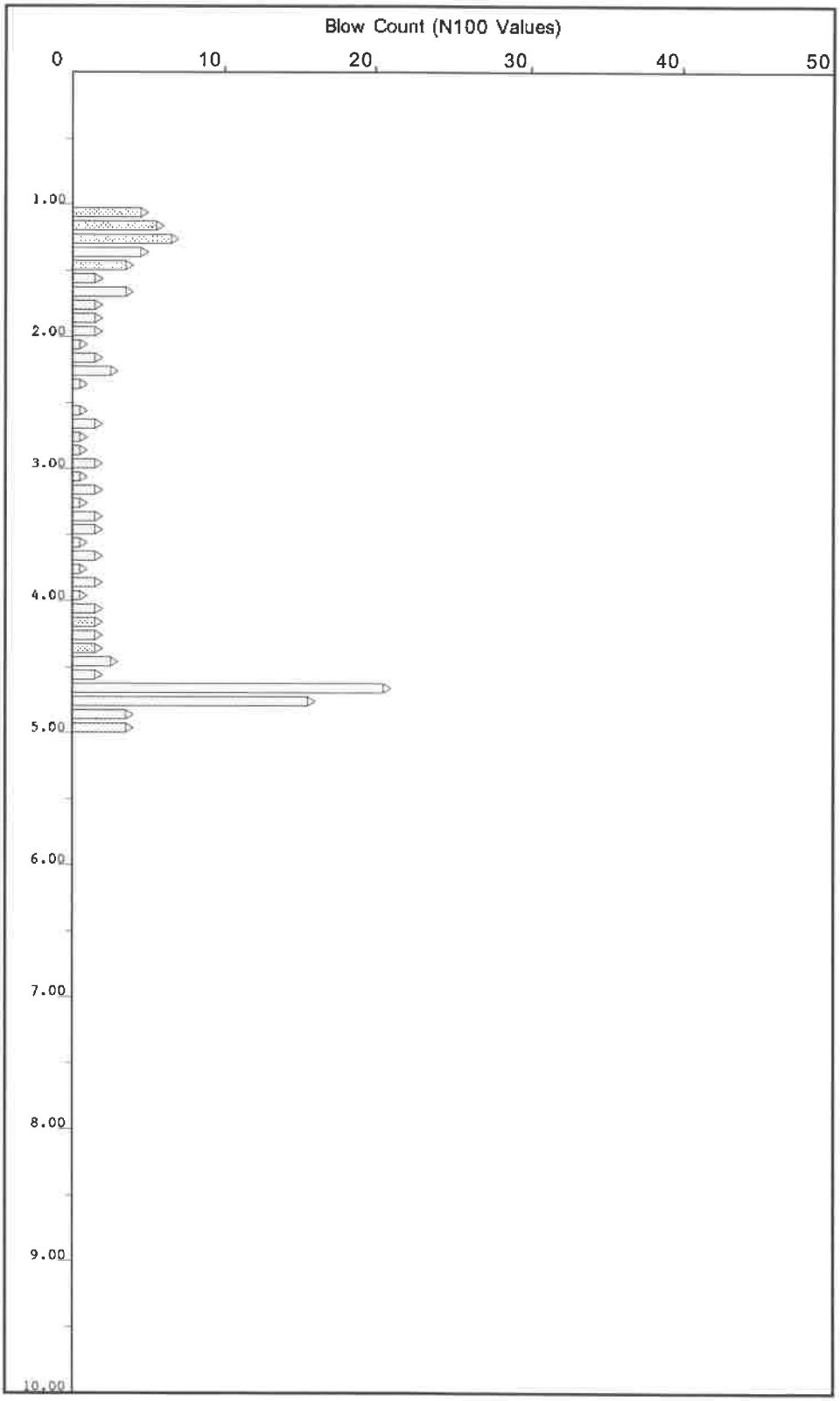
GROUND ENGINEERING LIMITED Tel: 01733-566565 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 08/04/19 Project Number 14727	PROBE No DP109 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		5
.2		6
.3		7
.4		5
.5		4
.6		2
.7		4
.8		2
.9		2
2.0		2
.1		1
.2		2
.3		3
.4		1
.5		0
.6		1
.7		2
.8		1
.9		1
3.0		2
.1		1
.2		2
.3		1
.4		2
.5		2
.6		1
.7		2
.8		1
.9		2
4.0		1
.1		2
.2		2
.3		2
.4		2
.5		3
.6		2
.7		21
.8		16
.9		4
5.0		4



Remarks :	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP110

Date: 09/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529871 mE 183119 mN

Ground Level: 18.98m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Dark grey and black ASPHALT.		0.08	18.90
				MADE GROUND - Brown, clayey SAND AND GRAVEL. Gravel of angular to sub-rounded brick, concrete and flint.		0.20	18.78
0.30	D2			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded brick, flint and concrete.		0.40	18.58
0.50	D3			MADE GROUND - Soft, brown, slightly sandy, gravelly, silty CLAY with occasional concrete cobbles. Gravel of angular to sub-rounded concrete, brick, flint and ash.			
1.00	D4						
						1.20	17.78
				Pit completed at 1.20m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

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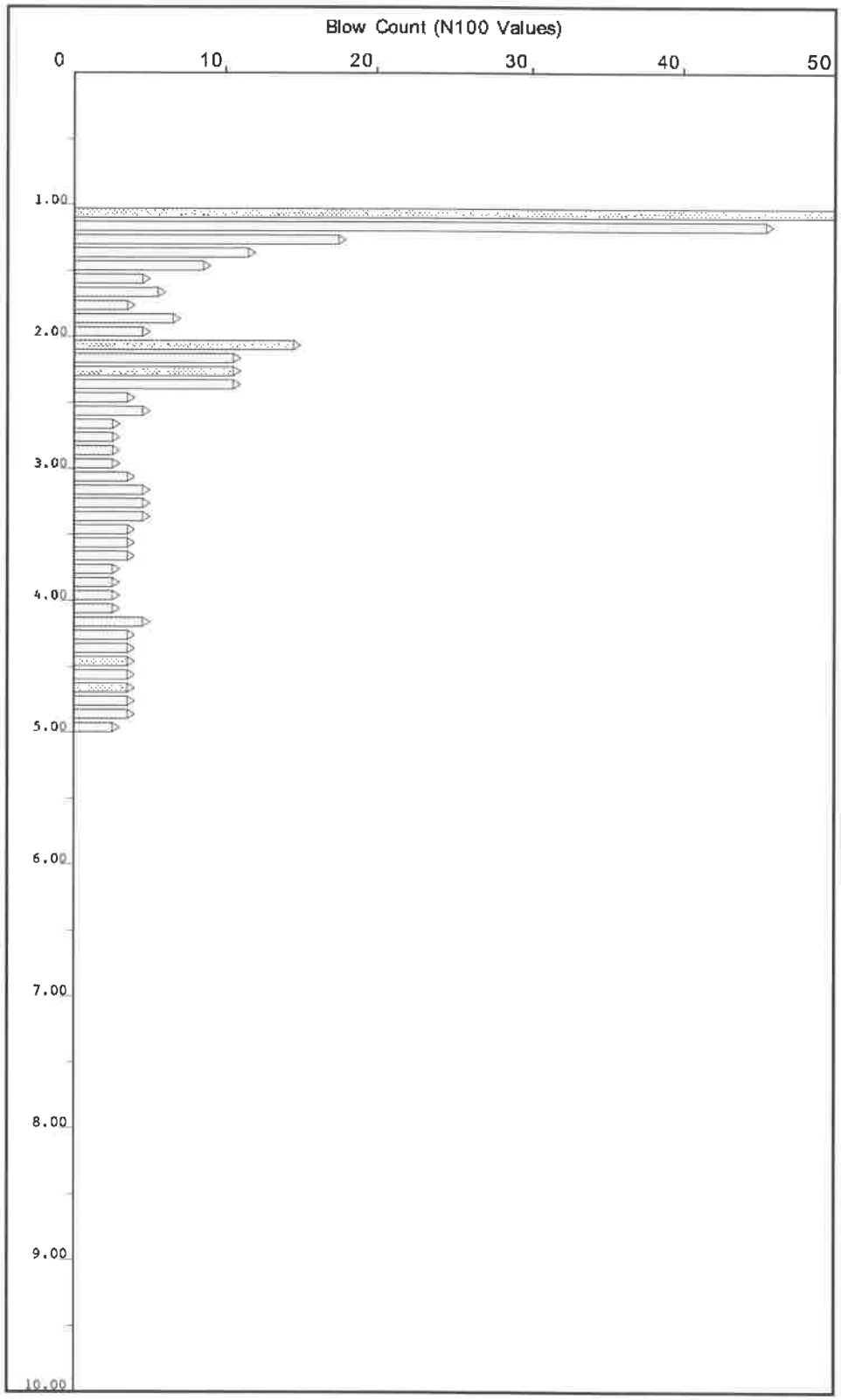
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP110 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		70
.2		46
.3		18
.4		12
.5		9
.6		5
.7		6
.8		4
.9		7
2.0		5
.1		15
.2		11
.3		11
.4		11
.5		4
.6		5
.7		3
.8		3
.9		3
3.0		3
.1		4
.2		5
.3		5
.4		5
.5		4
.6		4
.7		4
.8		3
.9		3
4.0		3
.1		3
.2		5
.3		4
.4		4
.5		4
.6		4
.7		4
.8		4
.9		4
5.0		3



Remarks :	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	Site: BRILL PLACE, LONDON NW1	TRIAL PIT DP111
	Date: 09/04/19 — Pit Size: 0.30m L x 0.30m W x 1.20m D.	529869 mE 183118 mN Ground Level: 19.04m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Dark grey and black ASPHALT.		0.08	18.96
				MADE GROUND - Brown, clayey SAND AND GRAVEL. Gravel of angular to sub-rounded flint.		0.20	18.84
0.35	D2			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick and concrete.		0.50	18.54
0.60	D3			MADE GROUND - Soft, brown, slightly sandy, gravelly, silty CLAY and occasional concrete cobbles. Gravel of angular to sub-rounded brick, concrete, flint and ash.			
1.10	D4					1.20	17.84
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to 0.50m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

Project No	
14727	
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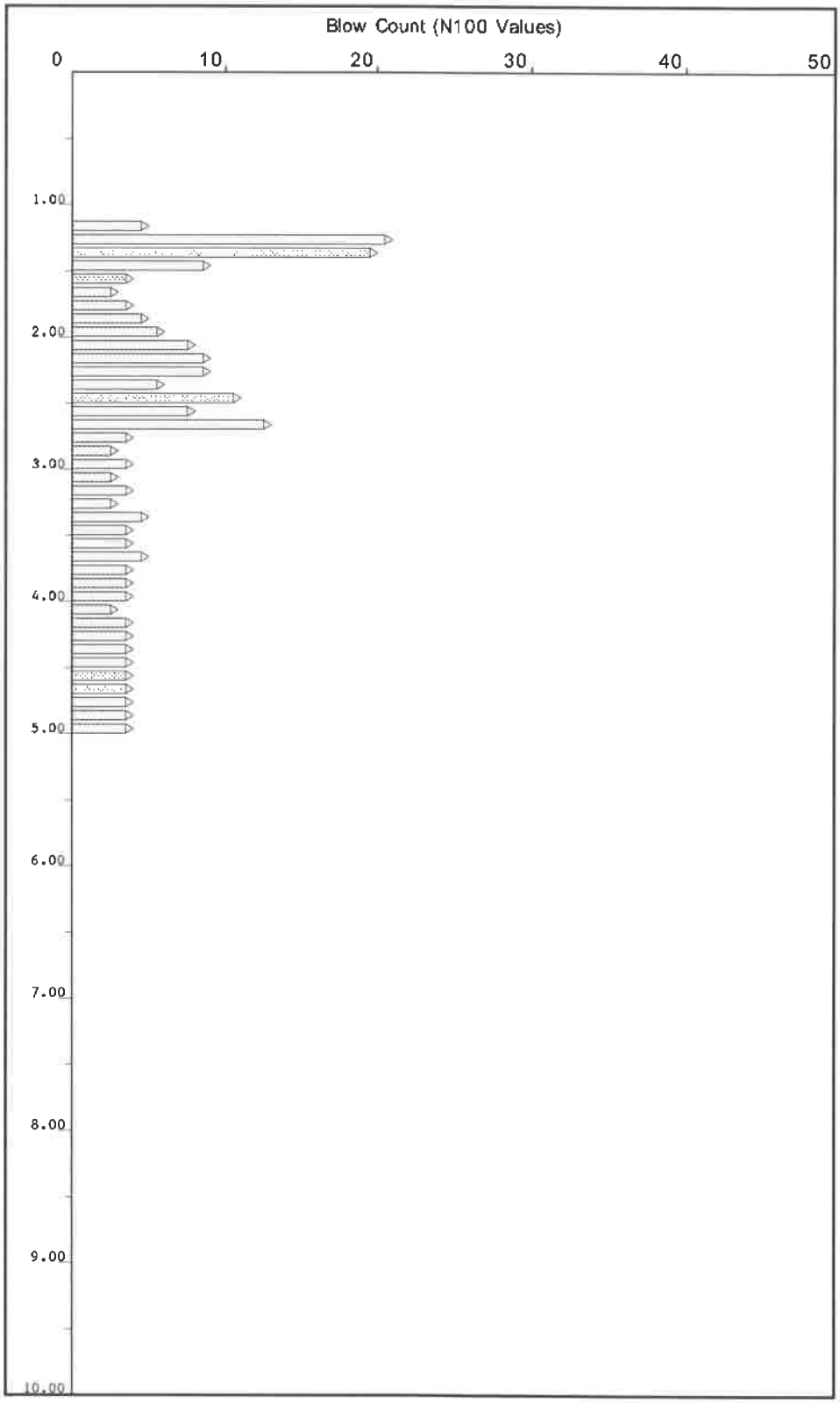
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP111 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		5
.3		21
.4		20
.5		9
.6		4
.7		3
.8		4
.9		5
2.0		6
.1		8
.2		9
.3		9
.4		6
.5		11
.6		8
.7		13
.8		4
.9		3
3.0		4
.1		3
.2		4
.3		3
.4		5
.5		4
.6		4
.7		5
.8		4
.9		4
4.0		4
.1		3
.2		4
.3		4
.4		4
.5		4
.6		4
.7		4
.8		4
.9		4
5.0		4



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

GROUND ENGINEERING LIMITED

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP112

Date: 09/04/19

Pit Size: 0.35m L x 0.35m W x 1.20m D.

529867 mE 183117 mN
Ground Level: 19.09m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - Dark grey ASPHALT.		0.08	19.01
0.15	D1			MADE GROUND - Brown, slightly clayey SAND AND GRAVEL. Gravel of angular to rounded flint.		0.20	18.89
				MADE GROUND - CONCRETE slab.		0.24	18.85
0.40	D2			MADE GROUND - Brown and light brown, slightly clayey SAND AND GRAVEL. Gravel of angular to sub-rounded flint and brick.		0.50	18.59
0.70	D3			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with occasional brick cobbles. Gravel of angular to sub-rounded brick, concrete, flint and ash.			
1.10	D4					1.20	17.89
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

Project No	
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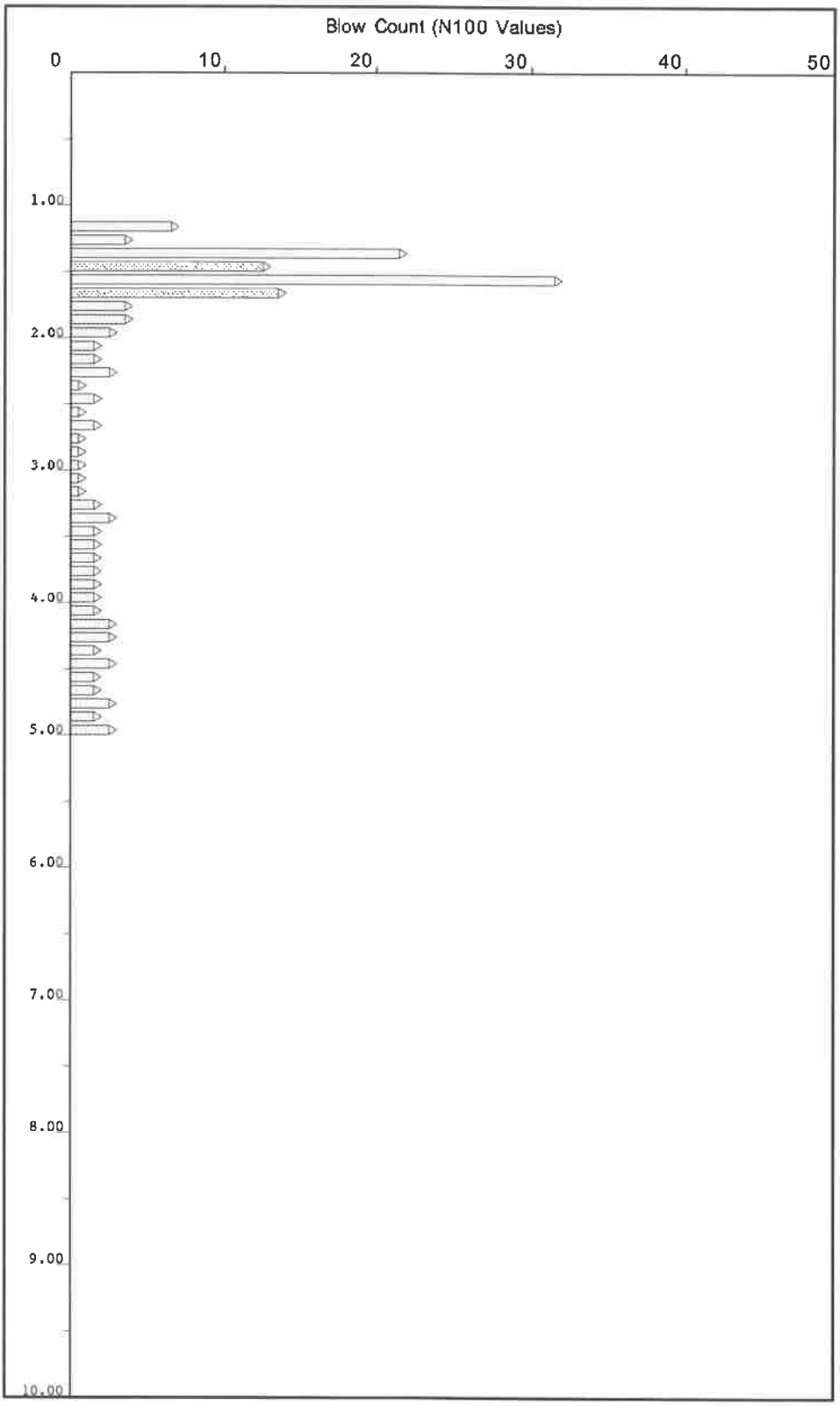
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP112 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		7
.3		4
.4		22
.5		13
.6		32
.7		14
.8		4
.9		4
2.0		3
.1		2
.2		2
.3		3
.4		1
.5		2
.6		1
.7		2
.8		1
.9		1
3.0		1
.1		1
.2		1
.3		2
.4		3
.5		2
.6		2
.7		2
.8		2
.9		2
4.0		2
.1		2
.2		3
.3		3
.4		2
.5		3
.6		2
.7		2
.8		3
.9		2
5.0		3



Remarks :			
	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: BRILL PLACE, LONDON NW1

TRIAL PIT DP113

Date: 09/04/19

Pit Size: 0.40m L x 0.30m W x 1.20m D.

529865 mE 183115 mN

Ground Level: 19.14m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.10	D1			MADE GROUND - Dark grey and black ASPHALT.		0.08	19.06
0.25	D2			MADE GROUND - Brown SAND AND GRAVEL. Gravel of angular to rounded flint and brick.		0.15	18.99
				MADE GROUND - CONCRETE paving slab.		0.22	18.92
				MADE GROUND - Light brown SAND AND GRAVEL. Gravel of angular to sub-rounded flint.		0.30	18.84
0.50	D3			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with many concrete cobbles. Gravel of angular to sub-rounded concrete, brick, ash and flint.			
1.00	D4						
						1.20	17.94
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 1.60m depth

Project No	
14727	
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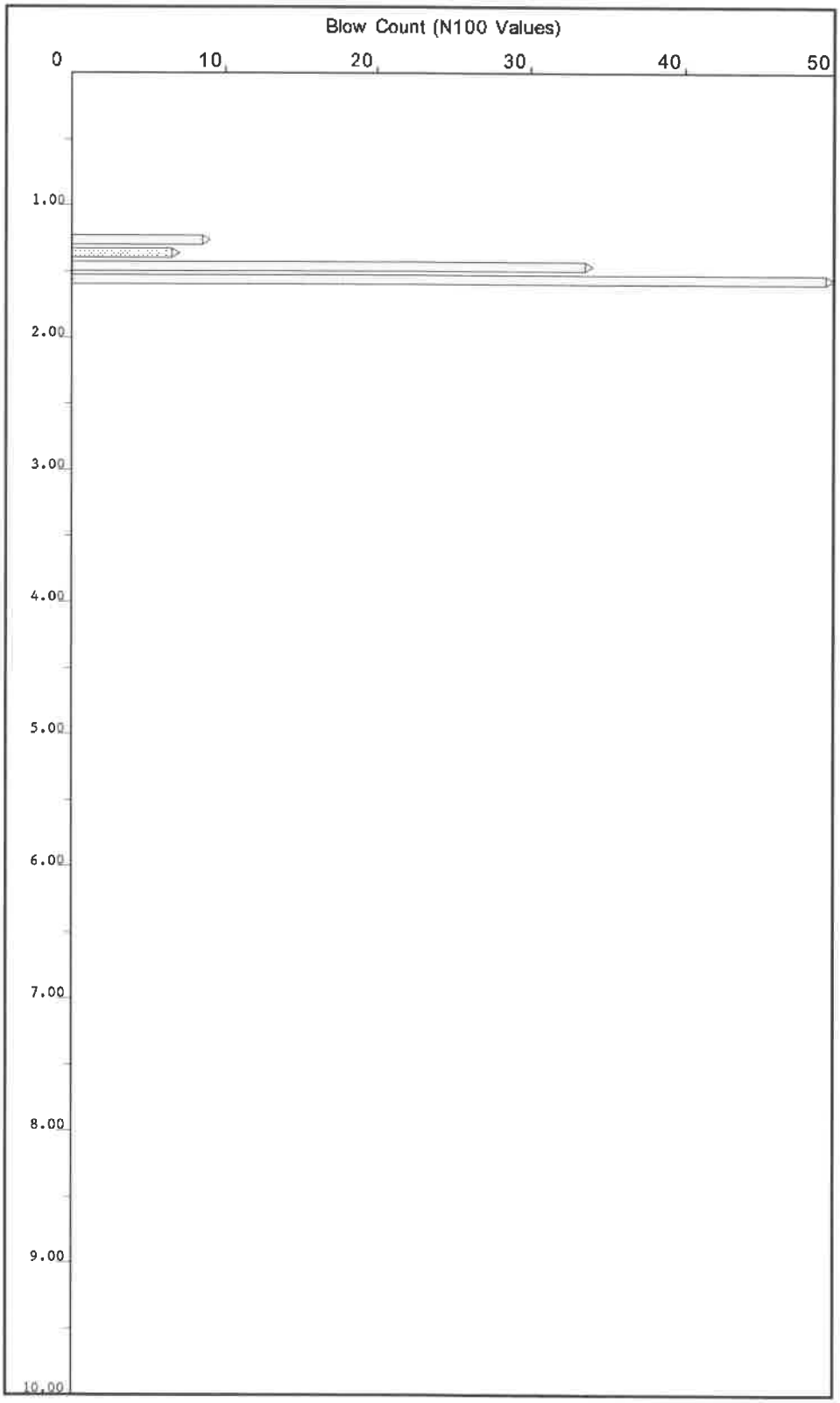
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundenginseering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP113 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		-
.3		9
.4		7
.5		34
.6		50



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

GROUND ENGINEERING LIMITED
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Site: BRILL PLACE, LONDON NW1

TRIAL PIT
DP114

Date: 09/04/19

Pit Size: 0.35m L x 0.35m W x 1.00m D.

529863 mE 183114 mN
Ground Level: 19.17m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - Dark grey and black ASPHALT.		0.08	19.09
0.30	D1			MADE GROUND - Brown SAND AND GRAVEL with many concrete cobbles. Gravel of angular to sub-rounded flint and concrete.		0.50	18.67
0.60	D2			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, flint and concrete. Many concrete cobbles below 0.60m depth.		1.00	18.17
				Pit completed at 1.00m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

Project No 14727

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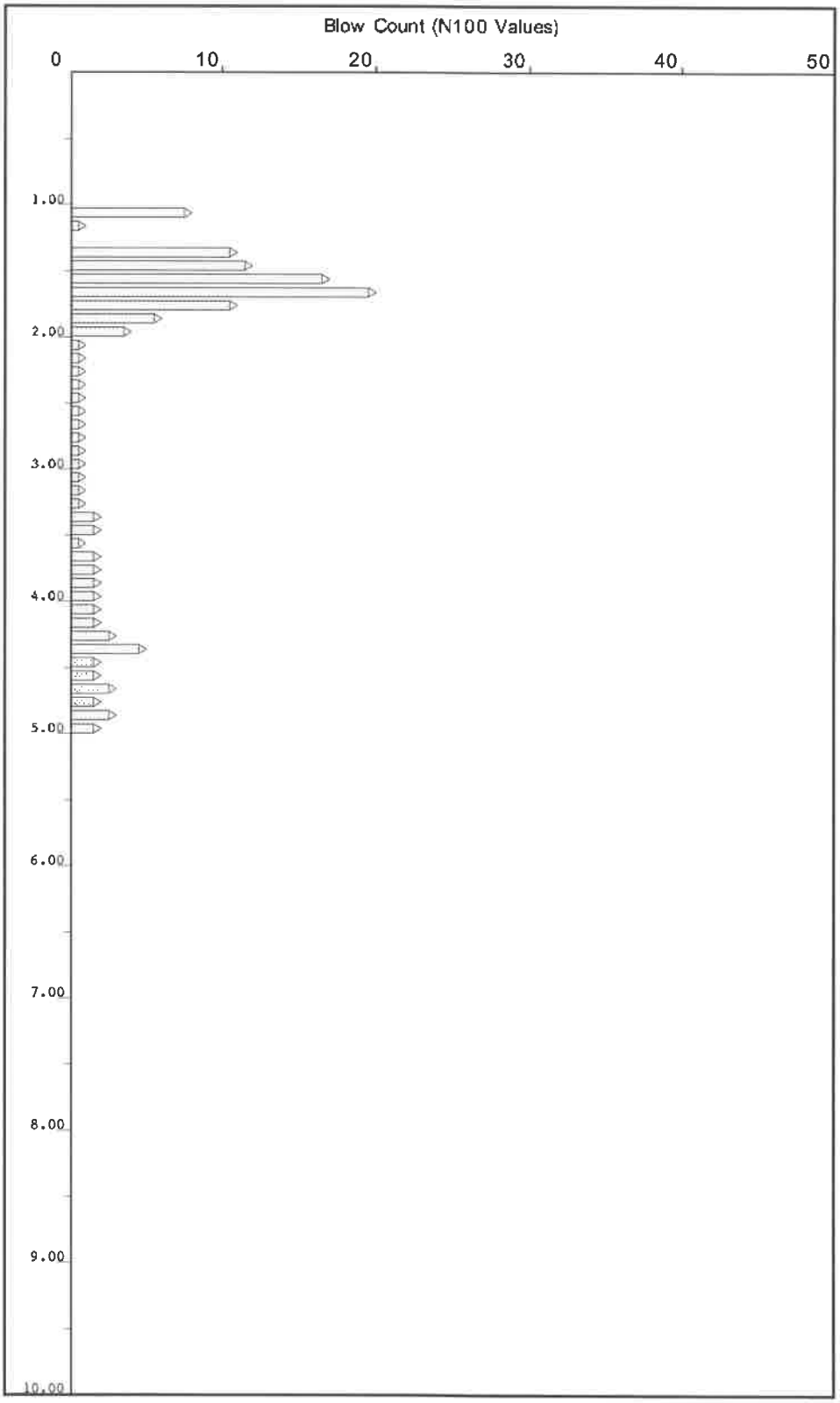
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP114 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		8
.2		1
.3		0
.4		11
.5		12
.6		17
.7		20
.8		11
.9		6
2.0		4
.1		1
.2		1
.3		1
.4		1
.5		1
.6		1
.7		1
.8		1
.9		1
3.0		1
.1		1
.2		1
.3		1
.4		2
.5		2
.6		1
.7		2
.8		2
.9		2
4.0		2
.1		2
.2		2
.3		3
.4		5
.5		2
.6		2
.7		3
.8		2
.9		3
5.0		2



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

GROUND ENGINEERING LIMITED
Tel: 01733-566566
www.groundengineering.co.uk

Site: BRILL PLACE, LONDON NW1

TRIAL PIT DP115

Date: 09/04/19

Pit Size: 0.30m L x 0.30m W x 1.10m D.

529861 mE 183115 mN

Ground Level: 19.18m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - Dark grey and black ASPHALT.		0.08	19.10
0.30	D1			MADE GROUND - Light brown slightly clayey SAND AND GRAVEL. Gravel of angular to sub-rounded concrete, brick, flint and ash.		0.40	18.78
0.80	D2			MADE GROUND - Brown, clayey sandy GRAVEL. Gravel of angular to sub-rounded concrete, brick, flint and ash.		1.10	18.08
				Pit completed at 1.10m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

Project No 14727

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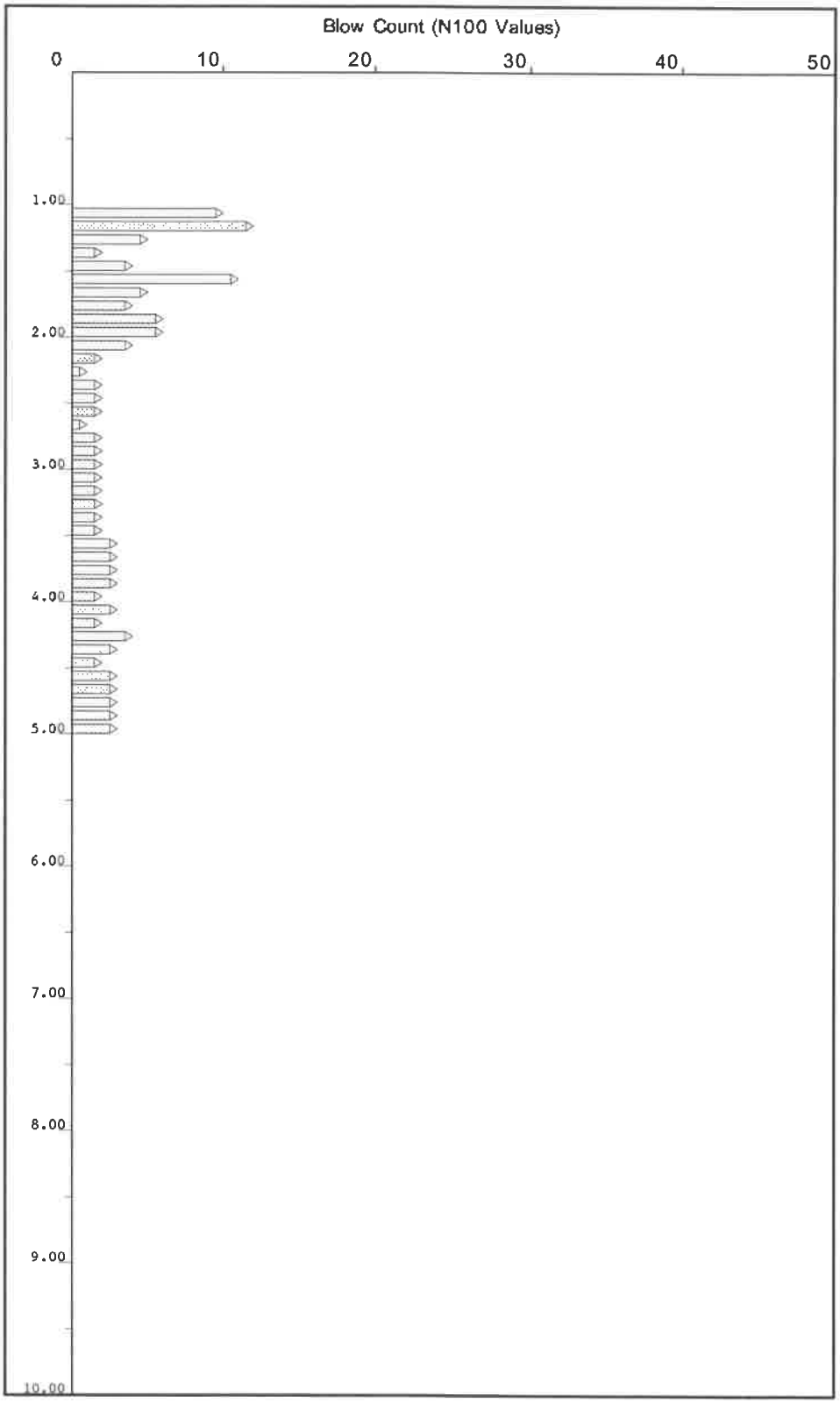
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP115 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		10
.2		12
.3		5
.4		2
.5		4
.6		11
.7		5
.8		4
.9		6
2.0		6
.1		4
.2		2
.3		1
.4		2
.5		2
.6		2
.7		1
.8		2
.9		2
3.0		2
.1		2
.2		2
.3		2
.4		2
.5		2
.6		3
.7		3
.8		3
.9		3
4.0		2
.1		3
.2		2
.3		4
.4		3
.5		2
.6		3
.7		3
.8		3
.9		3
5.0		3



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

GROUND ENGINEERING LIMITED
Tel: 01733-566566
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Site: BRILL PLACE, LONDON NW1

TRIAL PIT
DP116

Date: 09/04/19

Pit Size: 0.30m L x 0.30m W x 0.75m D.

529859 mE 183116 mN
Ground Level: 19.16m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
				MADE GROUND - Dark grey and black ASPHALT.		0.08	19.08
0.30	D1			MADE GROUND - Brown, slightly clayey SAND AND GRAVEL with some concrete cobbles. Gravel of angular to sub-rounded concrete, brick, flint and ash.			
0.50	D2					0.60	18.56
				MADE GROUND - CONCRETE.		0.75	18.41
				Pit abandoned at 0.75m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ⧖ Water Strike
- ⧗ Water Rise
- ⧗c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Pit abandoned at 0.75m depth due to concrete obstruction met at 0.60m depth

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GROUND ENGINEERING LIMITED
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Site: BRILL PLACE, LONDON NW1

TRIAL PIT
DP117

Date: 09/04/19

Pit Size: 0.35m L x 0.35m W x 1.20m D.

529856 mE 183123 mN
Ground Level: 19.24m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, dark brown, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick and concrete.		0.30	18.94
0.70	D2			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to rounded brick, concrete, flint and ash.			
1.10	D3					1.20	18.04
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 1.80m depth

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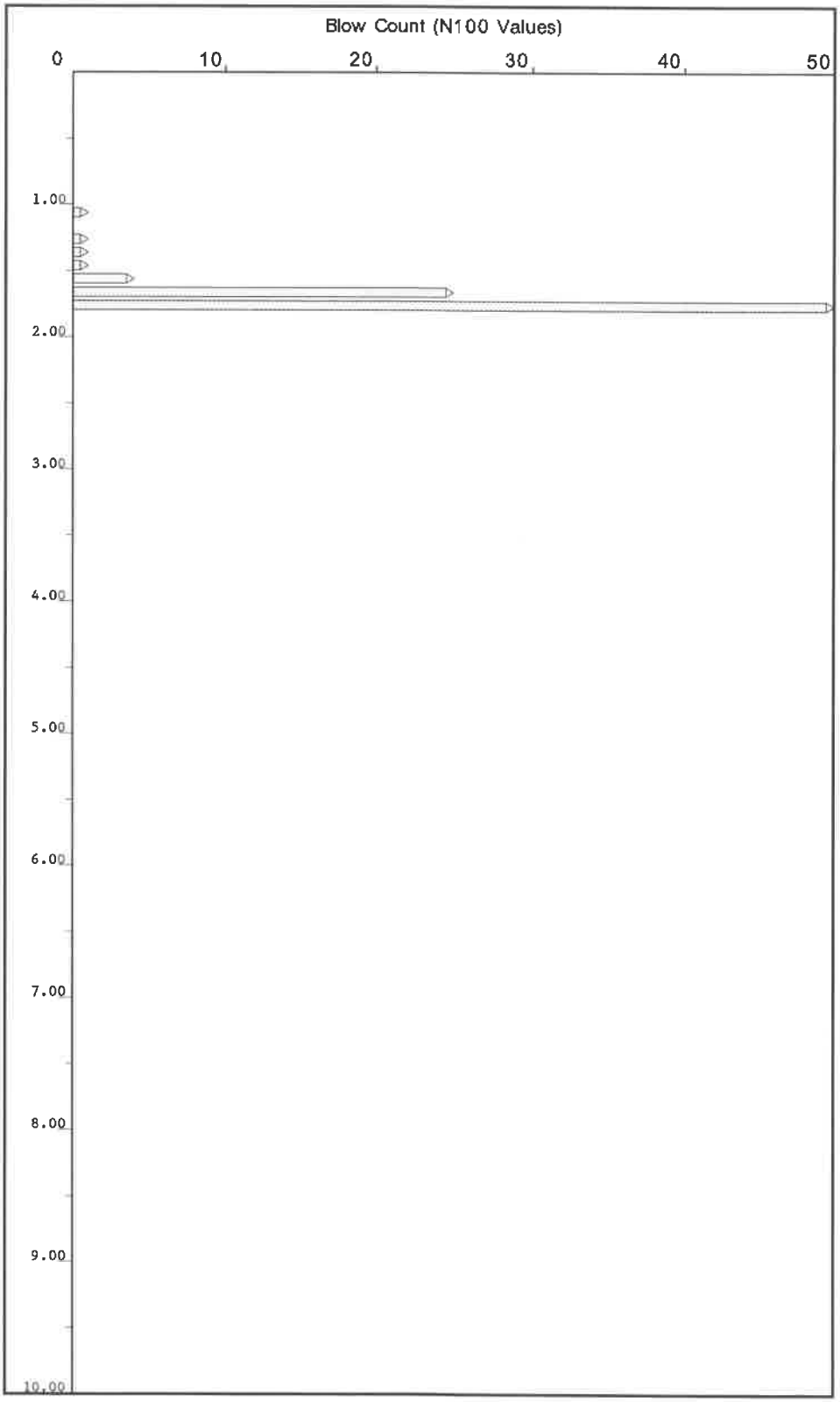
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP117 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		1
.2		0
.3		1
.4		1
.5		1
.6		4
.7		25
.8		50



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP118

Date: 09/04/19

Pit Size: 0.30m L x 0.30m W x 1.10m D.

529853 mE 183127 mN

Ground Level: 19.78m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, dark brown, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint and brick.		0.30	19.48
0.60	D2			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded brick, concrete and ash.			
1.00	D3					1.20	18.58
				Pit completed at 1.20m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to 1.10m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 1.80m depth

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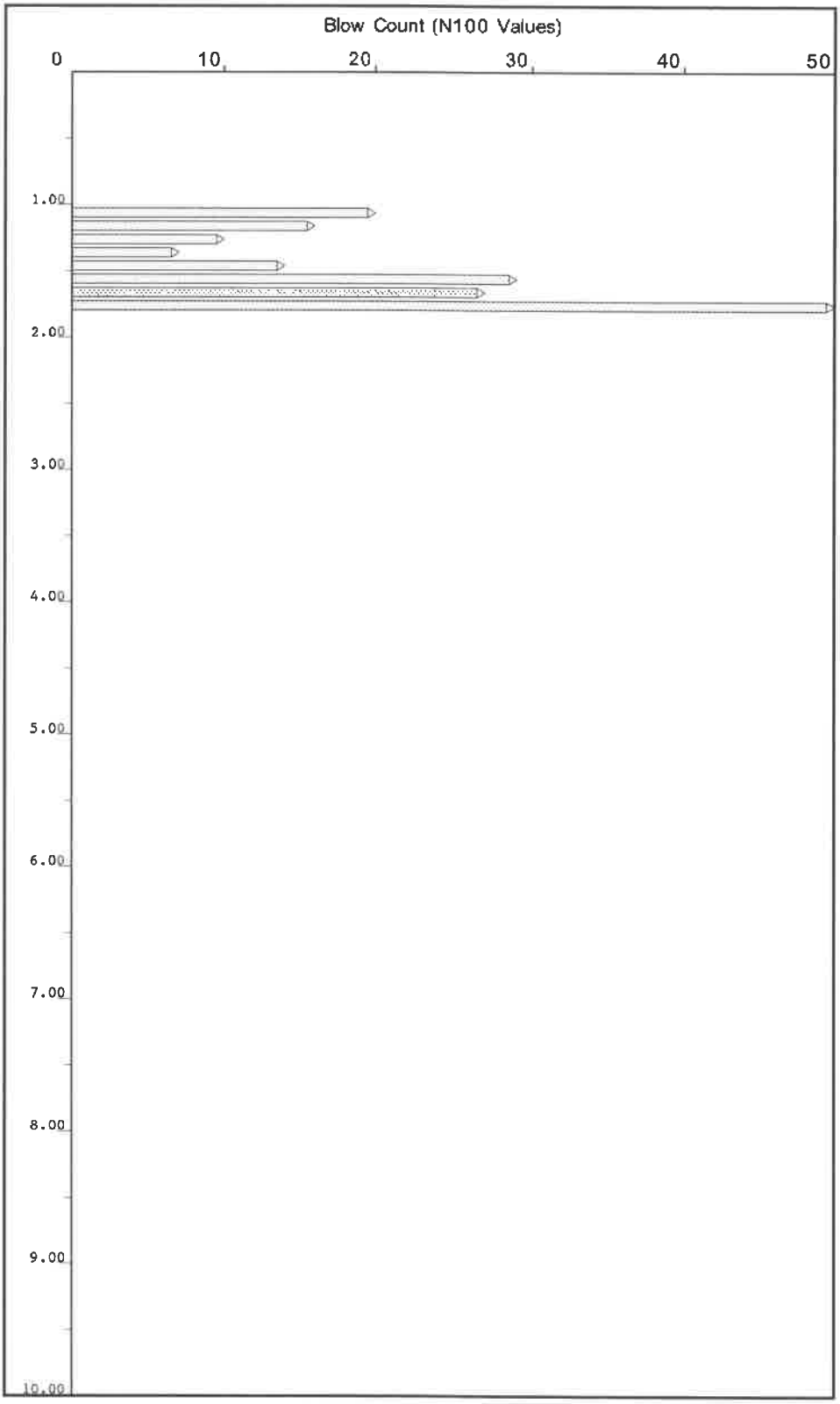
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 09/04/19 Project Number 14727	PROBE No DP118 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		20
.2		16
.3		10
.4		7
.5		14
.6		29
.7		27
.8		50



Remarks :	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP119

Date: 10/04/19

Pit Size: 0.30m L x 0.30m W x 1.10m D.

529857 mE 183129 mN

Ground Level: 20.05m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick and concrete.		0.40	19.65
0.70	D2			MADE GROUND - Firm, brown, slightly sandy, slightly gravelly, silty CLAY with some cobbles of concrete and brick. Gravel of angular to sub-rounded brick and concrete.			
1.10	D3					1.20	18.85
				Pit completed at 1.20m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to 1.10m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 2.10m depth

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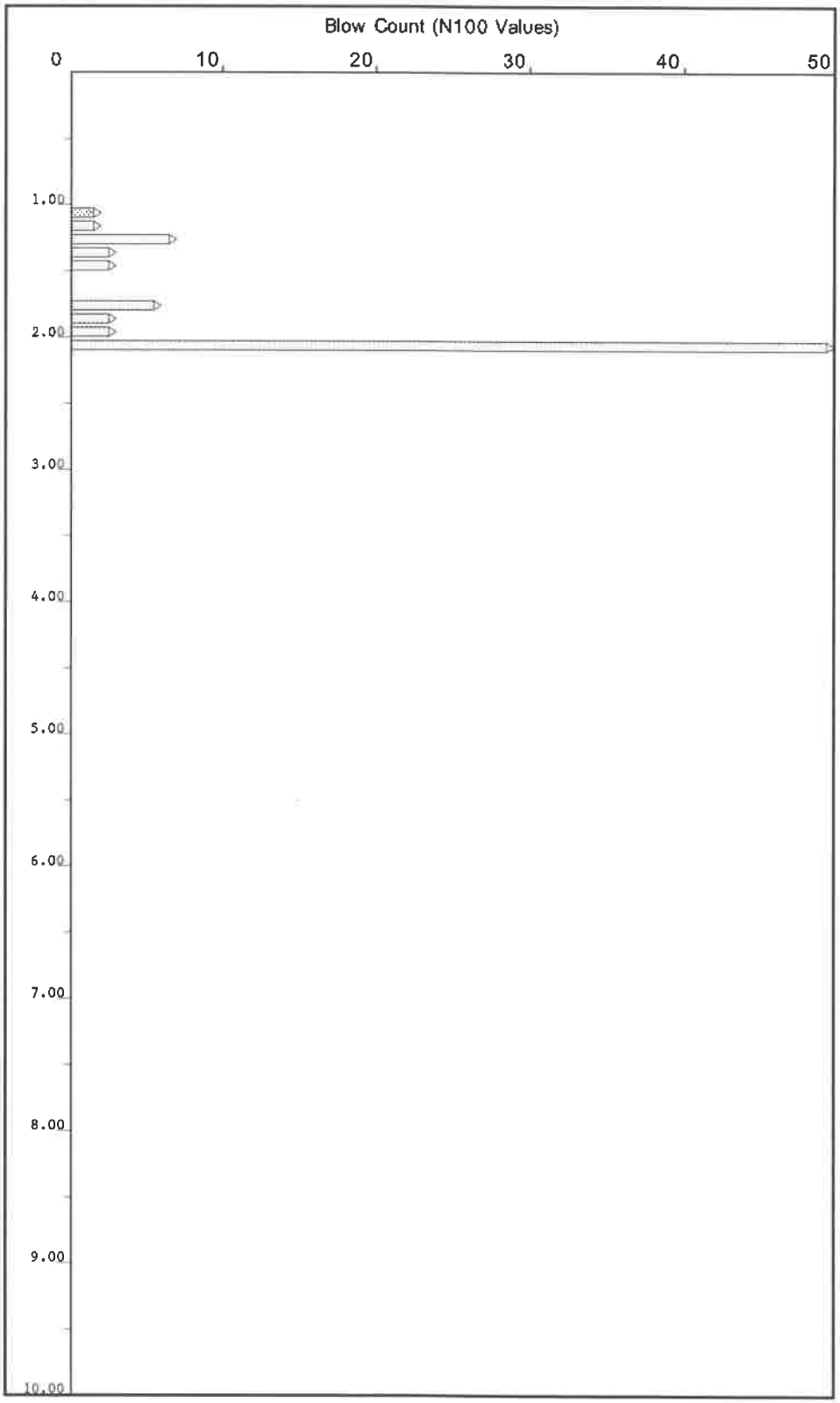
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 10/04/19 Project Number 14727	PROBE No DP119 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		2
.2		2
.3		7
.4		3
.5		3
.6		0
.7		0
.8		6
.9		3
2.0		3
.1		50



Remarks :	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP120

Date: 10/04/19

Pit Size: 0.35m L x 0.35m W x 1.10m D.

529861 mE 183132 mN

Ground Level: 20.13m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, dark brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded flint, brick, concrete and ash.		0.30	19.83
0.50	D2			MADE GROUND - Soft, brown, slightly gravelly, sandy, silty CLAY with some cobbles of concrete and brick. Gravel of angular to sub-rounded flint, brick and concrete.			
1.00	D3					1.20	18.93
				Pit completed at 1.20m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to at least 1.10m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 4.10m depth

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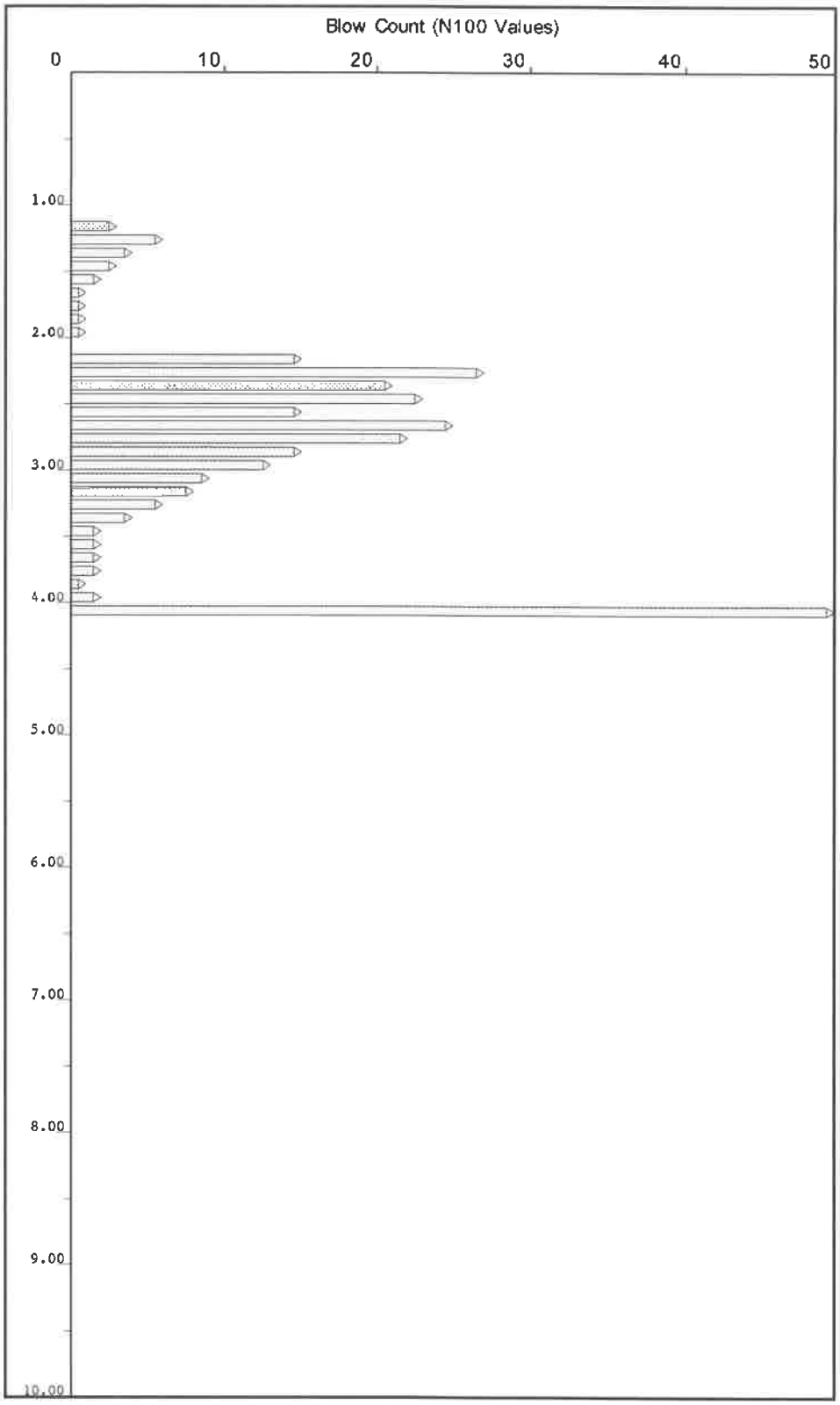
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 10/04/19 Project Number 14727	PROBE No DP120 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		-
.2		3
.3		6
.4		4
.5		3
.6		2
.7		1
.8		1
.9		1
2.0		1
.1		0
.2		15
.3		27
.4		21
.5		23
.6		15
.7		25
.8		22
.9		15
3.0		13
.1		9
.2		8
.3		6
.4		4
.5		2
.6		2
.7		2
.8		2
.9		1
4.0		2
.1		50



Remarks :			
	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP121

Date: 10/04/19

Pit Size: 0.30m L x 0.30m W x 1.00m D.

529866 mE 183134 mN

Ground Level: 20.09m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete, brick and flint.		0.40	19.69
0.70	D2			MADE GROUND - Soft, light brown, slightly sandy, gravelly, sandy CLAY. Gravel of angular to sub-rounded concrete.		1.00	19.09
				Pit completed at 1.00m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to at least 1.00m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 2.40m depth

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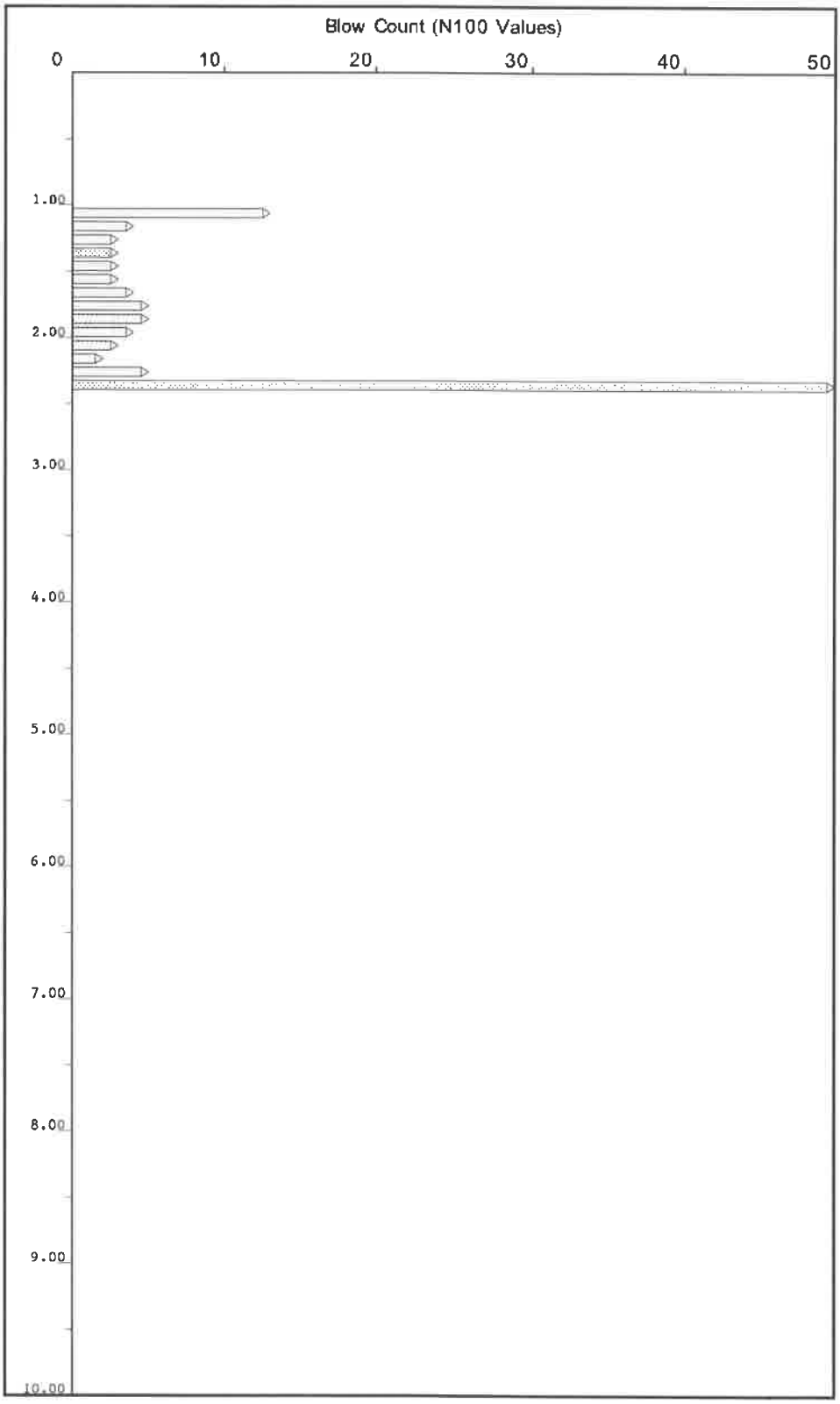
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 10/04/19 Project Number 14727	PROBE No DP121 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		13
.2		4
.3		3
.4		3
.5		3
.6		3
.7		4
.8		5
.9		5
2.0		4
.1		3
.2		2
.3		5
.4		50



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP122

Date: 10/04/19

Pit Size: 0.35m L x 0.35m W x 0.90m D.

529870 mE 183137 mN
Ground Level: 19.66m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.20	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY. Gravel of angular to sub-rounded concrete and flint.			
0.50	D2						
0.80	D3						
						0.90	18.76
				MADE GROUND - CONCRETE Pit abandoned at 0.90m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. Live roots observed to at least 0.90m depth
2. Pit dry
3. Pit sides stable
4. Pit abandoned at 0.90m depth due to concrete slab
5. Slab penetrated and hole extended by dynamic probe to refusal at 2.00m depth

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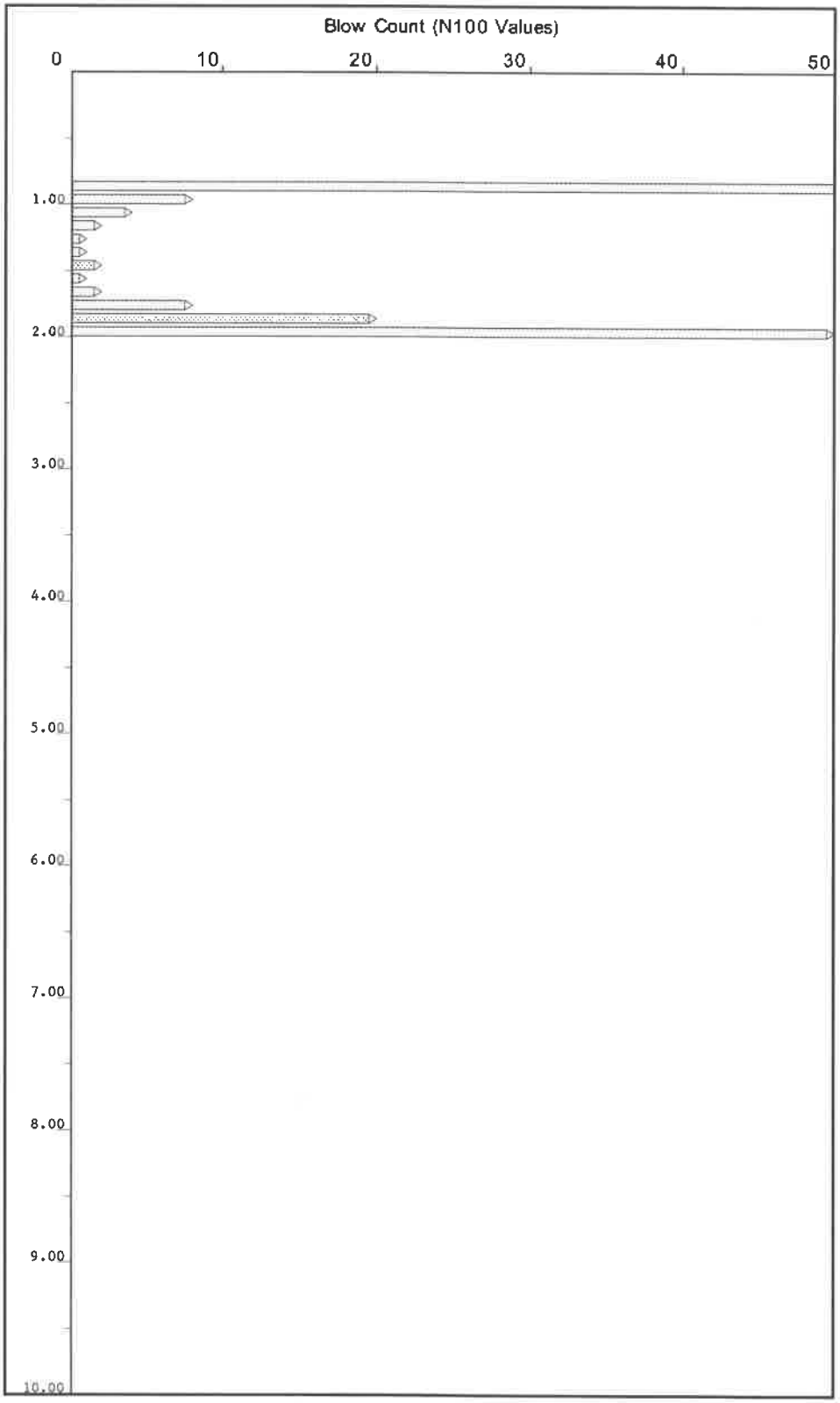
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 10/04/19 Project Number 14727	PROBE No DP122 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		66
1.0		8
.1		4
.2		2
.3		1
.4		1
.5		2
.6		1
.7		2
.8		8
.9		20
2.0		50



Remarks :			
	Hammer	63.5 kg	14727
	Standard Drop	750 mm	
	Cone	50 mm dia	
	Rod	8kg / 35 mm	

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT
DP123

Date: 10/04/19

Pit Size: 0.35m L x 0.35m W x 1.20m D.

529874 mE 183139 mN
Ground Level: 19.10m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.30	D1			MADE GROUND - Soft, brown and dark brown mottled, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded flint, brick, concrete and ash.			
0.70	D2					1.20	17.90
				Pit completed at 1.20m depth			

KEY
- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS
1. No live roots observed
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to refusal at 1.70m depth

Project No 14727

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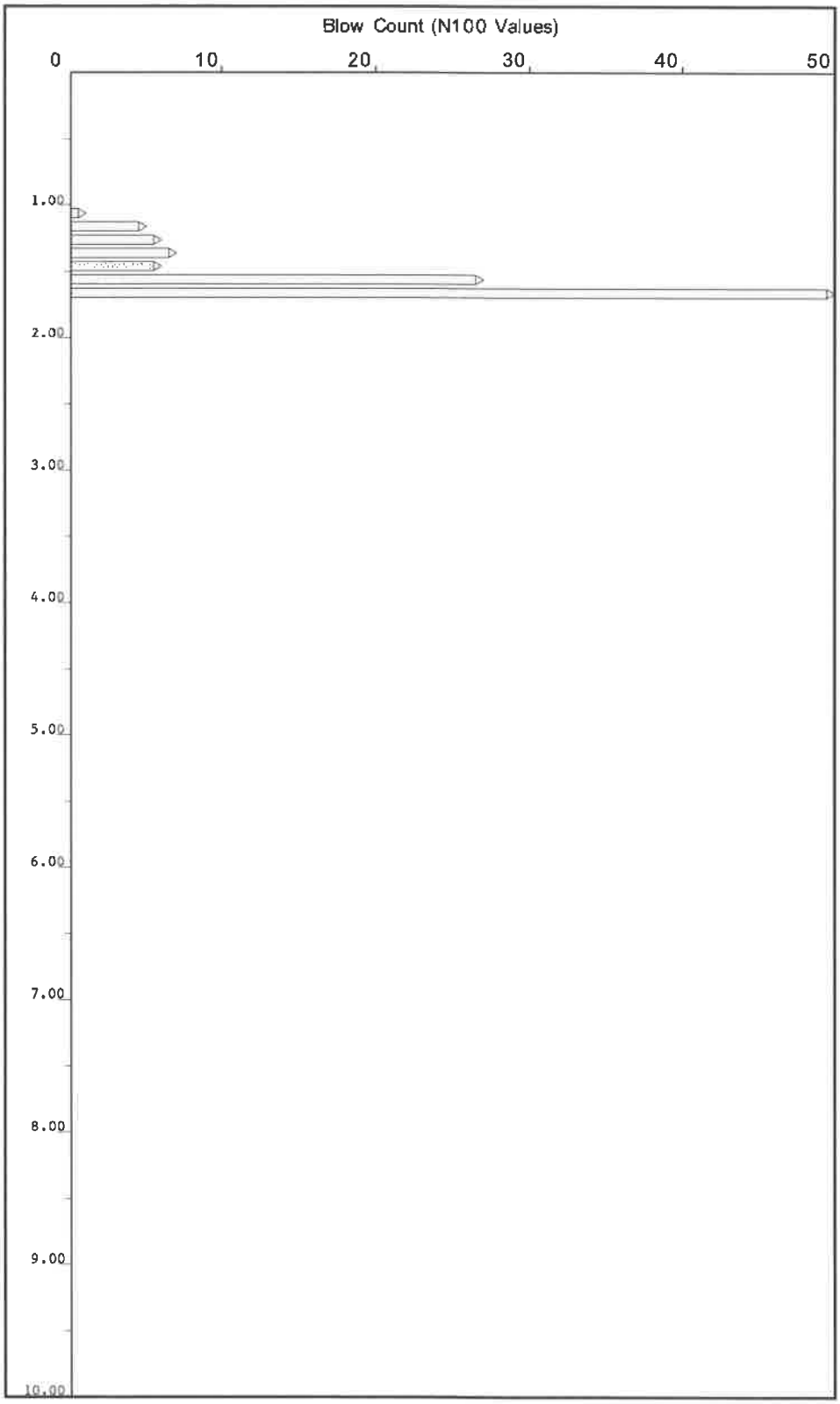
GROUND ENGINEERING LIMITED Tel: 01733-566566 www.groundengineering.co.uk	DYNAMIC PROBE PENETRATION TEST	Date 10/04/19 Project Number 14727	PROBE No DP123 Sheet 1 of 1
Method BS 1377 : Part 9 : Clause 3.2 (DPSH)	Client ED JERSEY LIMITED	Site BRILL PLACE, LONDON NW1	

Depth (m)	Torque	Blows (100mm)
.1		-
.2		-
.3		-
.4		-
.5		-
.6		-
.7		-
.8		-
.9		-
1.0		-
.1		1
.2		5
.3		6
.4		7
.5		6
.6		27
.7		50



Remarks :		
	Hammer	63.5 kg
	Standard Drop	750 mm
	Cone	50 mm dia
	Rod	8kg / 35 mm

14727

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Site: **BRILL PLACE, LONDON NW1**

TRIAL PIT DP124

Date: 10/04/19

Pit Size: 0.30m L x 0.30m W x 1.20m D.

529878 mE 183142 mN
Ground Level: 18.66m. O.D.

Samples and in-situ Tests			(Date) Water	Description of Strata	Legend	Depth m	O.D. Level m
Depth m	Type	Result					
0.50	D1			MADE GROUND - Soft, brown, slightly sandy, slightly gravelly, silty CLAY with some concrete cobbles. Gravel of angular to sub-rounded flint, concrete, brick and ash.			
1.00	D2						
						1.20	17.46
				Pit completed at 1.20m depth			

KEY

- D - Disturbed Sample
- B - Bulk Sample
- U - Undisturbed Sample
- R - Root Sample
- W - Water Sample
- ES - Environmental Sample
- ▽ Water Strike
- ▼ Water Rise
- ▼c Level on completion
- MP - Mackintosh Probe
- P( ) - Hand Penetrometer Cohesion ( ) kPa
- V - Vane Shear Test Cohesion ( ) kPa

REMARKS

1. Live roots observed to 1.00m depth
2. Pit dry
3. Pit sides stable
4. Hole extended by dynamic probe to 5.00m depth

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