SITE INVESTIGATION REPORT

PROPOSED CONSTRUCTION AT:

ST PANCRAS COMMUNITY CENTRE, 30 CAMDEN STREET, LONDON, NW1 0LG

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1.0 INTRODUCTION

Consideration is being given to the demolition of existing structures at 30 Camden Street but retaining the studios at the rear. A new 3 to 4 storey above ground residential building [with no basement] is proposed in the place of the former buildings.

In connection with the proposed works, Soil Consultants Ltd [SCL] were commissioned by Quinn Contracts, acting on behalf of Michael Barclay Partnership Ltd [Engineer] and Quinn London Ltd [The Client], to carry out a site investigation to include the following elements:

- Desk Study [Phase I] to identify site history and potential contaminative uses
- Intrusive work [Phase II] to include:
  - ⇨ The ground sequence and geotechnical parameters
  - ⇨ Provision of recommendations for foundation design and construction
  - ⇨ Outline contamination appraisal, risk assessment and conceptual model

This report reviews the desk study information, describes the investigation undertaken, gives a summary of the ground conditions encountered and then provides foundation design recommendations together with an outline contamination assessment and conceptual model.

2.0 SITE DESCRIPTION

St Pancras Community Centre [The Site] is located in the London Borough of Camden, in a predominantly residential area and forming an 'L' shape measuring approximately 50m x 35m. Its centre is at approximate NGR 529391E, 183583N, as shown on the Location Maps in Appendix A. The site is bound to the north by a concreted walkway/recreational area and a high brick wall leading to residential properties. To the south is fencing beyond which are residential flats and to the east is a high brick wall again with residential flats behind. Camden Street forms the western boundary.

The site consists of a vacant derelict 'open structure' Community Hall fronting Camden Road along with a row of 'lock-up style' brick garages along the south-eastern side. Camden Studios is currently an occupied filming studio and is in a separate building to the northeast of the Community Hall but is attached to the rear of the building. Camden Studios is currently occupied and also has 'lock-up style' garages on the south-eastern side of the building.

An access road is present on the southern side of the Community Hall building, providing access to the lock-up garages. Along the rear / south-eastern margin of the garages is a narrow strip of grass land which separates the site from the residential properties beyond. On the northern side of the Community Hall is a narrow children's play area. Here, a probable Ash tree measuring approximately 8m in height is present. Further along the northern boundary behind the Camden Studios and at the end of the lock-up garages are more semi-mature deciduous trees approximately 8-10m high; the species of these trees was not identified. On the pavement adjacent to the Community Hall are two mature London Plane Trees which attain a height of approximately 15m.

The site and surrounding area is sensibly flat and with only a nominal level change. Architectural drawings provided for the site by Cartwright Pickard architects' 'Camden Street - Ground floor GA Plan', Ref: 634-AD-2000, 01/05/2013 [see Appendix A] indicate the ground levels range between about +22.95mOD to +23.20mOD across the site.

3.0 SITE HISTORY AND GEOLOGICAL/ENVIRONMENTAL INFORMATION

3.1 Groundsure historical map pack and reports

An historical map and environmental database search was commissioned from Groundsure to ascertain the site history/usage and surrounding land usage. An indication of the gradual development of the site over the years can be gained by a study of the historical maps [shown in Appendix B]. The following table contains a summary of the site development obtained from the source maps provided in the Groundsure historical maps package.

Historical development of site and surrounding area		
Map date	**The site**	**Significant development / features in surrounding area [generally within 250m]**
1873 to 1896	The site is occupied by a Methodist Chapel and hard standing / garden area to the south. Residential buildings are situated to the rear [east] of the Chapel which have gardens behind. A residential property is also present in the south western corner of the site with large narrow gardens to the rear. By 1896 the Methodist Chapel has been renamed 'Mission Hall'	The current road network and surrounding buildings are shown in their current configuration Buildings in the immediate vicinity include, public baths, public house, residential houses, Chapel, College, Schools, stables, Workhouse and town hall Mushroom Grounds 50m W up to about 1873 after which schools were built Pump located about 100m W Playing Card & Stationary Manufactory 200m NE Pianoforte Manufactory 90m SW North London Collegiate School 240m SW Bedford Chapel 180m SE St Matthews Church Vicarage 180m SW School 50m West Rail sidings 233m NE Ale store 225m NE
1916 - 1938	No significant changes apparent	Ale and Porter Stores 250m NE Royal Veterinary College 100m E Depository located 50m N Working Men's College 100m SW By 1938 King Street 20m N of the site is now Plender Street Pianoforte Manufactory no longer shown

Historical development of site and surrounding area		
Map date	**The site**	**Significant development / features in surrounding area [generally within 250m]**
1948 to 1957	No significant changes apparent	Taxidermy house 20m NE Camden Hippodrome 250m SW Main school building to the west demolished sometime after 1951 map edition Post Office 250m SW
1961 to present	Between 1961 and 1968, the site was redeveloped to its current configuration	Camden Studios located directly to the rear of the site [1964] School 50m west named Richard Cobden Primary School [1964] Public baths 100m W became residential properties [1964]

The GroundSure Report includes information from a database of local activities encompassing a range of subjects related to land use, pollution, and geological/hydrological conditions. A summary of contaminative uses and other environmental issues covered by the desk study within the site and its immediate surroundings [generally within 250m] is presented below.

Potentially Contaminative Uses identified from 1:10,000 scale Mapping

- Unspecified Workhouse: 188m E [1911]
- Hospital: 189m E [1957 – 1989]
- Stores: 200m NE [various dates]
- Rail Sidings: 233m NE [1894 to 1957]

Historical Tanks

- 171m E: Tank or Trough [1876]
- 177m E: Unspecified Tank [1993]

Historical Garages and Motor Vehicle Repair Database

- 150m to 200m N: General Post Office garages and workshops
- 218m to 222m W: Car Body Works
- 225m to 227m W: Garage (Unknown activity)
- 248m N: General Post Office Garages and Workshops

Potentially Infilled Land

- 238m E: Burial ground

Historical Energy Features Database

- Electricity Substations: 49m N, 74m SE, 117m NE, 139m E, 194m E

Environmental Permits, Incidents and Registers

- Activities and Enforcements: Crowndale Dry Cleaners, dry cleaning; 125m SE of the site.
- Records of Category 3 or 4 Radioactive Substances Authorisations: Royal Veterinary College, disposal of radioactive waste [source: Groundsure report]; located 82m & 131m E of the site
- National Incidents: Contaminated Water, Firefighting Run-off, water impact minor; 136m N of the site

Landfill and other Waste Sites

- Scrap metal recycling: 173m E

Current Land Use

- Records of potentially contaminative industrial sites within 250m of the study site: None identified within the site boundary. Infrastructure and facilities within the vicinity of the site; notable entries are Electrical Sub Station [Infrastructure and Facilities] 56m N and 81m SE, works 117m N, 123m NE and 147m E
- Records of petrol or fuel sites: St Georges Service Station, 263m SW, obsolete

Hydrogeology and Hydrology

- Aquifer within superficial deposits: No
- Aquifer within bedrock deposits: 'Unproductive' aquifer on site
- Groundwater water abstraction: nearest record 670m NE [Historical borehole at Kings Cross]
- Surface water abstractions: nearest record active 890 E [Maiden Lane Bridge, London, NW1]
- Potable water abstractions: nearest record active 1248m NW [Kentish Sports Centre, Prince of Wales Street]
- Source Protection Zones: none within 500m
- Groundwater Vulnerability and Soil Leaching Potential: minor aquifer/high leaching potential on site
- No river, biological or chemical quality, detailed river network or surface water features within 250m

Detailed River Network

- 57m NE: Undefined culvert

Flooding

- No flood zones identified within 250m
- Risk of flooding from rivers and the sea – very low
- No flood defences/flood storage areas within 250m

- Groundwater Flooding Susceptibility Areas within 50m of site: site is susceptible; potential below surface. BGS rating of groundwater flooding confidence as 'High'

Designated Environmentally Sensitive Sites

- Nearest entry: Camley Street Nature Park [Natural England] – 486m E

Geology

- Artificial/Made Ground: Worked ground [made ground] on site and 84m NW
- Superficial Deposits: None recorded on site
- Bedrock/Solid Geology: London Clay Formation [clay & silt] identified on site by BGS; moderate to very low permeability
- Faults: None within 500m
- Radon: The property is not in a Radon Affected Area [<1% of properties are above action level] - no protective measures necessary
- Historical surface ground workings: Burial Ground 230m E, 1873
- Historical underground workings within 1000m: Tunnel 432m E and 589m SE
- Current ground workings recorded within 1000m: Kings Cross Rail Depot, Crushed Rock; 700m E
- Historical mining / coal mining / non coal mining / cavities: None identified within 1000m
- No natural cavities recorded within 1000m
- Brine extraction / gypsum extraction / tin mining / clay mining: None identified within 1000m
- Shrink–swell clays: Moderate hazard on site
- Other natural ground subsidence: Very low to negligible risks for all categories where identified
- BGS borehole records: Several borehole logs available; nearest 86m W
- Estimated Background Soil Chemistry: No data

Railways and Tunnels

- 238m SW [Northern Line]
- Railway sidings: 222 NE, 1973

3.2 Walk-over survey

Our site walkover survey was undertaken in October/November 2016. The site was occupied by Quinn Contracts with hoarding surrounding the site. Scaffolding works and an internal soft strip had already begun. The Community Centre ground floor consists of a large hall with a number of empty smaller rooms on the ground floor and first floor. The basement consisted of disused offices, a kitchen, an electrical cupboard and other vacant storage rooms.

The site is located in a typical London setting with high rise residential flats on the north, eastern and southern flanks. The residential building to the immediate north of the site [Kingston House] is currently surrounded by scaffolding and is undergoing construction works. To the south-west of the site, across from Camden Street, is Richard Cobden Primary School with a large play area to the rear. Overall, within the vicinity of the site there were no obvious signs of potential contamination sources.

The 'lock-up' garages on site were derelict at the time of the exploratory work. The garages had already been cleared and stripping of the garages had begun with their doors having been removed. No obvious potential contamination sources were identified inside the accessible garages and there were no obvious signs of leakage or spillage such as surface discolouration.

Overall, the site and its immediate surroundings are set in a 'typical' central London setting. We have not identified any particular features [such as fuel tanks], materials [such as chemical containers, asbestos cement] or land use within the site or in its immediate vicinity which are likely to give rise to significant contamination risks and we thus have no particular concerns in this regard. Photographs of the site taken during our survey are shown in Appendix A.

4.0 EXPLORATORY WORK

The fieldwork was carried out between 31 October and 3 November 2016, comprising a cable percussion borehole and a window sample borehole. The cable percussion borehole [BH1] was constructed from ground level at +22.84mOD and window sample borehole [WS101] at +23.23mOD. Access in general was limited at the time of our exploratory work.

Cable percussion borehole

This borehole was nominal 150mm diameter [BH1] and was constructed a] to provide information on the geology and groundwater conditions for geotechnical design and b] to provide some samples for contamination testing. Undisturbed U100 sampling and in-situ Standard Penetration Tests [SPT] were carried out at 1m intervals with intermediate disturbed samples. The borehole was terminated within competent natural strata at a depth of 25.00m [about -2.16mOD]. A 50mm ID standpipe was installed to 3m depth on completion to facilitate water/gas monitoring.

The calibration certificate for the cable percussive drilling rig SPT equipment used indicates that Energy Ratio, Er, of 65.96% should be used to provide corrected N_{60} values.

Window sampling

Due to access restrictions, a second cable percussive borehole was not possible. Therefore a small diameter window sample borehole [WS101] was constructed provide additional information on the shallow soil profile; this was undertaken using hand-held/operated equipment from ground level.

Groundwater and gas monitoring

Water and gas monitoring has been undertaken on 21st December 2016 and 5th January 2017. The results are appended in Appendix A and referred to in section 5.3.

Geotechnical laboratory testing

The following geotechnical laboratory testing was completed:

- Natural moisture content and Atterberg Limit determination
- Unconsolidated undrained triaxial testing

Contamination/chemical testing

Selected soil samples were delivered to a specialist laboratory [QTS Environmental Ltd] and the following testing was carried out:

- General soil suite - 4no samples
- Soluble sulphate/pH analyses

The engineering borehole logs and the laboratory test results are included in Appendix A. A site plan is also provided showing the exploratory locations.

5.0 GROUND CONDITIONS

The 1:50,000 and 1:10,000 scale British Geological Survey maps of the area indicate that the site is underlain by the London Clay Formation [typically stiff grey, weathering brown clay with variable silt/sand content] which, is recorded to extend to over 50m depth in this part of London.

Our investigation encountered the anticipated sequence beneath a covering of made ground, as summarised below:

Stratum	Depth to base [elevation]	Thickness
Made ground	1.40m to 1.65m [+21.83mOD to +21.19mOD]	1.40m to 1.65m
London Clay Formation	Proven to 25.00m [-2.16mOD]	23.35m proven

5.1 Made Ground

Beneath the tarmac and concrete slab [0.25m thick concrete in BH1] the made ground generally comprised a mixture of [non-engineered] brown ashy clay and flint gravel with variable quantities of

stone with brick, concrete and wood and ash fragments. At the borehole locations, the thickness of the made ground was found to be between 1.40m and 1.65m.

An SPT N_{60} value of 5 was measured indicating low shear strength. Atterberg Limit tests classify the Made Ground as Low to Very High plasticity according to the BS scheme and of Low, Medium and High Volume Change Potential (NHBC scheme). Natural moisture contents measured between 18% and 35% and this variability is attributed to gravel content and varied composition.

5.2 London Clay Formation

The London Clay Formation was encountered at depths of between 1.40m and 1.65m directly beneath the Made Ground. The deposits initially comprised brown weathered clay to about 6.70m becoming grey fissured clay below. The clay was occasionally silty with occasional fine sand partings, and pyrite fragments/nodules were present. Selenite crystals were noted in the upper weathered zone and claystones were met at 6.2m and 13.95m

Shear vane testing in the window sample hole indicates that the clay at shallow level is generally of 'high' strength [generally ranging between 86kPa and 115kPa]. In situ SPTs and undrained triaxial testing in BH1 indicate that the clay is initially of 'low' strength [lowest c_u of around 27kPa] near the top of the stratum, increasing in strength to become 'high' strength [>90kPa] below about 3.20m depth [+19.64mOD] and 'very high' strength [150kPa] below about 9.20m [+13.64mOD].

Atterberg Limit tests classify the clay as High to Very High plasticity according to the BS scheme and of Medium to High Volume Change Potential (NHBC scheme). The natural moisture content profile is appended and this shows variations between about 23% and 32%; the lower values are likely to be a result of higher silt/sand content. Although obvious effects of desiccation were not apparent in either of the boreholes, it is noted that rootlets were present within the shallow soils within WS101 and the high strength and stiff consistency of these soils vary markedly from BH1; this may be attributable to desiccation.

The London Clay extended to the full depth of BH1 to 25.00m bgl [-2.16mOD below ground floor level].

5.3 Groundwater

A groundwater seepage was identified during the investigation at 13.95m depth (approx +8.90mOD), probably related to the occurrence of claystone at that depth. It is possible that perched water may be present in the Made Ground and seasonal variations should, of course, be expected and shallow water should be anticipated during wet periods.

Monitoring of the borehole installations was undertaken on 21st December 2016 and 5th January 2017, as summarised below

Summary of groundwater monitoring				
Installation reference (and pipe internal diameter)	Approximate pipe base 21/12/16		Water depth/level 21/12/16	
	Depth (mbgl)	Elevation (mOD)	Depth (mbgl)	Elevation (mOD)
BH1 (50mm)	3.10	+19.74	1.72	+21.12
WS101 (35mm)	4.60	+18.63	2.60	+20.63

Summary of groundwater monitoring				
Installation reference (and pipe internal diameter)	Approximate pipe base 05/01/2017		Water depth/level 05/01/2017	
	Depth (mbgl)	Elevation (mOD)	Depth (mbgl)	Elevation (mOD)
BH1 (50mm)	3.10	+19.74	1.70	+21.10
WS101 (35mm)	4.70	+18.53	2.61	+20.64

5.4 Environmental observations and gas monitoring

No visual or olfactory signs of gross contamination were observed in any of the strata at the investigation locations.

We have undertaken ground gas monitoring on 21st December 2016 and 5th January 2017. The results appended indicate a very low concentration of Carbon Dioxide [<1%] and near normal Oxygen concentrations of around 20%. There was no measured emission rate or significant pressure.

6.0 GEOTECHNICAL ASSESSMENT

The proposed scheme is to demolish both the existing community centre [but keeping the studios at the rear] and the lock-up garages on the southern side of the site. The proposed development will include a new 3 to 4 storey residential building which will not contain a basement. The structural engineers have considered a piled foundation scheme with ground bearing floor slabs [with nominal loads being placed on the piling mat]. The investigation has indicated that the London Clay is locally soft to almost 3m depth and therefore spread foundations are highly unlikely to be feasible. Thus the anticipated piled foundation solution will almost certainly be the optimum type. Temporary concrete pads [thrust blocks] will also be placed to provide resistance for temporary propping; the London Clay should be capable of supporting these locks, albeit at a relatively low bearing pressure.

A new landscaped courtyard is proposed at the rear of the building incorporating some parking facilities.

It is noted that the site has a history of development and thus obstruction and buried structures may still be present in the ground.

6.1 Temporary foundations

In order to implement the construction of the new building, temporary concrete pads are required to act as thrust blocks for temporary propping. Our investigation has shown that made ground is present

overlying natural clay deposits. The made ground, which attains a thickness of about 1.50m, is non-engineered and variable in composition, and is not considered to be a competent founding material. Thus, foundations for the thrust blocks should bypass this made ground and bear within the natural soils. It is also noted that the upper layers of the natural soils are of low strength and this should be considered in relation to the design of the thrust blocks particularly where the load is eccentric.

On the basis of adopting an undrained shear strength (cu) of 30kN/m^2 with a foundation geometry not exceeding 2.0m width, bearing capacity theory predicts a safe bearing pressure in the order of 60kN/m^2, incorporating a factor of safety of three against general shear failure. Of course, the final design pressure will be dictated by the foundation geometry, depth, water level and loading regime.

It is noted that some areas of desiccated clay may be present. For temporary thrust blocks, this aspect may not be of particular concern although a small magnitude of heave may occur if desiccated soils rehydrate. For permanent structural foundations, design and construction would need to take account of potential desiccation, for example using NHBC Guidance Chapter 4.2, Building Near Trees [a High Volume Change Potential would apply at this site]. However, as discussed above the main permanent structural loads are likely to be supported by piled foundations.

6.2 Piled foundations

The structural engineer's preliminary scheme envisages piled foundations and we concur that these will almost certainly provide the optimum foundation type. From information provided by the structural engineer, we understand that un-factored column loads will be in the order of about 225kN to 700kN.

For the ground conditions encountered either CFA piles or conventional rotary augered piles could be considered, with the latter type requiring short length of temporary casing through any made ground.

The following table of coefficients may be used for the preliminary assessment of such piles, based upon the measured strength profile included in Appendix A.

Shaft adhesion

Stratum	Depth / Level[5]	Undrained cohesion [from strength profile]	Ultimate unit shaft adhesion 'q_s'
Made ground & London Clay	Above say 3m depth +19.84mOD approx	Ignore	Ignore
London Clay	3m (+19.84mOD) to 20m (+2.84mOD)	Increases linearly from 50kN/m^2 at a rate of 10.48kN/m^2/m	Increases linearly from 25kN/m^2 at a rate of 5.24kN/m^2/m [incorporates α = 0.50]

Notes:

a] Unit shaft adhesion 'q_s' = α x c_u [where α = 0.50 and c_u is the undrained cohesion from the design line]

b] The α value of 0.5 is based upon 102mm diameter triaxial tests and this should not be varied

c] The average shaft adhesion over the pile length should be limited to 110kN/m^2

d] The maximum value for unit shaft adhesion should be limited to 140kN/m^2

e] Ground levels/depths shown are relative to ground floor level, approx +22.95mOD

End bearing

Stratum	Depth/level[2]	Undrained cohesion [from strength profile]	Ultimate unit base resistance 'q_b'
London Clay	Below say 15.0m (+7.84mOD)	Increases linearly from 176kN/m^2 at a rate of 10.48kN/m^2/m	Increases linearly from 1584kN/m^2 at a rate of 94.32kN/m^2/m [incorporates Nc = 9]

Notes:

a] Unit base resistance in clay 'q_b' = Nc x c_u [where Nc = 9 and c_u is the equivalent undrained cohesion from the design line]

b] Ground levels/depths shown are relative to ground floor level, approx +22.95mOD

Using the traditional UK approach, an overall Factor of Safety of 2.6 should be appropriate when applied to these ultimate parameters, in accordance with the LDSA guidelines. Example working loads are provided below.

Pile diameter [mm]	Pile toe level [m OD]	Ultimate load [kN]	Working load [kN]
450	+12.84	605	233
	+7.84	1209	465
	+2.84	1998	768
600	+12.84	886	341
	+7.84	1724	663
	+2.84	2809	1080

Notes:

a] Working load is calculated using F_{shaft} and F_{base} = 2.6

b] Concrete stress should be considered in the final design

The above table is not intended to constitute recommendations on pile diameter/length but is intended only to illustrate the use of the recommended parameters.

As a number of trees surround the site the effect of desiccation should be taken into consideration in the design. As indicated in the table above, it is suggested that where in close proximity to trees, the upper 3m should be ignored with regards to pile design. Additionally for pile caps and ground beams which pass through desiccated or root infested clay soils, a suitable void former should be placed in accordance with good building practice to ensure potential swelling pressures do not adversely affect the structure.

It is noted that deep groundwater seepages were noted within the London Clay in BH1 (at 13.95m and at 20.20m depth). Some modification of the pile parameters or downgrading of the pile capacities may be warranted to mitigate the possible risk of clay softening, although this should be minimal with well-installed CFA piles. As claystones were observed, the possibility of obstructions within the London Clay in BH1 (6.20m and 13.95m) should not be overlooked and a contingency should be put in place.

Eurocode 7 adopts a slightly different approach when determining pile capacities. Under EC7 (BS EN 1997-1:2004 and UK National Annex) the limit states GEO and STR must be verified using Design Approach 1, where partial factors are applied to actions (Combination 1) and to material properties or resistance (Combination 2). The following partial factors, as recommended in the UK National Annex, are applied:

a] Model Factor, γ_{Rd} = 1.4 (Combinations 1 and 2)

b] Factor on shaft resistance, γ_s = 1.0 (Combination 1); 1.6 (Combination 2)

c] Factor on base resistance, γ_b = 1.0 (Combination 1); 2.0 (Combination 2)

When designing to EC7, the engineer must ensure that the correct comparisons are made between the Design Actions and Design Resistances. Whilst the partial factors address ULS design, serviceability checks should also be carried out.

If pile testing is carried out this will allow the use of lower model and partial factors, although for the scale of the development the advantages of this may be marginal. A specialist piling contractor must be consulted at an early stage to confirm the most appropriate pile type and to provide the final design.

6.3 Floor slabs

Due to the thickness and poor quality of the untreated made ground, floor slabs should be designed to be fully suspended with a void below to allow for potential swelling of clay soils which may be desiccated through tree root growth. However, we understand that the made ground may be treated and a piling mat constructed to facilitate piling operations. In this scenario, for nominally loaded floor slabs, it may be possible to cast the floor slab directly on the treated ground. This would not of course protect against any potential swelling and thus is would be necessary to excavate and replace any root infested and/or desiccated clay below the floor slab area prior to construction of the piling mat.

6.4 Foundation concrete

Concentrations of soluble sulphates and pH values were measured on a number of soil samples from the boreholes and the results are included in Appendix A. In general, sulphate values were elevated and pH reactivity from slightly to moderately alkaline. Overall, a Design Sulphate Class DS-3 [Table C2 given in BRE Special Digest 1:2005, 3rd Edition, 'Concrete in aggressive ground'] is considered to be applicable for the site with an ACEC Site Class AC-2s.

7.0 ENVIRONMENTAL APPRAISAL

This appraisal adopts the current UK practice which uses the Source-Pathway-Receptor methodology to assess contamination risks. For a site to be designated as contaminated a plausible linkage between any identified sources and receptors must be identified, ie whether significant pollution linkages [SPLs] are present. In considering the potential for contamination to cause a significant effect, the extent and nature of the potential source are assessed and pathways/receptors identified; without an SPL there is

theoretically no risk to the receptors from contamination. The assessed risks to the various potential receptors are summarised in the tabulated Conceptual Site Model which forms Section 8.6 of this report.

7.1 Environmental setting and context

The Site is underlain by Unproductive bedrock aquifers [London Clay Formation] and is not located in a source protection zone, a flood zone or environmentally-sensitive area. There are no water abstractions or surface water features nearby. The solid geology of the site and surrounding area is largely of a cohesive nature and low permeability. Overall, the site is assessed as being of **Low to Medium Environmental Sensitivity.**

7.2 Potential contamination sources [on-site and off-site]

The Phase 1 [Desk Study] indicated the presence of an Unspecified Workhouse [188m E] and a Hospital [189m E] in the early 20th century. Other manufacturing/industrial usages have been identified within a 250m area of the site with the vast majority of use appearing to be residential and public buildings. Some garages/vehicle maintenance workshops and an electrical substation 56m N have been identified which may give rise to potential contamination however migration of contaminants would be restricted by the presence of clay soils. Potentially infilled ground has been noted and identified as a burial ground. The site has been developed through historical times where the ground use has changed from religious and residential purposes to commercial and storage uses, and thus there is a potential for made ground

From our walkover survey of the site no significant sources of potential contamination have been noted within the site or its immediate surroundings. It is noted that some lock-up style garages are present which could have the potential for contamination. Visual observations indicated there was no discernible evidence of significant spillages or discolouration.

Overall, based on the available information, prior to our contamination testing, we considered there to be a **Low to Medium** risk potential with regard to contaminative sources which could affect the site.

7.3 Contamination testing

Access to the site was restricted and thus only a preliminary appraisal was possible. In order to undertake this preliminary assessment of potential contamination within the site, we carried out testing on 4no soil samples which were recovered from the made ground during our investigation. The test locations included an area outside the lock-up garages and the area of the former religious building; these locations being accessible at the time. The results were assessed where relevant against the DEFRA Soil Guideline Values [SGV] and the LQM/CIEH Suitable 4 Use Level [S4UL] Generic Assessment Criteria [GAC] for Human Health Risk Assessment in which LQM/CIEH have derived additional SGVs from the current CLEA Model [2nd Edition, 2009]. The SGV for Lead contamination was withdrawn as of 2008 but Category 4 Screening Levels [C4SLs] have been introduced by DEFRA in 2014, which have been used to assess the results. C4SLs have also been useful for comparison with several other common contaminants. There are currently no published SGV's or GAC's for Extractable/Total Petroleum Hydrocarbons and the results were compared with the frequently used EA remedial target of 1,000mg/kg.

The contamination testing was carried out specifically for the purpose of providing a general guidance evaluation for the proposed development. Reference should be made to the Foreword to the appended contamination test results in order to fully understand the context in which this discussion should be viewed.

We have used, where relevant, the trigger levels for **residential development** to assess the results of the contamination testing. Using these criteria all contaminant concentrations were found to be below guidance values, without exceptions.

Overall, no contamination has been detected in the samples tested with many of the determinands being below detection level. A small quantity of EPH was detected in the made ground in BH1 at 0.30m. It should be noted that the investigation provided limited coverage of the site, there may of course be areas of undetected contamination. Construction workers would be at exposure risk during construction and the use of appropriate PPE and hygiene precautions should provide sufficient protection in this regard.

Although not detected in our samples, asbestos containing materials [ACMs] are common in made ground and in buildings constructed before 2000, and this aspect should be addressed in the construction/health and safety procedures.

7.4 Ground gas

Ground gas monitoring was undertaken on 21st December 2016 and 05th January 2017 with no significant signs of harmful gases being present. The desk study information has indicated the presence of a former burial ground and this may be a potential gas source. However, the soils that are present are generally cohesive (ie probable relatively low permeability) and no obvious degradable materials were observed. This would tend to suggest that the potential for gas migration would be low and with the measured values, in accordance with CIRIA:665 Characteristic situation 1 would apply. The Groundsure desk study indicates that protection from Radon gas is also not necessary.

7.5 Disposal of excavated soils

A rigorous hazard assessment of the results was not within the scope of our investigation, but our preliminary conclusion, based upon the testing completed, is that the made ground will probably classify as either ‘inert’ or ‘non-hazardous’ industrial waste, with an ‘inert’ classification for the natural soils.

Early consultations should be made with appropriate waste facilities or regulators to confirm the classification for off-site disposal.

7.6 Risk Assessment and Conceptual Model

Taking into account the above discussion, the assessed risks to potential receptors are summarised as follows:

Source / hazard	Pathway	Receptor	Mitigation measures / explanation	Assessed Risk level
Contaminated soil: on-site and off-site sources [made ground]	Ingestion/ contact	End user and construction workers	✣ No visual/olfactory evidence of gross soil contamination and all contaminant were below threshold levels for Residential end use ✣ Structure and hard standing will reduce the possibility of end user contact ✣ In landscaped areas the upper 0.60m of made ground should be replaced with clean imported subsoil and topsoil ✣ Any residual risks to construction workers will be controlled by the use of appropriate PPE ✣ A careful watching brief should be kept during construction and if obvious or suspected contamination is encountered this should be dealt with prescriptively	**LOW [following mitigation measures]**
Contaminated soil: on-site sources	Migration of contaminated ground water and/or surface run-off through contaminated fill into aquifer	Aquifer and surface water	✣ No visual/olfactory evidence of soil contamination and all contaminant were below threshold levels for Residential end use ✣ The site is considered to be in a low to medium environmental sensitivity setting ✣ The site is underlain by very low permeability London clay which protects the main chalk aquifer present at depth ✣ The large majority of the site will remain fully covered by concrete/paving which should minimise any surface water infiltration into the underlying soils	**LOW**
Ground gas: on-site and off-site sources	Migration	End-user and buildings	✣ Burial ground to the east of the sitewhich could be a potential gas source. No degradable materials were noted in the exploratory boreholes ✣ Gas monitoring indicates noxious gasses are not present ✣ No radon protection measures are necessary based on the Groundsure information	**LOW**

In conclusion, based upon the information reviewed and the results of the investigation, our assessment is that the risks to potential receptors should be **LOW**, subject to some mitigation measures. It should be noted that access to the site was limited and it is self-evident that there may be zones of contamination within the site which were not encountered in our boreholes. A careful watching brief should be kept during construction to ensure that any potentially contaminated soil encountered is disposed of in a safe and controlled manner. A suitable contingency plan should be in place should contaminated soils be encountered.

Site workers should observe normal hygiene precautions when handling soils. If material suspected of being contaminated is identified during construction, this material should be set aside under protective cover and further tests undertaken to verify the nature and levels of contamination present. If contamination is encountered, further site characterisation may be required.

GENERAL INFORMATION, LIMITATIONS AND EXCEPTIONS

Unless otherwise stated, our Report should be construed as being a Ground Investigation Report [GIR] as defined in BS EN1997-2. Our Report is not intended to be and should not be viewed or treated as a Geotechnical Design Report [GDR] as defined in EN1997-2. Any 'design' recommendations which are provided are for guidance only and are intended to allow the designer to assess the results and implications of our investigation/testing and to permit preliminary design of relevant elements of the proposed scheme.

The methods of investigation used have been chosen taking into account the constraints of the site including but not limited to access and space limitations. Where it has not been possible to reasonably use an EC7 compliant investigation technique we have adopted a practical technique to obtain indicative soil parameters and any interpretation is based upon our engineering experience and relevant published information.

The Report is issued on the condition that Soil Consultants Ltd will under no circumstances be liable for any loss arising directly or indirectly from ground conditions between the exploratory points which differ from those identified during our investigation. In addition Soil Consultants Ltd will not be liable for any loss arising directly or indirectly from any opinion given on the possible configuration of strata both between the exploratory points and/or below the maximum depth of the investigation; such opinions, where given, are for guidance only and no liability can be accepted as to their accuracy. The results of any measurements taken may vary spatially or with time and further confirmatory measurements should be made after any significant delay in using this Report.

Comments made relating to ground-water or ground-gas are based upon observations made during our investigation unless otherwise stated. Ground-water and ground-gas conditions may vary with time from those reported due to factors such as seasonal effects, atmospheric effects and and/or tidal conditions. We recommend that if monitoring installations have been included as part of our investigation, continued monitoring should be carried out to maximise the information gained.

Specific geotechnical features/hazards such as [but not limited to] areas of root-related desiccation and dissolution features in chalk/soluble rock can exist in discrete localised areas - there can be no certainty that any or all of such features/hazards have been located, sampled or identified. Where a risk is identified the designer should provide appropriate contingencies to mitigate the risk through additional exploratory work and/or an engineered solution.

Where a specific risk of ground dissolution features has been identified in our Report [anything above a 'low' risk rating], reference should be made to the local building control to establish whether there are any specific local requirements for foundation design and appropriate allowances should be incorporated into the design. If such a risk assessment was not within the scope of our investigation and where it is deemed that the ground sequence may give rise to such a risk [for example near-surface chalk strata] it is recommended that an appropriate assessment should be undertaken prior to design of foundations.

Where spread foundations are used, we recommend that all excavations are inspected and approved by suitably experienced personnel; appropriate inspection records should be kept. This should also apply to any structures which are in direct contact with the soil where the soil could have a detrimental effect on performance or integrity of the structure.

Ground contamination often exists in small discrete areas - there can be no certainty that any or all such areas have been located, sampled or identified.

The findings and opinions conveyed in this Report may be based on information from a variety of sources such as previous desk studies, investigations or chemical analyses. Soil Consultants Limited cannot and does not provide any guarantee as to the authenticity, accuracy or reliability of such information from third parties; such information has not been independently verified unless stated in our Report.

Our Report is written in the context of an agreed scope of work between Soil Consultants Ltd and the Client and should not be used in any different context. In light of additional information becoming available, improved practices and changes in legislation, amendment or re-interpretation of the assessment or the Report in part or in whole may be necessary after its original publication.

Unless otherwise stated our investigation does not include an arboricultural survey, asbestos survey, ecological survey or flood risk assessment and these should be deemed to be outside the scope of our investigation.

APPENDIX A

Fieldwork, in-situ testing

- Cable percussion borehole record
- Standard Penetration Test summary
- Window sample borehole records

Laboratory testing and monitoring

- Summary of classification test results
- Plasticity Chart
- Summary of undrained shear strength test results
- Undrained cohesion and SPT vs depth
- Groundwater and gas monitoring

Contamination and sulphate / pH testing [QTS Environmental]

- General soil suite [including soluble sulphate/pH results]

Plans, drawings & photographs

- Architectural/survey drawings
- Walkover survey photographs
- Site Plan
- Location Map

APPENDIX B

- GroundSure historical maps [Ref SCL-3521692]
- GroundSure EnviroInsight Report [Ref SCL-3521690]
- GroundSure GeoInsight Report [Ref SCL-3521691]

FOREWORD / GUIDANCE NOTES - CABLE PERCUSSION BORING

GENERAL

The Borehole Records are compiled from the driller's description of the strata encountered, an examination of the samples by our Geotechnical Engineer and the results of in-situ and laboratory tests. Based on this data, the report presents an opinion on the configuration of strata within the site. However, such reasonable assumptions are given for guidance only and no liability can be accepted for changes in conditions not revealed by the boreholes.

BORING METHODS

The Cable Percussion technique of boring is normally employed and allows the ground conditions to be reasonably well established. However, some disturbance of the ground is inevitable, particularly some "softening" of the upper zone of clay immediately beneath a granular soil. The presence of thin layers of different soils within a stratum may not always be detected.

GROUND WATER

The depth at which ground water was struck is entered on the Borehole Records. However, this observation may not indicate the true water level at that period. Due to the speed of boring and the relatively small diameter of the borehole, natural ground water may be present at a depth slightly higher than the water strike. Moreover, ground water levels are subject to variations caused by changes in the local drainage conditions and by seasonal effects. When a moderate inflow of water does take place, boring is suspended for at least 10 minutes to enable a more accurate short term water level to be achieved. An estimate of the rate of inflow is also given. This is a relative term and serves only as a guide to the probable flow of water into an excavation.

Further observations of the water level made during the progress of the borehole are shown including end of shift and overnight readings and the depth at which water was sealed off by the borehole casing, if applicable.

Whilst drilling through granular soils, it is usually necessary to introduce water into the borehole to permit their extraction. When additional water has been used a remark is made on the Borehole Record and the implications are discussed in the text.

SAMPLES

Undisturbed samples of the predominantly cohesive soils are obtained using a 100mm diameter open-drive sampler. In granular soils, disturbed bulk samples are taken and placed in polythene bags. Small jar samples are taken at frequent intervals in all soils for subsequent visual examination. Where ground water is encountered in sufficient quantity, a sample of the ground water is also taken.

IN-SITU STANDARD PENETRATION TESTS

This test is performed in accordance with the procedure given in B.S.1377: 1990. The individual blow count record for each test is given on a separate table. The 'N' value is normally the number of blows to achieve a penetration of 0.3m following a seating distance of 0.15m and is quoted at the mid-depth of the test zone. However if a change of stratum occurs within the test zone then a revised 'N' value is calculated to assess one layer in particular. In hard strata full penetration may not be obtained. In such cases the suffix + indicates that the result has been extrapolated from the limited penetration achieved. Where ground water has affected the measured values, the resultant 'N' value has been placed in brackets since it is unlikely to represent the true in-situ density of the soil.

FOREWORD TO CONTAMINATION TESTING AND ASSESSMENT

The following statements are designed to inform and guide the Client and other potential parties intending to rely upon this report, with the express intent of protecting them from misunderstanding as to the extent and thus the potential associated risks that may result from proceeding without further evaluations or guidance.

1] Unless otherwise stated in this report, the testing of soils and waters is based on a range of commonly occurring potential contaminants for the specific purpose of providing a general guidance evaluation for the proposed form of development. Thus, the range of potential contaminants is neither exhaustive nor specifically targeted to any previous known uses or influences upon the site.

2] The amount and scope of the testing should not be assumed to be exhaustive but has been selected, at this stage, to provide a reasonable, general view of the site ground conditions. In many cases this situation is quite sufficient for the site to be characterised for the purposes of development and related Health and Safety matters for persons involved in or directly affected by the site development works. It must be understood, however, that in certain circumstances aspects or areas of the site may require further investigation and testing in order to fully clarify and characterise contamination issues, both for regulatory compliance and for commercial reasons.

3] The scope of the contamination testing must not automatically be regarded as being sufficient to fully formulate a remediation scheme. For such a scheme it may be necessary to consider further testing to verify the effectiveness of the remedial work after the site has been treated. It must be understood that a remediation scheme which brings a site into a sufficient state for the proposed development ("fit for purpose") under current legislation and published guidance, may result in some contamination being left in-situ. It is possible that forthcoming legislation may result in a site being classified by the Local Authority and assigned a "Degree of Risk" related to previous use or known contamination.

4] The scope of the environmental investigation and contamination testing must not be automatically regarded as sufficient to satisfy the requirements in the wider environmental setting. The risks to adjacent properties and to the water environment are assessed by the regulatory authorities and there may be a requirement to carry out further exploration, testing and, possibly monitoring in the short or long term. It is not possible to sensibly predict the nature and extent of such additional requirements as these are the direct result of submissions to and liaison with the regulatory authorities. It is imperative, therefore, that such submissions and contacts are made as soon as possible, especially if there are perceived to be critical features of the site and proposed scheme, in this context.

5] New testing criteria have been implemented by the Environment Agency to enable a waste disposal classification to be made. The date of implementation of this Waste Acceptance Criteria [WAC] was July 2005. It is this testing that will be used by the waste regulatory authorities, including waste disposal sites, to designate soils for disposal in landfill sites. In certain circumstances, to satisfy the waste regulations, there may be the necessity to carry out additional testing to clarify and confirm the nature of any contamination that may be present. If commercial requirements are significant then this process may also necessitate further field operations to clarify the extent of certain features. Thus, the waste classification must be obtained from the waste regulation authorities or a licensed waste disposal site and we strongly recommend that this classification is obtained as soon as possible and certainly prior to establishing any costings or procedures for this or related aspects of the scheme.

Site & Location:	**St Pancras Community Centre** **30 Camden Street, London, NW1 0LG**		Borehole No: **BH1**
Client:	**Quinn London Ltd**	Coordinates: 529398E, 183578N	Sheet 1 of 3
Engineer:	**Michael Barclay Partnership LLP**	Ground Level: +22.84mOD	Report No: 10037/SC

Progress & Observations	Samples & Tests Type	Samples & Tests Depth (m)	Field Test Results	Strata Depth (m)	Strata Level (m)	Legend	Strata Descriptions	Backfill / Installation
BH commenced: 31/10/16				0.05	22.79		TARMAC	
	D	0.30		0.25	22.59		CONCRETE	
BH/casing dia: 150mm							MADE GROUND: soft brown mottled black ashy silty clay with cinder, brick, wood and concrete fragments	
	B	0.65						
	D	0.75						
	D	0.95		0.95	21.89		MADE GROUND: soft orangish brown silty CLAY with rare fine ironstone fragments and fine brick fragments	
	S	1.20		1.20	21.64		MADE GROUND: soft brown mottled black silty clay with rare gravel. Gravel is fine to medium, sub angular flint with brick and ash fragments	
	SPT/S	1.20	N=5 N_{60}=5					
BH cased to 1.60m				1.65	21.19		Soft orangish brown silty CLAY with occasional grey gleying	
	D	1.90						
	U	2.20						
	D	2.95		2.90	19.94		Firm fissured orangish brown silty CLAY. Occasional orange sand pockets and partings. Rare becoming occasional grey gleying associated with decayed root pathways. Rare selenite crystals throughout	
50mm pipe installation at 3.00m	S	3.20						
	SPT/S	3.20	N=16 N_{60}=18				*....becoming stiff below 3.20m*	
	D	3.90						
	U	4.20						
	D	4.90						
	S	5.20						
	SPT/S	5.20	N=19 N_{60}=21					
	D	5.90						
Claystone at 6.20m	U	6.20					*....claystone fragment at 6.20m*	
	D	6.90		6.70	16.14		Stiff fissured dark brown silty CLAY with rare grey gleying and rare sand/silt partings.	
	S	7.20						
	SPT/S	7.20	N=20 N_{60}=22					
	D	7.90					*....at 7.90m pyritised wood fragments and rare selenite crystals*	
	U	8.20						
	D	8.90		8.85	13.99		Stiff fissured grey silty CLAY with rare light brown silt/sand pockets	
	S	9.20						
	SPT/S	9.20	N=31 N_{60}=34					
	D	9.90		10.00	12.84			

Continued on next sheet

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet

Borehole type: Cable Percussion

Remarks: Ground levels taken from Cartwright Pickard architects' 'Camden Street - Ground floor GA Plan', Ref: 634-AD-2000, 01/05/2013

Borehole No: **BH1**

Site & Location:	**St Pancras Community Centre** **30 Camden Street, London, NW1 0LG**	Borehole No:	**BH1**
Client:	**Quinn London Ltd**	Coordinates: 529398E, 183578N	Sheet 2 of 3
Engineer:	**Michael Barclay Partnership LLP**	Ground Level: +22.84mOD	Report No: 10037/SC

Progress & Observations	Samples & Tests Type	Samples & Tests Depth (m)	Field Test Results	Strata Depth (m)	Strata Level (m)	Legend	Strata Descriptions	Backfill / Installation
	U	10.20					Stiff fissured grey silty CLAY with rare light brown silt/sand pockets	
	D	10.90		10.90	11.94			
	S	11.20					Stiff fissured grey silty CLAY with occasional light grey silt/ sand pockets and partings and rare pyrite nodules	
	SPT/S	11.20	N=30 N_{60}=33					
	D	11.90						
	U	12.20						
	D	12.90		12.90	9.94			
	S	13.20					Very stiff fissured grey silty CLAY with rare fossil fragments and pyrite nodules	
	SPT/S	13.20	N=29 N_{60}=32					
							....at 13.80m to 13.90m 10cm lignite horizon	
Chiselling on claystone at 13.95m to 14.10m for 30mins Seepage at 13.95m - not sealed	D	13.95						
	U	14.20						
	D	14.95		14.90	7.94		Very stiff fissured grey slightly sandy silty CLAY with occasional light grey sand pockets	
	S	15.20						
	SPT/S	15.20	N=35 N_{60}=38					
	D	15.90						
	U	16.20						
	D	16.90						
	S	17.20						
	SPT/S	17.20	N=38 N_{60}=42					
	D	17.90					*....at 17.90m clay has a bluish grey colouration*	
	U	18.20						
	D	18.90						
	S	19.20						
	SPT/S	19.20	N=41 N_{60}=45					
	D	19.90		20.00	2.84			

Continued on next sheet

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet

Borehole type: Cable Percussion

Remarks: Ground levels taken from Cartwright Pickard architects' 'Camden Street - Ground floor GA Plan', Ref: 634-AD-2000, 01/05/2013

Borehole No: **BH1**

Site & Location:	**St Pancras Community Centre** **30 Camden Street, London, NW1 0LG**	Borehole No:	**BH1**
Client:	**Quinn London Ltd**	Coordinates: 529398E, 183578N	Sheet 3 of 3
Engineer:	**Michael Barclay Partnership LLP**	Ground Level: +22.84mOD	Report No: 10037/SC

Progress & Observations	Samples & Tests: Type	Samples & Tests: Depth (m)	Field Test Results	Strata: Depth (m)	Strata: Level (m)	Legend	Strata Descriptions	Backfill / Installation
End of shift: 01/11/16 BH depth: 20.00m Casing depth: 1.60m Water depth: dry BH continued: 02/11/16 Water depth: dry Seepage at 20.20m - not sealed	U	20.20					Very stiff fissured grey slightly sandy silty CLAY with occasional light grey sand pockets	
	D	20.90					*....at 20.95m pyritised wood fragments*	
	S	21.20						
	SPT/S	21.20	N=44 N_{60}=48					
	D	21.90						
	U	22.20						
	D	22.90		22.90	-0.06		Very stiff fissured grey silty CLAY with rare light grey silt/ sand pockets.	
	S	23.20					*....at 23.20m pyritic wood fragments and increased occurrence in sand partings/ pockets*	
	SPT/S	23.20	N=46 N_{60}=51					
	D	24.05					*....pyrite nodules at 24.05m*	
	U	24.55						
End of BH: 02/11/16 BH depth: 25.00m Casing depth: 1.60m Water depth: dry After pulling casing water level: dry				25.00	-2.16		End of hole at 25.00m	

21 22 23 24 25 26 27 28 29 30

Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet

Borehole type: Cable Percussion

Remarks: Ground levels taken from Cartwright Pickard architects' 'Camden Street - Ground floor GA Plan', Ref: 634-AD-2000, 01/05/2013

Borehole No: **BH1**

Site & Location	**St Pancras Community Centre** **30 Camden Street, London, NW1 0LG**	Report No:	**10037/SC**

STANDARD PENETRATION TEST SUMMARY

BH ID	Depth [m]	Test type	'N' value and blow-counts [Seating blows/Test blows]	N_{60}	N_{60} - ext	Casing depth [m]	Water depth [m]	Remarks
BH1	1.20	S	N = 5 :0 1/ 1 1 1 2	5		1.60	DRY	
	3.20	S	N = 16 :1 2/ 3 4 4 5	18		1.60	DRY	
	5.20	S	N = 19 :2 3/ 4 5 5 5	21		1.60	DRY	
	7.20	S	N = 20 :3 3/ 4 5 5 6	22		1.60	DRY	
	9.20	S	N = 31 :4 5/ 7 7 8 9	34		1.60	DRY	
	11.20	S	N = 30 :5 6/ 6 7 7 10	33		1.60	DRY	
	13.20	S	N = 29 :5 6/ 6 7 8 8	32		1.60	DRY	
	15.20	S	N = 35 :5 4/ 7 8 10 10	38		1.60	DRY	
	17.20	S	N = 38 :5 6/ 9 9 10 10	42		1.60	DRY	
	19.20	S	N = 41 :6 5/ 9 10 11 11	45		1.60	DRY	
	21.20	S	N = 44 :6 6/ 10 10 12 12	48		1.60	DRY	
	23.20	S	N = 46 :5 6/ 10 12 12 12	51		1.60	DRY	

Standard Penetration Test : BS EN ISO 22476:2005 Part 3 Hammer Energy Ratio, Er = 65.96%

* where full penetration not achieved, the reported N_{60} is based on maximum uncorrected blow-counts of 50

** extrapolated N_{60} value where full penetration not achieved - this is indicative only and should be used with caution

Soil Consultants

SPT Calibration Report

EQUIPE GROUP
www.equipegroup.com

Hammer Energy Measurement Report

Type of Hammer	SPT HAMMER
Client	GEH GROUNDWORKS
Test No	EQU1367_5
Test Depth (m)	7.59
Date of Test	16 October 2015
Valid until	15 October 2016
Hammer ID	GEH2

Mass of the hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of the instrumented rod		0.558 m
Area	A =	11.61 cm^2
Modulus	E_a =	206843 MPa

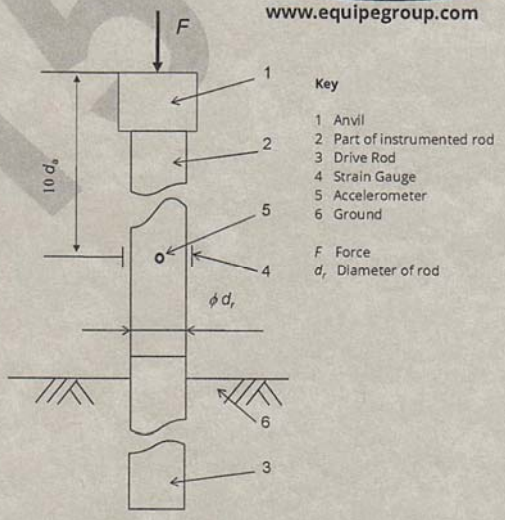
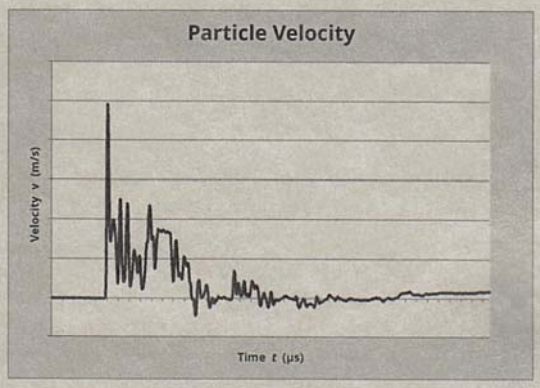
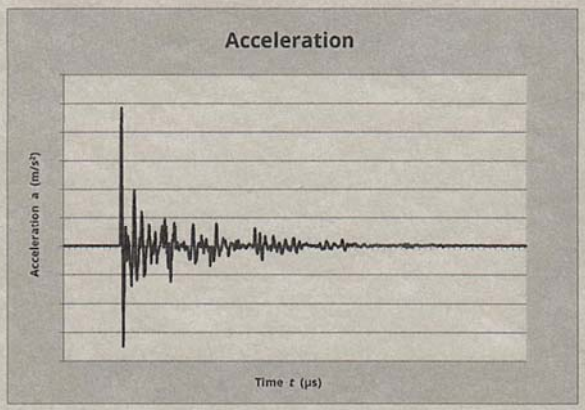
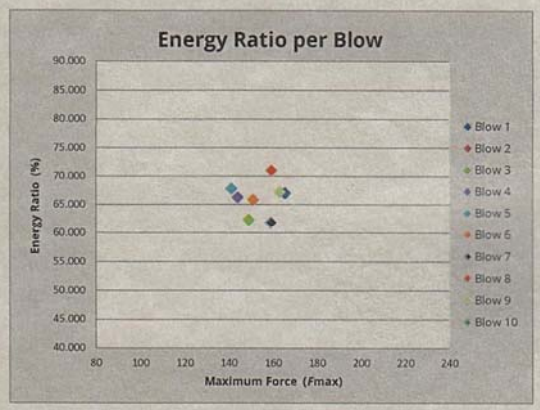


Fig. B.1 and B.2 BS EN ISO 22476-3 : 2005 + A1 : 2011







Observations:
1.

E_{meas} = **0.312** kN-m

E_{theor} = **0.473** kN-m

Energy Ratio (E_r) = $\frac{E_{meas}}{E_{theor}}$ = **65.96%**

Equipe SPT Analyzer Operators: MH

Prepared by: **Checked by:** **Date** 21/10/2015

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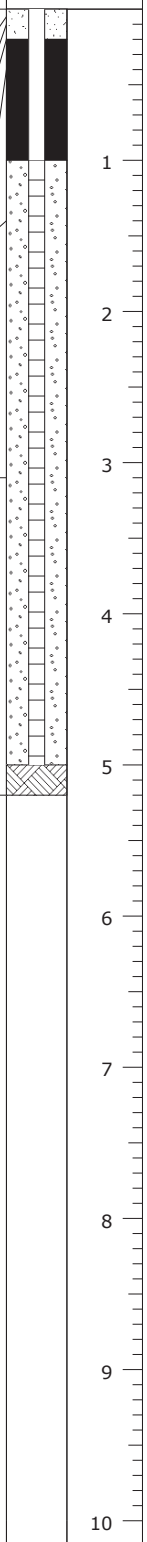
Site & Location:	**St Pancras Community Centre** **30 Camden Street, London, NW1 0LG**	Borehole No:	**WS101**
Client:	**Quinn London Ltd**	Coordinates: 529380E, 183592N	Sheet 1 of 1
Engineer:	**Michael Barclay Partnership LLP**	Ground Level: +23.23mOD	Report No: 10037/SC

Progress & Observations	Samples & Tests: Type	Samples & Tests: Depth (m)	Field Test Results	Strata: Depth (m)	Strata: Level (m)	Legend	Strata Descriptions	Backfill / Installation
				0.05	23.18		RUBBER MATTING	
				0.10	23.13		WOOD CHIPPING	
				0.20	23.03		MADE GROUND: pink hardcore	
WS Commenced: 03/11/16 Nominal diameter of 90mm from GL to 1.0m. Decreasing with depth.	D	0.30		0.40	22.83		MADE GROUND: brown and yellow sand with occasional gravel. Gravel is fine to medium sub angular to sub rounded flint with brick and concrete fragments	
	D	0.40						
	D	0.50						
	PP	0.50	2.5					
	D	0.70						
	PP	0.70	3.0					
	PP	0.80	3.2				MADE GROUND: soft brown iron stained silty clay with occasional gravel. Gravel is fine to coarse, sub angular to sub rounded flint with brick, glass, asphalt and concrete fragments. Live rootlets through to 0.80m	
	D	0.90						
	D	1.00						
	PP	1.00	3.5	1.40	21.83		Stiff brown silty CLAY with live roots and rootlets between 1.50m and 1.80m	
	D	1.20					*.....claystone fragments between 1.40m and 1.80m*	
	PP	1.20	3.0					
	D	1.30						
	PP	1.30	4.5					
	D	1.40						
	PP	1.40	2.8					
	D	1.50						
	HV	1.50	86					
	PP	1.50	3.1					
	HV	1.60	91					
	D	1.70						
	HV	1.70	84					
	HV	1.80	93	3.10	20.13		Stiff brown silty CLAY with grey gleying. Rare becoming occasional orange sand pockets and partings	
	D	1.90						
	HV	1.90	86					
	HV	2.00	81					
	D	2.10						
	HV	2.10	91					
	HV	2.20	72					
	D	2.30						
	HV	2.30	62					
	D	2.40						
	HV	2.40	62					
	HV	2.60	62					
	D	2.70						
	HV	2.70	57					
	HV	2.80	69					
End of Shift: 03/11/16 WS depth: 5.20m WS cased to: N/A 35mm pipe installation at 5.00m	D	2.90						
	HV	2.90	69	5.20	18.03		End of hole at 5.20m	
	D	3.10						
	HV	3.10	77					
	D	3.30						
	HV	3.30	74					
	D	3.50						
	HV	3.50	81					
	D	3.70						
	HV	3.70	101					
	HV	3.90	101					
	D	4.10						
	HV	4.20	101					
	HV	4.40	81					
	D	4.50						
	HV	4.60	72					
	D	4.70						
	HV	4.80	115					
	D	5.00						
	HV	5.00	86					



Key: U = Undisturbed B = Bulk D = Small disturbed W = Water ES = glass jar & plastic tub E = glass jar SPT/S = split spoon SPT/C = solid cone PP = Pocket Penetrometer [kg/cm²] HV = Hand Vane [kPa] PID = Photo Ionisation Detector [ppm - Isobutylene Equivalent, PhoCheck Tiger, 10.6eV lamp] * = full SPT penetration not achieved - see summary sheet

Borehole type: Cable Percussion

Remarks: Ground level taken from Cartwright pickard architects' 'Camden Street - Ground floor GA Plan', Ref: 634-AD-2000, 01/05/2014

Borehole No: **WS101**

Site & Location: **St Pancras Community Centre, 30 Camden Street, London, NW1 0LG**

Report No: **10037/SC**

SUMMARY OF CLASSIFICATION TEST RESULTS

BH ID	Depth (m)	Type	w (%)	wL (%)	wP (%)	Pass 425 (%)	IP (%)	Mod IP (%)	IL (%)	LOI (%)	Description
BH1	0.95	D	35	76	23	>95	53		0.23		MADE GROUND: soft orangish brown silty clay
	2.20	U	29	72	24	>95	48		0.12		Orangish brown silty CLAY
	4.20	U	25	63	24	>95	39		0.03		Orangish brown silty CLAY
	6.20	U	28	61	25	>95	36		0.08		Orangish brown silty CLAY
	8.20	U	28								Dark brown silty CLAY
	10.20	U	27	71	27	>95	44		0.02		Grey silty CLAY
	12.20	U	27								Grey silty CLAY
	14.20	U	29	81	28	>95	53		0.02		Grey silty CLAY
	16.20	U	27								Grey slightly sandy silty CLAY
	18.20	U	23	81	27	>95	54		-0.07		Grey slightly sandy silty CLAY
	20.20	U	26								Grey slightly sandy silty CLAY
	22.20	U	24	68	27	>95	41		-0.09		Grey slightly sandy silty CLAY
	24.55	U	24								Grey silty CLAY
WS101	0.50	D	27	60	20	45*	40	18	0.18		MADE GROUND: brown iron stained silty clay with occasional gravel.
	0.70	D	22	57	21	45*	36	16	0.03		MADE GROUND: brown iron stained silty clay with occasional gravel.
	0.90	D	23	67	19	67*	48	32	0.09		MADE GROUND: brown iron stained silty clay with occasional gravel.
	1.00	D	18								MADE GROUND: brown iron stained silty clay with occasional gravel.
	1.20	D	24	59	19	58*	40	23	0.13		MADE GROUND: brown iron stained silty clay with occasional gravel.

Testing in accordance with BS EN ISO 17892 unless specified otherwise

Date: 05 Dec 16

Modified Plasticity Index calculated in accordance with NHBC Standards Chapter 4.2 (reported if %passing 425mm <95%)

Percent passing 425μm: by estimation, by hand* or by sieving**

Soil Consultants

Site & Location: **St Pancras Community Centre, 30 Camden Street, London, NW1 0LG**

Report No: **10037/SC**

SUMMARY OF CLASSIFICATION TEST RESULTS

BH ID	Depth (m)	Type	w (%)	wL (%)	wP (%)	Pass 425 (%)	IP (%)	Mod IP (%)	IL (%)	LOI (%)	Description
WS101	1.40	D	28	70	26	95	44		0.05		Brown silty CLAY
	1.50	D	30	84	21	>95	63		0.15		Brown silty CLAY
	1.70	D	30								Brown silty CLAY
	1.90	D	29	76	17	>95	59		0.21		Brown silty CLAY
	2.10	D	27								Brown silty CLAY
	2.30	D	30	77	21	>95	56		0.17		Brown silty CLAY
	2.70	D	31								Brown silty CLAY
	3.10	D	32	77	22	>95	55		0.19		Brown silty CLAY
	3.70	D	32								Brown silty CLAY
	4.50	D	27								Brown silty CLAY
	5.00	D	25	61	17	>95	44		0.19		Brown silty CLAY

Testing in accordance with BS EN ISO 17892 unless specified otherwise

Date: 05 Dec 16

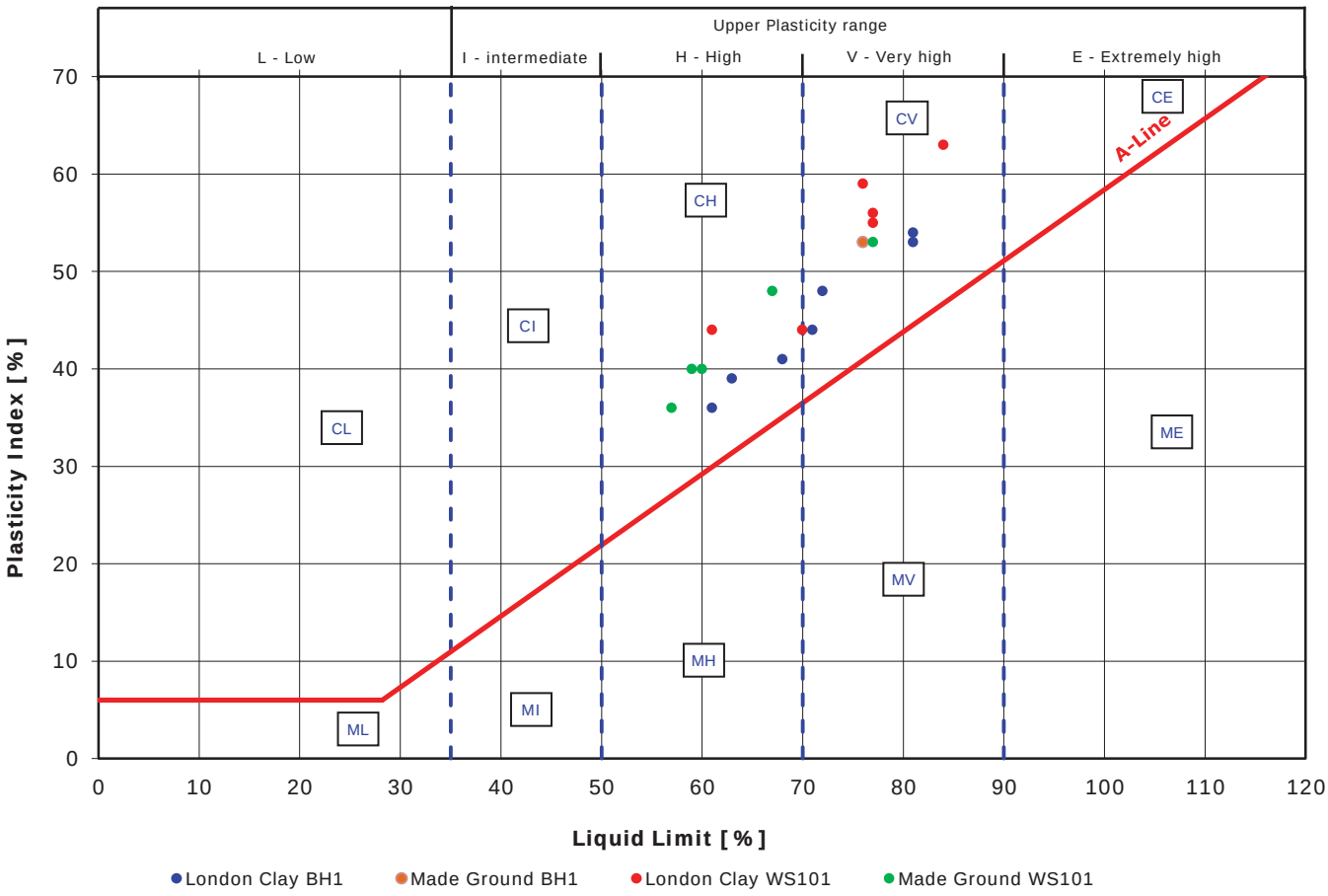
Modified Plasticity Index calculated in accordance with NHBC Standards Chapter 4.2 (reported if %passing 425mm <95%)

Percent passing 425μm: by estimation, by hand* or by sieving**

Soil Consultants

Site & Location	St Pancras Community Centre 30 Camden Street, London, NW1 0LG	Report No:	10037/SC

Plasticity Chart



M - SILT [plots below the A-Line]

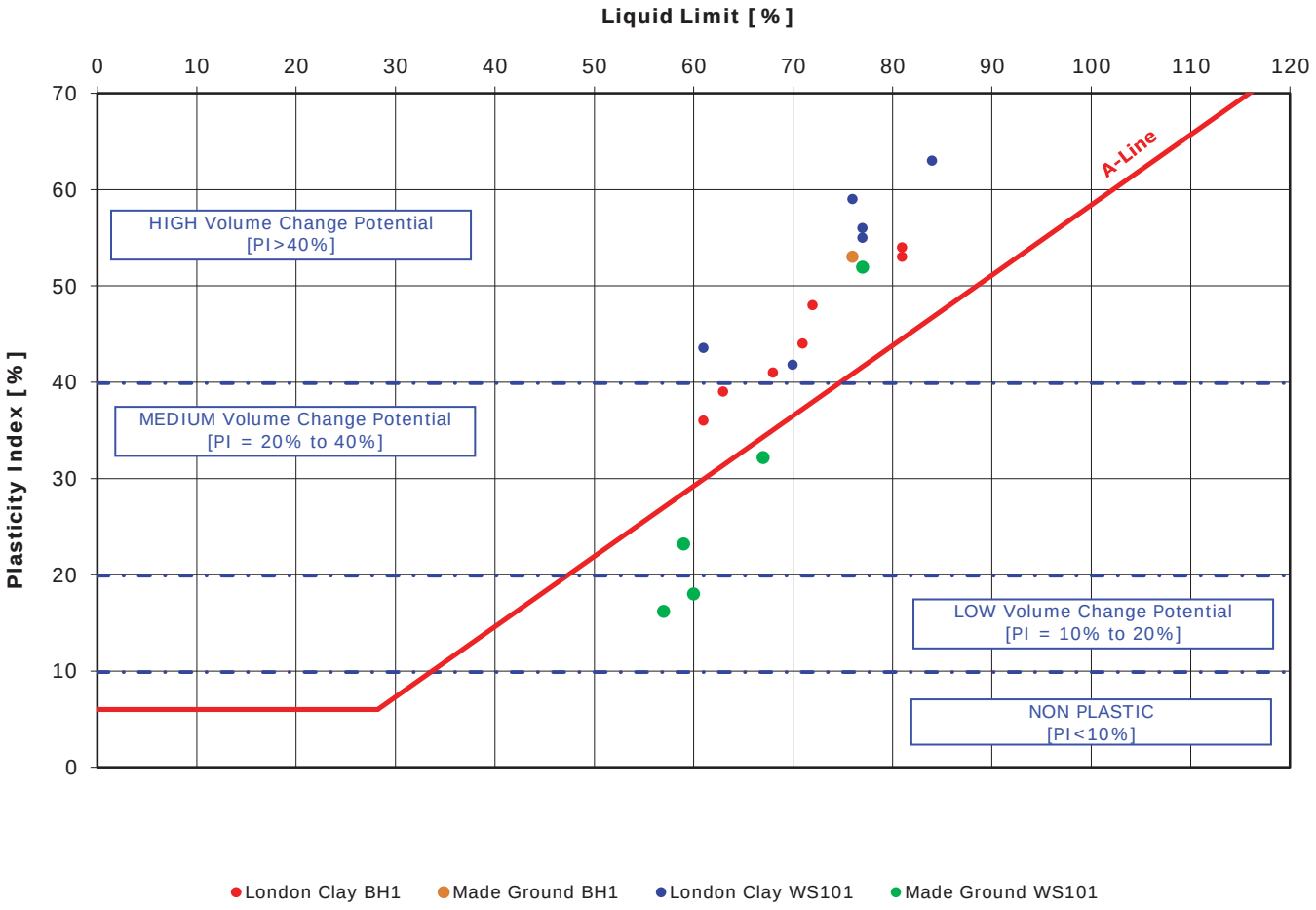
C - CLAY [plots above the A-Line]

Classification in accordance with BS5930:1999+A2:2010 "Code of practice for site investigations"

Soil Consultants

Site & Location	St Pancras Community Centre 30 Camden Street, London, NW1 0LG	Report No:	10037/SC

Plasticity Chart



Modified Plasticity Index, I'p:

$$I'p = \frac{Ip \times (\%\ \text{passing 425mm})}{100\%}$$

[where Ip = Plasticity Index]

Classification in accordance with NHBC Standards, Part 4 'Foundations', Chapter 4.2 'Building near trees'

Soil Consultants

Site	St Pancras Community Centre	Report No:	10037/SC
Location	30 Camden Street, London, NW1 0LG		

SUMMARY OF UNDRAINED SHEAR STRENGTH TEST RESULTS

BH ID	Depth [m]	Moisture content [%]	Bulk density [Mg/m^3]	Dry density [Mg/m^3]	Cell pressure [kPa]	$(\sigma_1-\sigma_3)_f$ [kPa]	Failure strain [%]	Failure mode	Undrained cohesion [kPa]	Remarks
BH1	2.20	29	1.87	1.44	80	53	4.00	I	27	
BH1	4.20	25	1.83	1.46	100	130	5.00	B	65	
BH1	6.20	28								Claystone - Not testable
BH1	8.20	28	1.91	1.49	160	196	6.00	B	98	
BH1	10.20	27	1.97	1.55	200	156	3.00	B	78	
BH1	12.20	27	1.93	1.52	240	250	4.00	B	125	
BH1	14.20	29	1.93	1.50	280	283	4.50	B	142	
BH1	16.20	27	1.93	1.52	320	381	6.00	B	191	
BH1	18.20	23	1.98	1.60	360	249	8.00	B	125	
BH1	20.20	26	1.98	1.57	400	322	3.00	B	161	
BH1	22.20	24	1.98	1.60	440	484	6.00	B	242	
BH1	24.55	24	1.96	1.58	500	750	8.00	B	375	

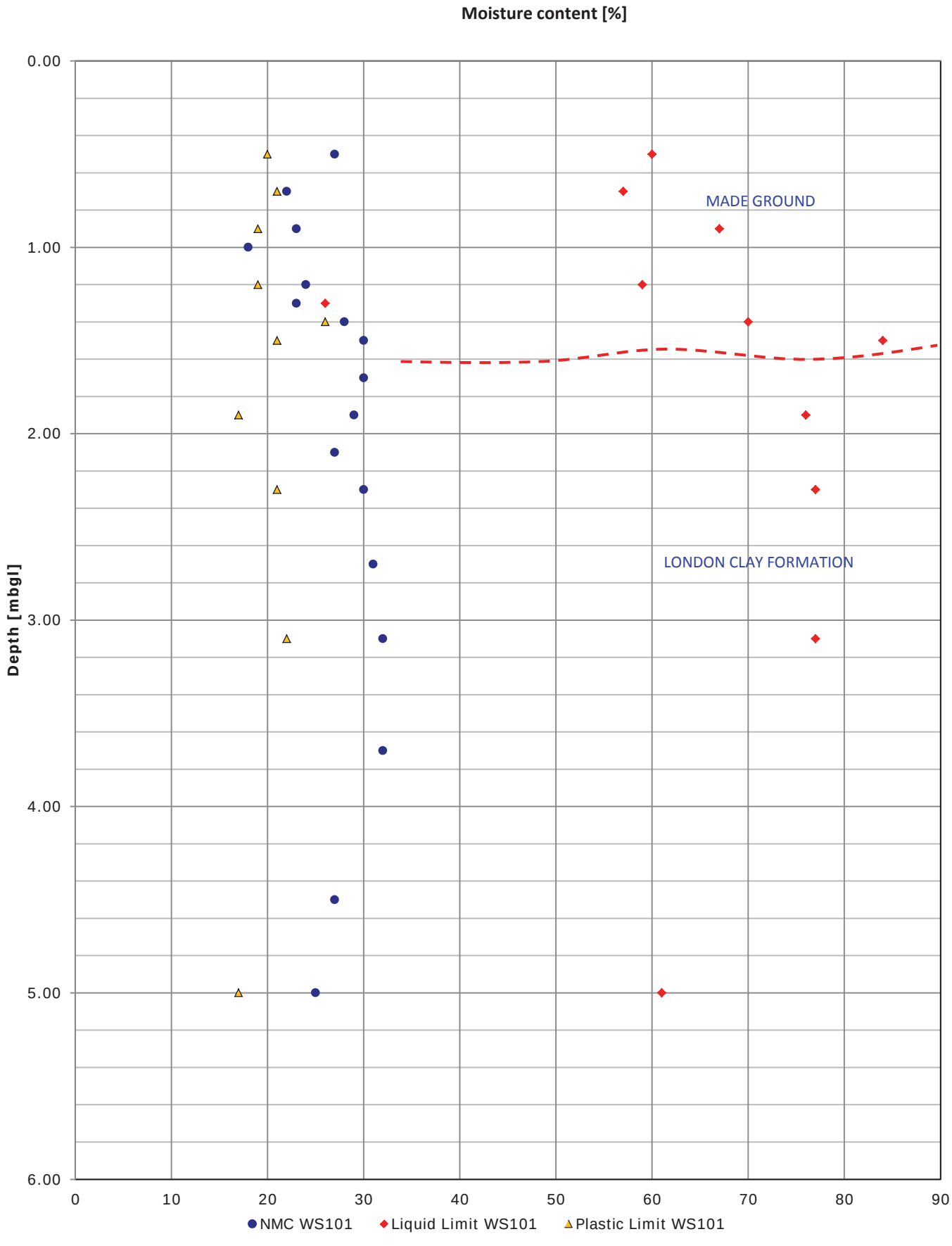
Testing in accordance with BS EN ISO 17892 UU = unconsolidated, undrained; MUU = multistage, unconsolidated, ur Date: 05 December 16

Unless stated otherwise: Rate of strain = 2mm/min, Standard latex membrame used with thickness = 0.5mm

Failure modes: B = brittle, I = intermediate, P = plastic

Site & Location	St Pancras Community Centre 30 Camden Street, London, NW1 0LG	Report No:	10037/SC

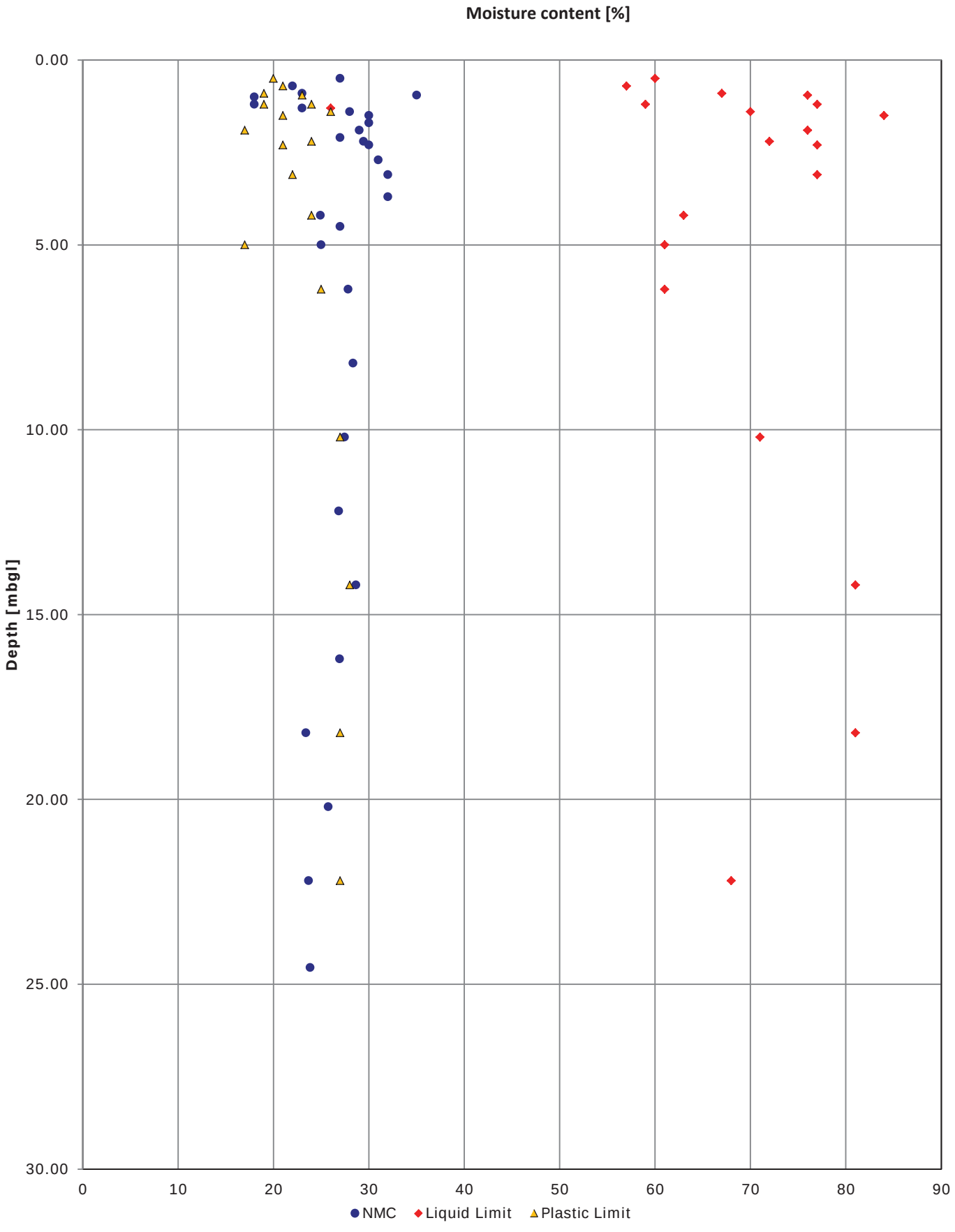
Natural Moisture Content and Index Properties vs depth



Soil Consultants

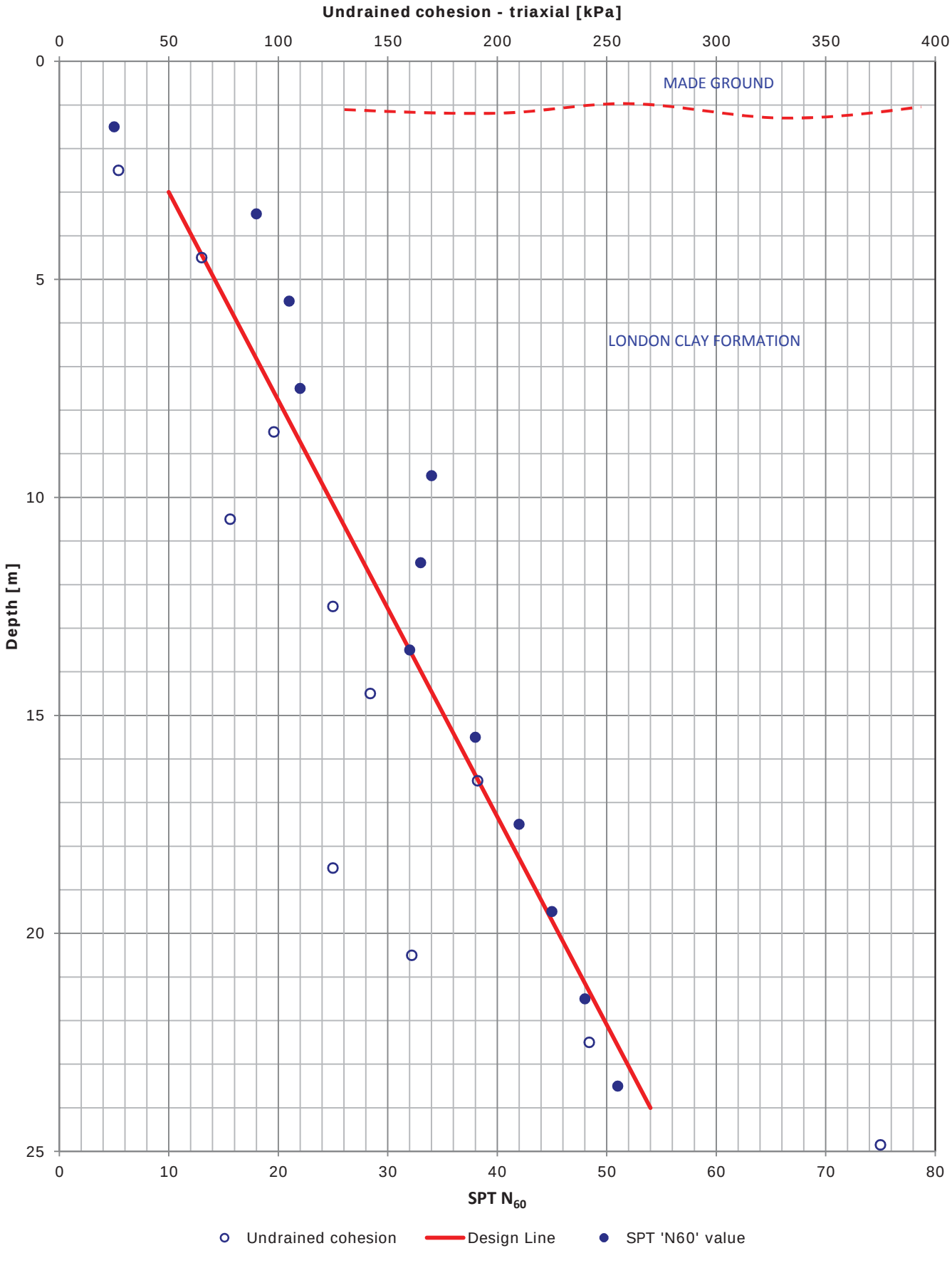
Site & Location	St Pancras Community Centre 30 Camden Street, London, NW1 0LG	Report No:	10037/SC

Natural Moisture Content and Index Properties vs depth



Site & Location	St Pancras Community Centre 30 Camden Street, London, NW1 0LG	Report No:	10037/SC

Undrained cohesion and SPT [N60] vs depth



Design Line Δcu = 10.48kPa/m

Note: this plot may incorporate extrapolated results, generally where 'N' >50 - these are indicative only and should be used with caution

Soil Consultants

Site Location:	St Pancras Community Centre, 30 Camden Street, London NW1 0LG	Ref: 10037/SC

Results of Ground Gas/Groundwater Monitoring

Date:	21 Dec 16	05 Jan 17	
Time [24hr]:	08:15	08:50	
Barometric pressure:	1023	1040	
a] Trend [24hrs]:	Falling then Steady	Rising	
b] At start [mB]:	1023	1040	
c] At end [mB]:	1023	1040	
Recorded by:	MR	MR	
Surface ground conditions:	Wet	Dry	
Weather conditions:	Cold and Overcast	Clear & Cold	
Ambient air temp [^{o}C]:	6-8	2-4	

Monitoring equipment

Instrument: GA2000 Plus MC08/0126/00

Calibration check details: Within monitor tolerance

Next calibration date: Febuary 2017

Notes:

1] Barometric pressure trend and ambient air temperature is recorded from Wunderground.com website on the day of the monitoring visit

2] Calibration check is performed at start of monitoring against ambient air and also periodically with a 5% CH4, 5% CO2 and 6% O2 gas mixture

3] CH4 = methane; CO2 = carbon dioxide; CO = carbon monoxide; O2 = oxygen; H2S = hydrogen sulphide

Results

Date	Time [24hr]	Borehole	GW Depth	Depth to Base	CH4 [%]		CO2 [%]		O2 [%]		Highest [ppm]		Emission Rate	Relative Pressure	PID
			[m]	[m]	Max	Steady	Max	Steady	Min	Steady	CO	H_2S	[l/hr]	[mb]	
21/12/2016	08:15	BH1	1.72	3.10	0	0	0.8	0.8	19.7	19.7	0	0	0.00	0.10	-
	08:30	WS101	2.60	4.60	0	0	0.6	0.6	20.5	20.5	0	0	0.00	0.00	-
															-
05/01/2017	08:50	BH1	1.70	3.10	0	0	0.7	0.7	20	20	0	0	0.00	0.00	-
	09:05	WS101	2.61	4.70	0	0	0.7	0.7	19.8	19.8	0	0	0.00	0.01	-
															-

SoilConsultants

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HP15 6QT

QTS Environmental Ltd
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Rose Lane Industrial Estate
Rose Lane
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Kent
ME17 2JN
t: 01622 850410
russell.jarvis@qtsenvironmental.com

QTS Environmental Report No: 16-51407

Site Reference:	Camden
Project / Job Ref:	10037
Order No:	10037
Sample Receipt Date:	08/11/2016
Sample Scheduled Date:	08/11/2016
Report Issue Number:	1
Reporting Date:	14/11/2016

Authorised by:

Kevin Old
Associate Director of Laboratory

Authorised by:

Ela Mysiara
Inorganics & ICP Section Head

QTS Environmental Ltd
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Rose Lane
Lenham Heath
Maidstone
Kent ME17 2JN
Tel : 01622 850410

4480

Soil Analysis Certificate							
QTS Environmental Report No: 16-51407	Date Sampled	01/11/16	01/11/16	01/11/16	01/11/16	01/11/16
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Camden	TP / BH No	BH1	BH1	BH1	BH1	BH1
Project / Job Ref: 10037	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 10037	Depth (m)	0.30	0.75	0.95	1.90	5.90
Reporting Date: 14/11/2016	QTSE Sample No	237001	237002	237003	237004	237005

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025	Not Detected	Not Detected	Not Detected		
pH	pH Units	N/a	MCERTS	9.9	9.1	7.9	7.8	7.6
Electrical Conductivity	uS/cm	< 5	NONE	383	518	269		
Total Cyanide	mg/kg	< 2	NONE	< 2	< 2	< 2		
Total Sulphate as SO_4	mg/kg	< 200	NONE	3266	2120	702	1003	13030
Total Sulphate as SO_4	%	< 0.02	NONE	0.33	0.21	0.07	0.10	1.30
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	723	675	199	526	2960
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.72	0.68	0.20	0.53	2.96
Total Sulphur	%	< 0.02	NONE	0.11	0.08	0.02	0.04	0.41
Organic Matter	%	< 0.1	MCERTS	0.9	1.3	0.8		
Arsenic (As)	mg/kg	< 2	MCERTS	10	15	12		
W/S Boron	mg/kg	< 1	NONE	< 1	1.3	1		
Cadmium (Cd)	mg/kg	< 0.2	MCERTS	< 0.2	< 0.2	< 0.2		
Chromium (Cr)	mg/kg	< 2	MCERTS	15	25	41		
Chromium (hexavalent)	mg/kg	< 2	NONE	< 2	< 2	< 2		
Copper (Cu)	mg/kg	< 4	MCERTS	42	91	26		
Lead (Pb)	mg/kg	< 3	MCERTS	238	428	33		
Mercury (Hg)	mg/kg	< 1	NONE	< 1	1.5	< 1		
Nickel (Ni)	mg/kg	< 3	MCERTS	15	21	32		
Selenium (Se)	mg/kg	< 3	NONE	< 3	< 3	< 3		
Zinc (Zn)	mg/kg	< 3	MCERTS	132	227	83		
Total Phenols (monohydric)	mg/kg	< 2	NONE	< 2	< 2	< 2		
EPH (C10 - C40)	mg/kg	< 6	MCERTS	54	< 6	15		

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Rosie Head

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis (S)

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
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Lenham Heath
Maidstone
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Tel : 01622 850410

4480

Soil Analysis Certificate							
QTS Environmental Report No: 16-51407	**Date Sampled**	01/11/16	01/11/16	01/11/16	04/11/16	04/11/16
Soil Consultants Ltd	**Time Sampled**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Site Reference: Camden	**TP / BH No**	BH1	BH1	BH1	WS101	WS101
Project / Job Ref: 10037	**Additional Refs**	None Supplied	None Supplied	None Supplied	None Supplied	None Supplied
Order No: 10037	**Depth (m)**	11.90	16.90	21.90	1.30	4.00
Reporting Date: 14/11/2016	**QTSE Sample No**	237006	237007	237008	237009	237010

Determinand	Unit	RL	Accreditation					
Asbestos Screen	N/a	N/a	ISO17025				Not Detected	
pH	pH Units	N/a	MCERTS	7.9	7.9	9.1	7.9	7.5
Electrical Conductivity	uS/cm	< 5	NONE				70	
Total Cyanide	mg/kg	< 2	NONE				< 2	
Total Sulphate as SO_4	mg/kg	< 200	NONE	1759	1300	897	781	69260
Total Sulphate as SO_4	%	< 0.02	NONE	0.18	0.13	0.09	0.08	6.93
W/S Sulphate as SO_4 (2:1)	mg/l	< 10	MCERTS	814	528	343	51	2560
W/S Sulphate as SO_4 (2:1)	g/l	< 0.01	MCERTS	0.81	0.53	0.34	0.05	2.56
Total Sulphur	%	< 0.02	NONE	0.58	2.73	0.58	0.06	2.25
Organic Matter	%	< 0.1	MCERTS				2.7	
Arsenic (As)	mg/kg	< 2	MCERTS				15	
W/S Boron	mg/kg	< 1	NONE				< 1	
Cadmium (Cd)	mg/kg	< 0.2	MCERTS				< 0.2	
Chromium (Cr)	mg/kg	< 2	MCERTS				28	
Chromium (hexavalent)	mg/kg	< 2	NONE				< 2	
Copper (Cu)	mg/kg	< 4	MCERTS				52	
Lead (Pb)	mg/kg	< 3	MCERTS				241	
Mercury (Hg)	mg/kg	< 1	NONE				< 1	
Nickel (Ni)	mg/kg	< 3	MCERTS				23	
Selenium (Se)	mg/kg	< 3	NONE				< 3	
Zinc (Zn)	mg/kg	< 3	MCERTS				97	
Total Phenols (monohydric)	mg/kg	< 2	NONE				< 2	
EPH (C10 - C40)	mg/kg	< 6	MCERTS				< 6	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{O}C
Analysis carried out on the dried sample is corrected for the stone content

The samples have been examined to identify the presence of asbestiform minerals by polarising light microscopy and dispersion staining technique to In-House Procedures QTSE600 Determination of Asbestos in Bulk Materials; Asbestos in Soils/Sediments (fibre screening and identification)

This report refers to samples as received, and QTS Environmental Ltd, takes no responsibility for the accuracy or competence of sampling by others.

The material description shall be regarded as tentative and is not included in our scope of UKAS Accreditation.

Opinions and interpretations expressed herein are outside the scope of UKAS Accreditation.

Asbestos Analyst: Rosie Head

RL: Reporting Limit

Pinch Test: Where pinch test is positive it is reported "Loose Fibres - PT" with type(s).

Subcontracted analysis (S)

QTS Environmental Ltd
Unit 1, Rose Lane Industrial Estate
Rose Lane
Lenham Heath
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Tel : 01622 850410

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Soil Analysis Certificate - Speciated PAHs						
QTS Environmental Report No: 16-51407	Date Sampled	01/11/16	01/11/16	01/11/16	04/11/16	
Soil Consultants Ltd	Time Sampled	None Supplied	None Supplied	None Supplied	None Supplied	
Site Reference: Camden	TP / BH No	BH1	BH1	BH1	WS101	
Project / Job Ref: 10037	Additional Refs	None Supplied	None Supplied	None Supplied	None Supplied	
Order No: 10037	Depth (m)	0.30	0.75	0.95	1.30	
Reporting Date: 14/11/2016	QTSE Sample No	237001	237002	237003	237009	

Determinand	Unit	RL	Accreditation					
Naphthalene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthylene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Acenaphthene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluorene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Phenanthrene	mg/kg	< 0.1	MCERTS	0.39	< 0.1	< 0.1	< 0.1	
Anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Fluoranthene	mg/kg	< 0.1	MCERTS	0.83	< 0.1	< 0.1	< 0.1	
Pyrene	mg/kg	< 0.1	MCERTS	0.75	< 0.1	< 0.1	< 0.1	
Benzo(a)anthracene	mg/kg	< 0.1	MCERTS	0.46	< 0.1	< 0.1	< 0.1	
Chrysene	mg/kg	< 0.1	MCERTS	0.48	< 0.1	< 0.1	< 0.1	
Benzo(b)fluoranthene	mg/kg	< 0.1	MCERTS	0.89	< 0.1	< 0.1	< 0.1	
Benzo(k)fluoranthene	mg/kg	< 0.1	MCERTS	0.31	< 0.1	< 0.1	< 0.1	
Benzo(a)pyrene	mg/kg	< 0.1	MCERTS	0.65	< 0.1	< 0.1	< 0.1	
Indeno(1,2,3-cd)pyrene	mg/kg	< 0.1	MCERTS	0.44	< 0.1	< 0.1	< 0.1	
Dibenz(a,h)anthracene	mg/kg	< 0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
Benzo(ghi)perylene	mg/kg	< 0.1	MCERTS	0.35	< 0.1	< 0.1	< 0.1	
Total EPA-16 PAHs	mg/kg	< 1.6	MCERTS	5.6	< 1.6	< 1.6	< 1.6	

Analytical results are expressed on a dry weight basis where samples are assisted-dried at less than 30^{o}C

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Maidstone
Kent ME17 2JN
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Soil Analysis Certificate - Sample Descriptions	
QTS Environmental Report No: 16-51407	
Soil Consultants Ltd	
Site Reference: Camden	
Project / Job Ref: 10037	
Order No: 10037	
Reporting Date: 14/11/2016	

QTSE Sample No	TP / BH No	Additional Refs	Depth (m)	Moisture Content (%)	Sample Matrix Description
237001	BH1	None Supplied	0.30	12.3	Brown sandy gravel with stones and concrete
237002	BH1	None Supplied	0.75	21.2	Brown clay with brick and concrete
237003	BH1	None Supplied	0.95	23.3	Light brown clay
237004	BH1	None Supplied	1.90	23.1	Light brown clay
237005	BH1	None Supplied	5.90	19.1	Brown clay
237006	BH1	None Supplied	11.90	18.3	Brown clay
237007	BH1	None Supplied	16.90	15.9	Brown clayey sand
237008	BH1	None Supplied	21.90	15.5	Brown clayey sand
237009	WS101	None Supplied	1.30	17.7	Brown clayey sand
237010	WS101	None Supplied	4.00	18.2	Brown clayey sand

Moisture content is part of procedure E003 & is not an accredited test

Insufficient Sample I/S

Unsuitable Sample U/S

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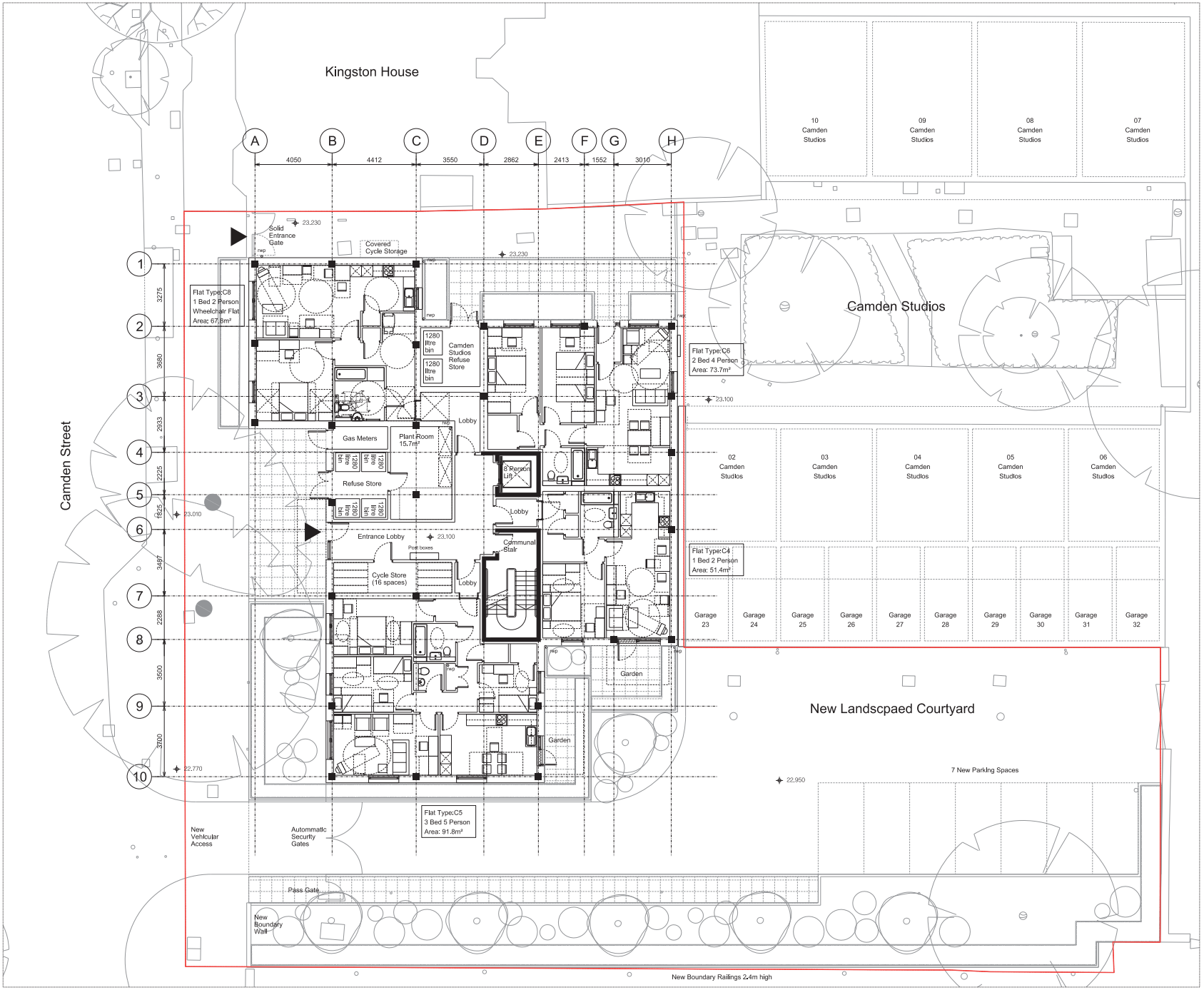
Soil Analysis Certificate - Methodology & Miscellaneous Information
QTS Environmental Report No: 16-51407
Soil Consultants Ltd
Site Reference: Camden
Project / Job Ref: 10037
Order No: 10037
Reporting Date: 14/11/2016

Matrix	Analysed On	Determinand	Brief Method Description	Method No
Soil	D	Boron - Water Soluble	Determination of water soluble boron in soil by 2:1 hot water extract followed by ICP-OES	E012
Soil	AR	BTEX	Determination of BTEX by headspace GC-MS	E001
Soil	D	Cations	Determination of cations in soil by aqua-regia digestion followed by ICP-OES	E002
Soil	D	Chloride - Water Soluble (2:1)	Determination of chloride by extraction with water & analysed by ion chromatography	E009
Soil	AR	Chromium - Hexavalent	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry	E016
Soil	AR	Cyanide - Complex	Determination of complex cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Free	Determination of free cyanide by distillation followed by colorimetry	E015
Soil	AR	Cyanide - Total	Determination of total cyanide by distillation followed by colorimetry	E015
Soil	D	Cyclohexane Extractable Matter (CEM)	Gravimetrically determined through extraction with cyclohexane	E011
Soil	AR	Diesel Range Organics (C10 - C24)	Determination of hexane/acetone extractable hydrocarbons by GC-FID	E004
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of saturated calcium sulphate followed by electrometric measurement	E022
Soil	AR	Electrical Conductivity	Determination of electrical conductivity by addition of water followed by electrometric measurement	E023
Soil	D	Elemental Sulphur	Determination of elemental sulphur by solvent extraction followed by GC-MS	E020
Soil	AR	EPH (C10 – C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH Product ID	Determination of acetone/hexane extractable hydrocarbons by GC-FID	E004
Soil	AR	EPH TEXAS (C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C40)	Determination of acetone/hexane extractable hydrocarbons by GC-FID for C8 to C40. C6 to C8 by headspace GC-MS	E004
Soil	D	Fluoride - Water Soluble	Determination of Fluoride by extraction with water & analysed by ion chromatography	E009
Soil	D	FOC (Fraction Organic Carbon)	Determination of fraction of organic carbon by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	D	Loss on Ignition @ 450oC	Determination of loss on ignition in soil by gravimetrically with the sample being ignited in a muffle furnace	E019
Soil	D	Magnesium - Water Soluble	Determination of water soluble magnesium by extraction with water followed by ICP-OES	E025
Soil	D	Metals	Determination of metals by aqua-regia digestion followed by ICP-OES	E002
Soil	AR	Mineral Oil (C10 - C40)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge	E004
Soil	AR	Moisture Content	Moisture content; determined gravimetrically	E003
Soil	D	Nitrate - Water Soluble (2:1)	Determination of nitrate by extraction with water & analysed by ion chromatography	E009
Soil	D	Organic Matter	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	PAH - Speciated (EPA 16)	Determination of PAH compounds by extraction in acetone and hexane followed by GC-MS with the use of surrogate and internal standards	E005
Soil	AR	PCB - 7 Congeners	Determination of PCB by extraction with acetone and hexane followed by GC-MS	E008
Soil	D	Petroleum Ether Extract (PEE)	Gravimetrically determined through extraction with petroleum ether	E011
Soil	AR	pH	Determination of pH by addition of water followed by electrometric measurement	E007
Soil	AR	Phenols - Total (monohydric)	Determination of phenols by distillation followed by colorimetry	E021
Soil	D	Phosphate - Water Soluble (2:1)	Determination of phosphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Total	Determination of total sulphate by extraction with 10% HCl followed by ICP-OES	E013
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of sulphate by extraction with water & analysed by ion chromatography	E009
Soil	D	Sulphate (as SO4) - Water Soluble (2:1)	Determination of water soluble sulphate by extraction with water followed by ICP-OES	E014
Soil	AR	Sulphide	Determination of sulphide by distillation followed by colorimetry	E018
Soil	D	Sulphur - Total	Determination of total sulphur by extraction with aqua-regia followed by ICP-OES	E024
Soil	AR	SVOC	Determination of semi-volatile organic compounds by extraction in acetone and hexane followed by GC-MS	E006
Soil	AR	Thiocyanate (as SCN)	Determination of thiocyanate by extraction in caustic soda followed by acidification followed by addition of ferric nitrate followed by colorimetry	E017
Soil	D	Toluene Extractable Matter (TEM)	Gravimetrically determined through extraction with toluene	E011
Soil	D	Total Organic Carbon (TOC)	Determination of organic matter by oxidising with potassium dichromate followed by titration with iron (II) sulphate	E010
Soil	AR	TPH CWG (ali: C5- C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C34, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C35. C5 to C8 by headspace GC-MS	E004
Soil	AR	TPH LQM (ali: C5-C6, C6-C8, C8-C10, C10-C12, C12-C16, C16-C35, C35-C44, aro: C5-C7, C7-C8, C8-C10, C10-C12, C12-C16, C16-C21, C21-C35, C35-C44)	Determination of hexane/acetone extractable hydrocarbons by GC-FID fractionating with SPE cartridge for C8 to C44. C5 to C8 by headspace GC-MS	E004
Soil	AR	VOCs	Determination of volatile organic compounds by headspace GC-MS	E001
Soil	AR	VPH (C6-C8 & C8-C10)	Determination of hydrocarbons C6-C8 by headspace GC-MS & C8-C10 by GC-FID	E001

D Dried
AR As Received



01 Ground Floor GA Plan

Scale 1:100

Drwg. original size: A1

Notes:
Unless indicated, this drawing is for information only.
Do not scale, use figured dimensions only.
All dimensions to be checked on site

N

Revisions:

Date:	Rev:	Note:	Check:
140613	A	Stage D+ Issue for review	SD

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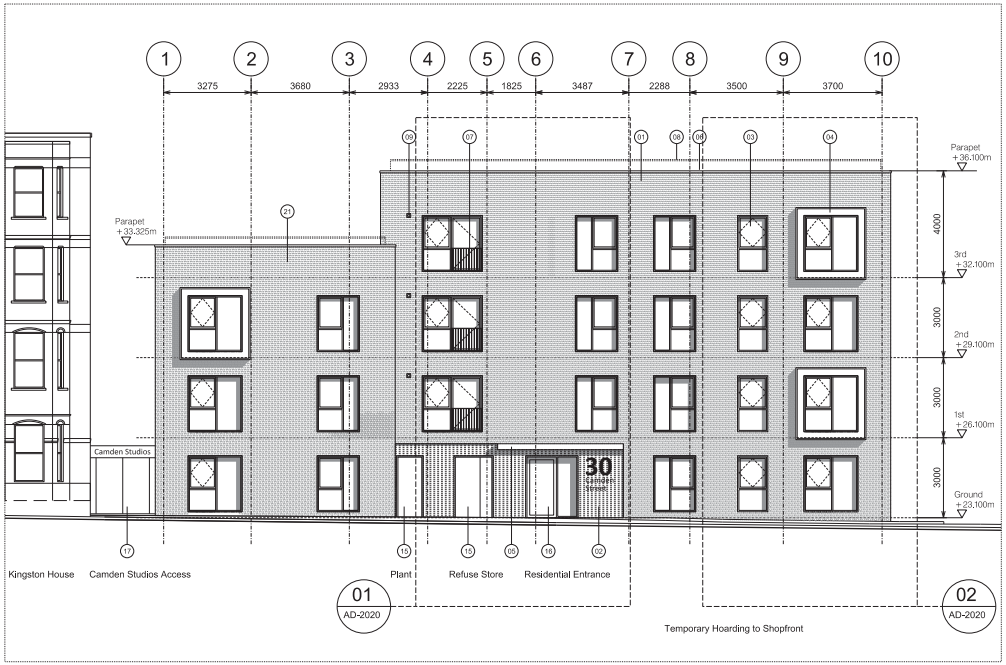
Project:	634 Camden Street and Plender Street
Drawing Title:	CAMDEN STREET Ground Floor GA Plan
Scale:	1:100 @ A1
Drwg. Created:	01.05.13
Drwg. No:	634-AD-2000
Status:	For Information (Not for Construction)
Revision:	A



01 Camden Street West Elevation

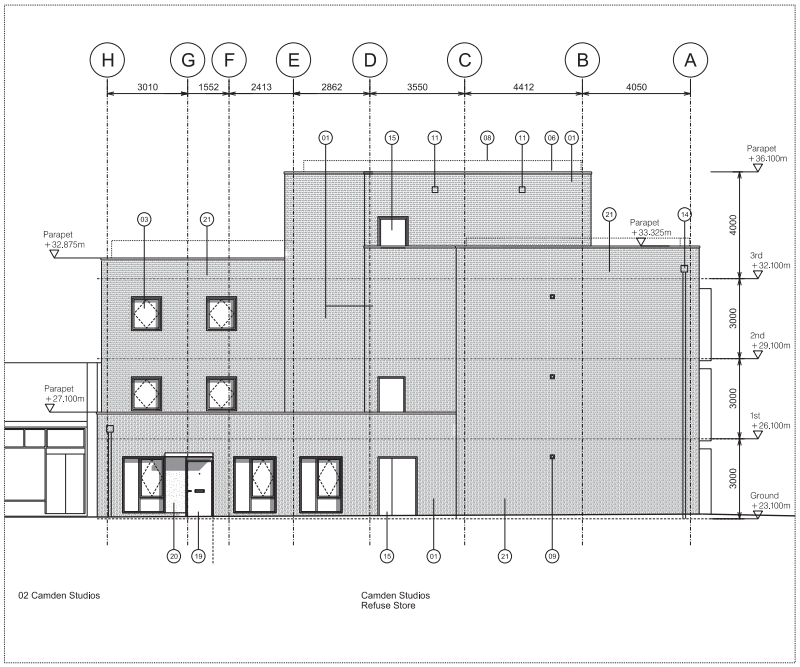
1:100 @ A1

02 Camden Street South Elevation

1:100 @ A1

03 Camden Street East Elevation

1:100 @ A1



04 Camden Street North Elevation

1:100 @ A1

0 Drwg. original size: A1

Notes:

Unless indicated, this drawing is for information only.
Do not scale, use figured dimensions only.
All dimensions to be checked on site

Material Key

01. Brickwork (Tone A)
02. Glazed brickwork
03. Aluminium framed windows
05. Anodised aluminium bay window
06. Metal coping
07. Metal railings
08. Roof balustrade
09. Boiler flue
10. Textured feature brickwork
11. Bird Boxes
12. Anodised aluminium entrance canopy
13. Perforated PPC metal privacy screen
14. Aluminium PPC rainwater pipes and hopper
15. Metal access door
16. Aluminium framed glazed entrance door
17. Solid metal entrance gate and screen
18. Existing wall sculpture re-located
19. Metal flat entrance door with entrance canopy above
20. Aluminium spandrel panel
21. Brickwork (Tone B)
22. Etched glazing

Revisions:

Date:	Rev:	Note:	Check:
140613	A	Stage D+ Issued for review	SD

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Project:	634 Camden Street and Plender Street
Drawing Title:	CAMDEN STREET Elevations
Scale:	1:100 @ A1
Drwg. Created:	07.05.13
Drwg. No:	634-AD-2010
Status:	For Information (Not for Construction)
Revision:	A

01

Camden Street Existing Site Plan
1:200 @ A1

0 10m Drwg. original size: A1

Notes:

Planning Application Boundary

Adjoining Site Ownership Boundary

N

Revisions:

Date:	Rev:	Note:	Check:
22.03.13	A	Planning Application Issue	SD
26.03.13	B	Planning Application Issue	SD

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Project:	634 Camden and Plender Street
Drawing Title:	Camden Street Existing Site Plan
Scale:	1:200 @ A1
Drwg. Created:	March 2013
Drwg. No:	634-AP-0100
Status:	Planning Application (Not for Construction)
Revision:	B

PILE LAYOUT
SCALE 1 : 50

TYPICAL PILE HEAD DETAIL
SCALE 1 : 20

PILE SCHEDULE		
REF.	UNFACTORED DESIGN LOADS (KN)	PILE CUT OFF LEVEL (m)
P1	300	22.515
P2	325	22.515
P3	450	22.515
P4	500	22.515
P5	650	22.515
P6	600	22.515
P7	450	22.515
P8	250	22.515
P9	475	22.515
P10	225	22.515
P11	350	22.515
P12	250	22.515
P13	250	22.515
P14	350	22.515
P15	400	22.515
P16	275	22.515
P17	275	22.515
P18	250	22.515
P19	275	22.515
P20	325	22.515
P21	300	22.515
P22	350	22.515
P23	425	22.515
P24	450	22.515
P25	475	22.515
P26	475	22.515
P27	525	22.515
P28	475	22.515
P29	425	22.515
P30	400	22.515
P31	500	22.515
P32	300	22.515
P33	300	22.515
P34	350	22.515
P35	450	22.515
P36	500	22.515
P37	625	22.515
P38	475	22.515
P39	400	22.515
P40	400	22.515
P41	275	22.515
P42	275	22.515
P43	275	22.515
P44	375	22.515
P45	450	22.515
P46	525	22.515
P47	500	22.515
P48	475	22.515
P49	375	22.515
P50	375	22.515
P51	350	22.515
P52	400	22.515
P53	375	22.515
P54	350	22.515
P55	700	22.515
P56	475	22.515
P57	400	22.515
P58	500	22.515
P59	400	22.515
P60	375	22.515
P61	275	22.515
P62	375	22.515
P63	425	22.515
P64	475	22.515
P65	700	22.515
P66	400	22.515
P67	425	22.515
P68	400	22.515
P69	475	22.515
P70	325	22.515
P71	425	22.515
P72	350	22.515
P73	425	22.515
P74	550	22.515
P75	650	22.515
P76	750	22.515
P77	700	22.515
P78	650	22.515
P79	575	22.515
P80	275	22.515
P81	550	22.515
P82	500	22.515
P83	575	22.515
P84	275	22.515
P85	375	22.515
P86	425	22.515
P87	340	22.515
P88	375	22.515
P89	475	22.515
P90	375	22.515
P91	475	22.515
P92	500	22.515
ALL PILE LOADS ARE PRELIMINARY		

PILING NOTES:

1. ALL PILES ARE TO BE DESIGNED BY THE PILING CONTRACTOR.
2. ALL PILE LOADS ARE TAKEN FROM CHARACTERISTIC LOADINGS.
3. REFER TO SITE INVESTIGATION REPORT.
4. ALL TENSION PILES TO HAVE FULL LENGTH TENSION REINFORCEMENT.
5. ALL SETTING OUT TO BE CONFIRMED BY ARCHITECT.
6. SURVEY STATION POSITIONS AND NORTHINGS AND EASTINGS BASED UPON EXISTING SURVEY DRAWING.

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS.
3. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
4. DO NOT SCALE FROM THE DRAWING OR THE COMPUTER DIGITAL DATA. ONLY FIGURED DIMENSIONS TO BE USED.

Rev	Date	Description	By
P1	14/11/16	PRELIMINARY ISSUE	MF

Drawing Status
PRELIMINARY

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www.mbp-uk.com

Job
30 Camden Street

Title
PROPOSED
PILING LAYOUT

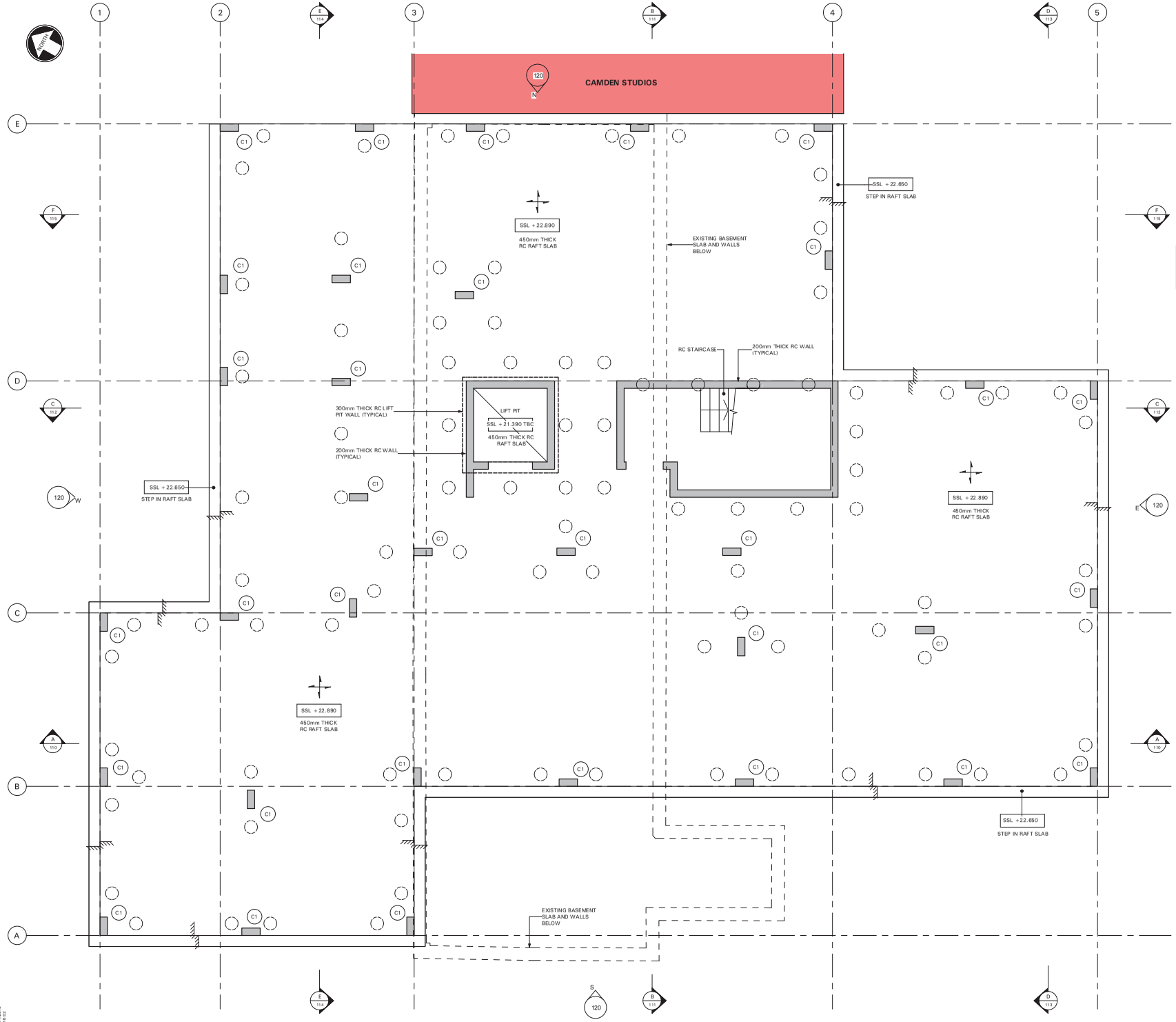
Scale @ A1	Date	By	Checked
As indicated	11/10/16	MF	KG

Drawing Number
6995 / 100

Revision
P1

14/11/2016
11:16:50

T:\Project.s\6900 - 6999\6995 - 20 Camden Street, London, NW1 0HL\11 Drawings\11.3 MBP\Revit\MBP-6995-30 Camden Street.rvt



LEGEND:

- EXISTING STRUCTURE TO BE RETAINED
- NEW REINFORCED CONCRETE STRUCTURE
- C1 — COLUMN REFERENCE. REFER TO SCHEDULE FOR TYPE AND SIZE.
- COLUMN BELOW SYMBOL
- TWO-WAY SPAN OF RC SLAB. REFER TO LAYOUT FOR DEPTH.
- ONE-WAY SPAN OF RC SLAB. REFER TO LAYOUT FOR DEPTH.
- STEP IN LEVEL SYMBOL

ABBREVIATIONS:

FL	-	FORMATION LEVEL
SSL	-	STRUCTURAL SLAB LEVEL
FFL	-	FINISHED FLOOR LEVEL
TOF	-	TOP OF FOUNDATION
TOB	-	TOP OF BEAM
TOW	-	TOP OF WALL
L/L	-	LOW LEVEL
H/L	-	HIGH LEVEL

COLUMN SCHEDULE

REF.	SIZE
C1	200x500mm RC COLUMN
C2	200x350mm RC COLUMN

NOTES:

1. THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. FOR SETTING OUT REFER TO ARCHITECT'S DRAWINGS.
3. ALL DIMENSIONS ARE IN MILLIMETRES (mm) UNLESS NOTED OTHERWISE.
4. DO NOT SCALE FROM THE DRAWING OR THE COMPUTER DIGITAL DATA. ONLY FIGURED DIMENSIONS TO BE USED.

Rev	Date	Description	By
P1	14/11/16	PRELIMINARY ISSUE	MF

Drawing Status: PRELIMINARY

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Job: 30 Camden Street

Title: PROPOSED GROUND FLOOR LAYOUT

Scale @ A1	Date	By	Checked
1 : 50	11/10/16	MF	KG

Drawing Number: 6995 / 101 Revision: P1

14/11/2016
15:16:02

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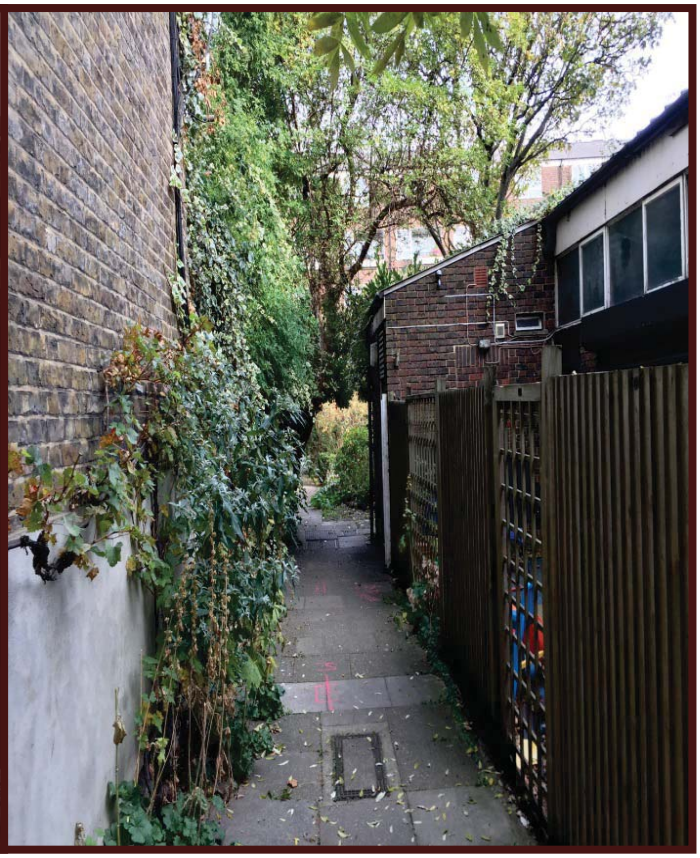
Site Location	St Pancras Community Centre, 30 Camden Street, London, NW1 0LG	Report No: 10037/SC

Walkover Survey Photographs –November 2016

Looking North East towards the front of St Pancras Community Centre

Southern side of the community centre showing a concreted courtyard and garages. A Mature deciduous tree located to the end of the courtyard

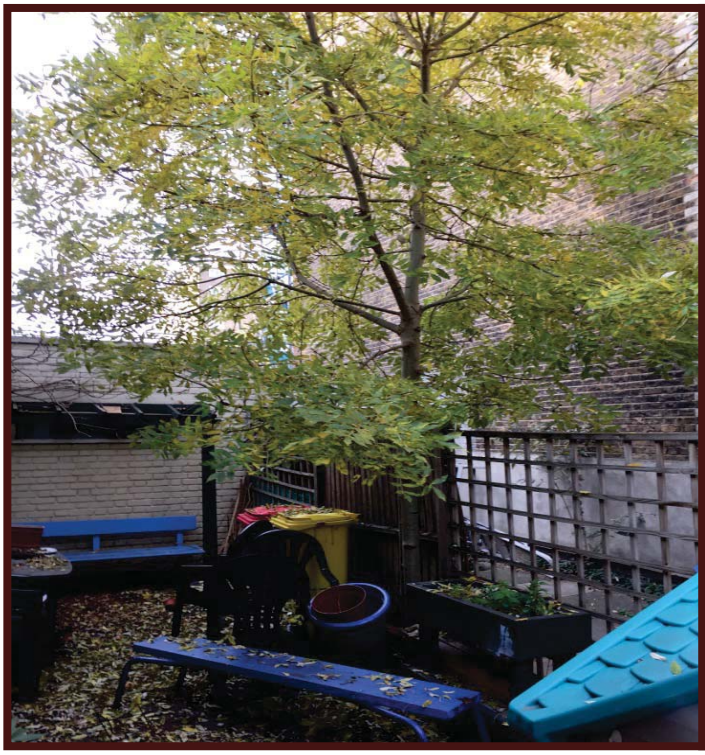


Northern side of the community centre. WS101 constructed behind the fence panels

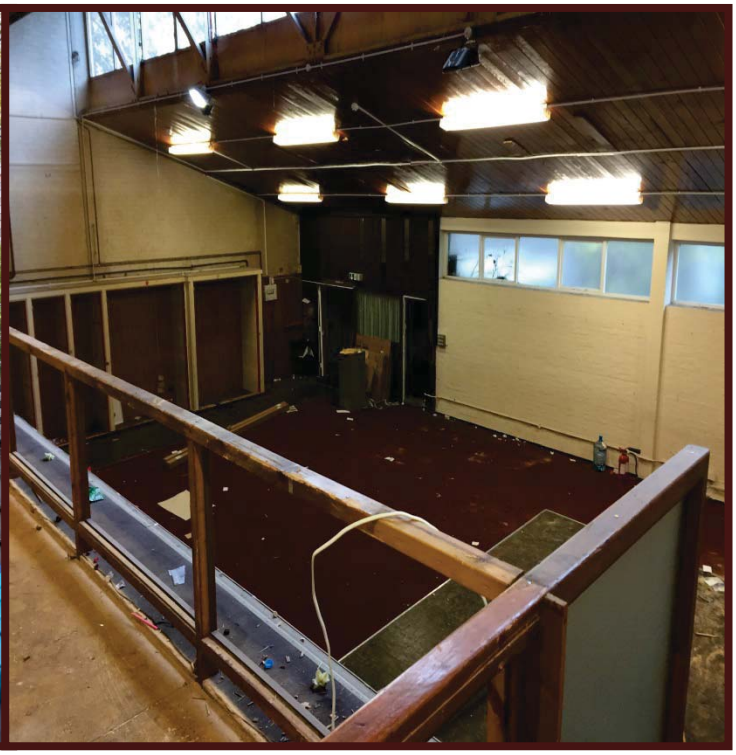
Site Location	St Pancras Community Centre, 30 Camden Street, London, NW1 0LG	Report No: 10037/SC

Walkover Survey Photographs –November 2016

Play area along the northern side of the community centre.



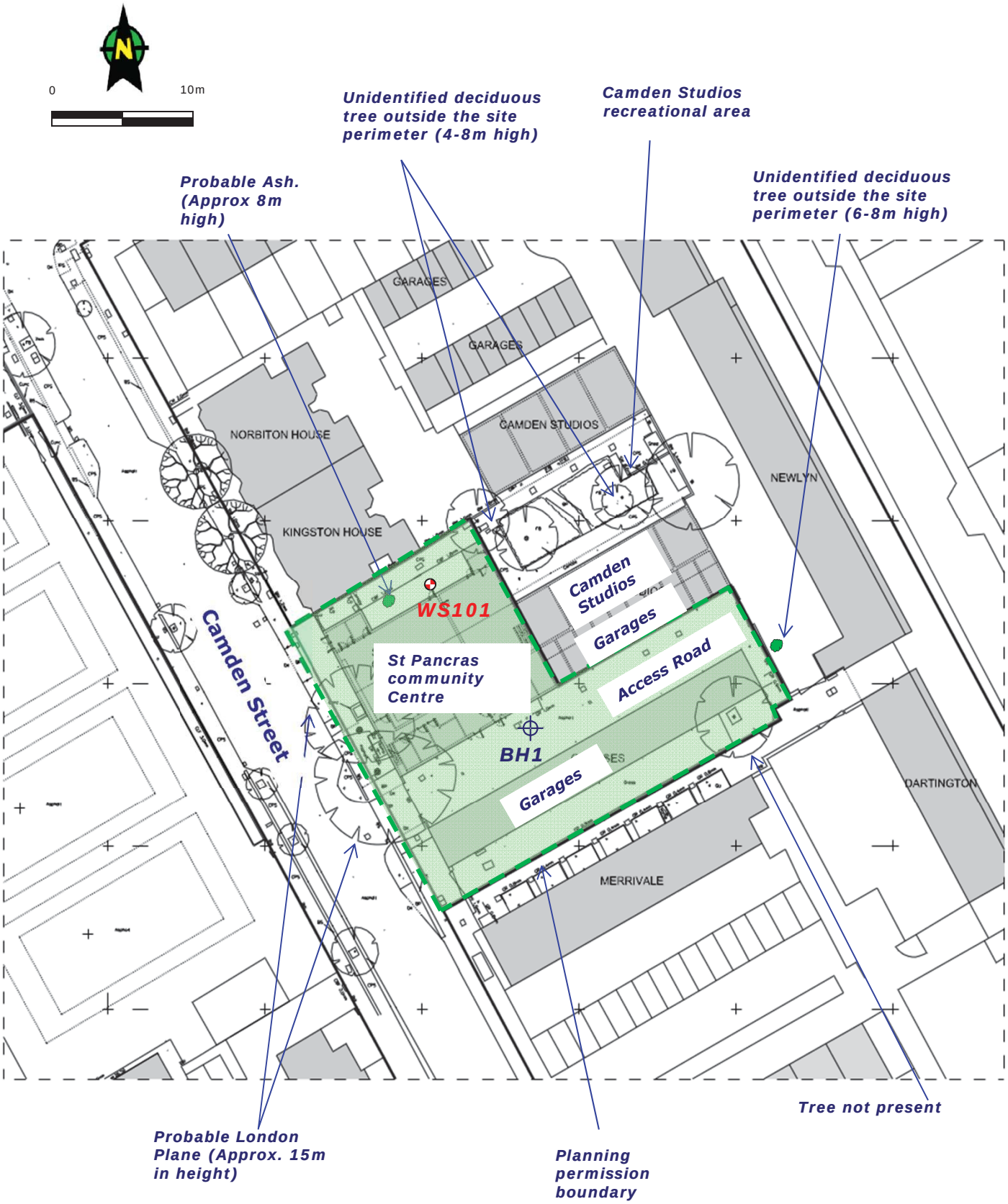
Semi Mature deciduous ash tree within the proximity of WS101



Main hall within the community centre

Site Location	St Pancras Community Centre, 30 Camden Street, London, NW1 0LG	Report No: 10037/SC

Site Plan



Site & Location	St Pancras Community Centre, 30 Camden Street, London, NW1 0LG	Report No: 10037/SC

Location Maps