6 Nutley Terrace

London

NW3 5BX

Basement Impact Assessment Appendices continued

Job number:	211367
Revision:	P1
Status:	Information
Date:	January 2012

5.0 Desk Study and Ground Investigation Report

Desk Study and Ground Investigation Report

6 Nutley Terrace
London NW3

Client	Mr & Mrs Shafi
Engineer	Elliott Wood

J11158

October 2011




GEA Geotechnical & Environmental Associates

Document Control

Project title	6 Nutley Terrace, London, NW3 5BX	**Project ref**	J11158
Report prepared by	Angelina Varchione BEng	Martin Cooper BSc CEng MICE	
Report checked by	Juliet Fuller BSc MSc DIC FGS		
Report approved for issue by	Steve Branch BSc MSc CGeol FGS FRGS MIEnvSc		

Issue No	Status	Date	Approved for Issue
1	Draft	10 October 2011	
2	Final	11 October 2011	

This report has been issued by the GEA office indicated below. Any enquiries regarding the report should be directed to the office indicated or to Steve Branch in our Herts office.

✓	Hertfordshire	tel 01727 824666	mail@gea-ltd.co.uk
	Nottinghamshire	tel 01509 674888	midlands@gea-ltd.co.uk

CONTENTS

EXECUTIVE SUMMARY

This executive summary contains an overview of the key findings and conclusions. No reliance should be placed on any part of the executive summary until the whole of the report has been read. Other sections of the report may contain information that puts into context the findings that are summarised in the executive summary.

BRIEF

This report describes the findings of a site investigation carried out by Geotechnical and Environmental Associates Limited (GEA) on the instructions of Elliott Wood, on behalf of Mr and Mrs Shafi, with respect to the replacement of the existing house with two new three-storey houses with single level basements. The purpose of the investigation has been to research the history of the site with respect to possible contaminative uses, to determine the ground conditions, to assess the extent of any contamination and to provide information to assist with the design of suitable foundations and retaining walls.

DESK STUDY

The earliest map studied, dated 1871, shows the site to be occupied by fields with a line of trees in the north of the site running south-west to north-east. This map also shows the outline of the Belsize Tunnel immediately to the north of the site. The next map, dated 1896, shows significant development of the area with a number of houses having been constructed, although the site itself comprised three garden plots associated with the houses to the west. The existing house was built at some time between 1935 and 1946 and can be seen on the aerial photograph dated 1946. The site and surroundings have remained essentially unchanged since that time.

GROUND CONDITIONS

Beneath a surface covering of paving or topsoil, made ground was encountered overlying the London Clay formation to the full depth of the investigation of 20 m. The made ground comprised orange-brown silty sandy clay with fine gravel, brick, charcoal fragments and rootlets and was encountered to depths of between 0.20 m (73.10 m OD) and 1.2 m (73.71 m OD). A weathered zone of soft or firm orange-brown mottled brown and grey silty sandy clay extended to depths of between 4.75 m (69.57 m OD) and 5.50 m (69.68 m OD). This upper weathered material is sandier than would be expected for London Clay and could partly represent soliflucted material derived in part from the overlying Claygate Member which is present upslope of the site. Firm dark brownish grey silty fissured clay extended to depths of between 14.0 m (60.32 m OD) and 14.3 m (60.88 m OD) whereupon stiff grey fissured silty clay with lenses of fine grey sand was encountered to the full depth of the investigation of 20.0 m (55.18 m OD). Groundwater was not encountered during the investigation.

Monitoring of the standpipes installed into each of the three cable percussion boreholes has recorded groundwater at depths of 1.24 m (73.94 m OD) and 6.14 m (68.18 m OD) indicating groundwater flow direction towards the south. Further monitoring should however be carried out to establish equilibrium levels.

No elevated concentrations of contaminants were recorded in the made ground.

RECOMMENDATIONS

Excavations for the basement structure will require temporary support to maintain stability and prevent any excessive ground movement. On the basis of the groundwater observations to date, groundwater will be encountered within the depth of the proposed basement excavation. Groundwater is may be present within the clay soils as discrete pockets of water rather than in continuous layers. Each individual pocket may therefore be of relatively low volume and individual inflows may cease once the pocket is emptied. On this basis inflows are may not be significant and should be adequately dealt with by sump pumping, but this should be confirmed by continued monitoring and trial excavations.

Spread or piled foundations would be suitable to support the proposed houses.

Consideration will need to be given to any possible effect of the proposed development on the nearby railway tunnel.
In view of the absence of contamination remedial measures are not deemed necessary.

Part 1: INVESTIGATION REPORT

This section of the report details the objectives of the investigation, the work that has been carried out to meet these objectives and the results of the investigation. Interpretation of the findings is presented in Part 2.

1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Elliott Wood Partnership on behalf of Mr and Mrs Shafi, to carry out a desk study and ground investigation at 6 Nutley Terrace, London, NW3 5BX.

1.1 Proposed Development

The current proposals are to demolish the existing house and construct two new three-storey houses with single level basements. The basements will extend to a depth of 4.2 m and will it is understood, cover the existing building footprint and extend partly into the existing rear garden.

This report is specific to the proposed development and the advice herein should be reviewed once the development proposals have been finalised.

1.2 Purpose of Work

The principal technical objectives of the work carried out were as follows.

- to check the history of the site with respect to previous contaminative uses;
- to determine the ground conditions and their engineering properties;
- to provide advice with respect to the design of suitable foundations and retaining walls;
- to provide an indication of the degree of soil contamination present; and
- to assess the risk that any such contamination may pose to the proposed development, its users or the wider environment.

1.3 Scope of Work

In order to meet the above objectives, a desk study was carried out, followed by a ground investigation. The desk study comprised:

- a review of readily available geological maps;
- a review of historical Ordnance Survey (OS) maps, historical data and environmental searches sourced from the Envirocheck database; and
- a review of bomb damage maps held by the London Metropolitan Archives

In the light of this desk study an intrusive ground investigation was carried out which comprised, in summary, the following activities:

- three cable percussion boreholes advanced to a depths of 20.00 m;
- standard penetration tests (SPTs), carried out at regular intervals in the boreholes, to provide additional quantitative data on the strength of the soils;
- installation of standpipe piezometers to depths of 6 m to facilitate future monitoring of groundwater levels;
- a series of five shallow window sample boreholes to provide additional coverage of the site;
- laboratory testing of selected soil samples for geotechnical purposes and for the presence of contamination; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

The report includes a contaminated land assessment which has been undertaken in accordance with the methodology presented in Contaminated Land Report (CLR) 11[1] and involves identifying, making decisions on, and taking appropriate action to deal with, land contamination in a way that is consistent with government policies and legislation within the United Kingdom. The risk assessment is thus divided into three stages comprising Preliminary Risk Assessment, Generic Quantitative Risk Assessment, and Site-Specific Risk Assessment.

1.3.1 Basement Impact Assessment (BIA)

The work carried out also includes information required for a Hydrological and Hydrogeological Assessment and Land Stability Assessment (also referred to as Slope Stability Assessment), which form part of the BIA procedure specified in the London Borough of Camden (LBC) Planning Guidance CPG4[2] and their Guidance for Subterranean Development[3] prepared by Arup. The aim of this work is to provide information on the groundwater conditions specific to this site and land stability, in particular to assess whether the development will affect the stability of neighbouring properties and whether any identified impacts can be appropriately mitigated.

The BIA elements of the work have been carried out by Martin Cooper, a BEng in Civil Engineering, a chartered engineer (CEng) and member of the Institution of Civil Engineers (MICE), who has over 20 years specialist experience in ground engineering. The assessment has been made in conjunction with Steve Branch, a BSc in Engineering Geology and Geotechnics, MSc in Geotechnical Engineering, a chartered geologist (CGeol) and Fellow of the Geological Society (FGS) with 25 years' experience in geotechnical engineering, engineering geology and hydrogeology. Both assessors meet the Geotechnical Specialist criteria of the Site Investigation Steering Group and satisfy the qualification requirements of the Council guidance.

1 *Model Procedures for the Management of Land Contamination* issued jointly by the Environment Agency and the Department for Environment, Food and Rural Affairs (DEFRA) Sept 2004
2 London Borough of Camden Planning Guidance CPG4 *Basements and lightwells*
3 Ove Arup & Partners (2010) *Camden geological, hydrogeological and hydrological study. Guidance for Subterranean Development.* For London Borough of Camden November 2010

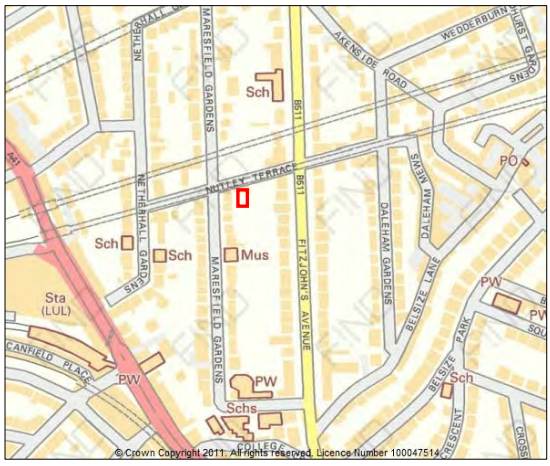
1.4 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

2.0 THE SITE

2.1 Site Description

The site is located approximately 400 m to the north-east of Finchley Road London Underground station. It fronts onto Nutley Terrace to the north and is bounded by private gardens to the south, east and west. The site is also located immediately to the south of the Network Rail's Belsize Tunnel which carries the Midland Mainline service.



The site may be additionally located by National Grid Reference 526659, 184995, as shown on the adjacent map.

The site is roughly rectangular in shape, measuring approximately 30 m by 60 m and is occupied by the existing two-storey L-shaped house, located on the northern part of the site. A brick paved parking area is present to the front of the house, adjacent to Nutley Terrace. A small grassed area with planted borders and two deciduous trees approximately 20 m high are present to the east of the house.

To the south of the house the rear garden comprises a terraced lawn with a number of mature trees on the eastern and western boundaries; species include ash, beech and poplar. The site slopes gently down towards the south in a series of terraces, from a level of 75.47 m OD at the northern boundary to 73.58 m OD at the southern boundary.

The adjacent photograph illustrates the stepped lawn.

2.2 Site History

The site history has been researched by reference to historical Ordnance Survey (OS) maps sourced from the Envirocheck database.

The earliest map studied dated 1871, shows the site to be occupied by fields with a line of trees in the north of the site running south-west to north-east. This map also shows the outline of the Belsize Tunnel to the north of the site. The surrounding area appears predominantly undeveloped, with the exception of "Belsize Farm" approximately 100 m to the south-east of the site and a ventilating shaft of the tunnel approximately 100 m to the north-east of the site.

The next map, dated 1896, shows significant development of the area with a number of houses having been constructed, although the site itself comprises three garden plots associated with the houses to the west. The existing house was built at some time between 1935 and 1946 and can be seen on the aerial photograph dated 1946. The Belsize Tunnel is labelled on the 1954 map, running adjacent and parallel to the northern edge of the site, beneath Nutley Terrace. The site has remained essentially unchanged to the present day.

2.3 Other Information

A search of public registers and databases has been made via the Envirocheck database and relevant extracts from the search are appended. Full results of the search can be provided if required.

The search has revealed no records of any landfills, waste management or transfer sites within 500 m of the site. However, there are two waste treatment or disposal sites listed within 500 m. On closer inspection this appears to be two entries for the same goods yard and is unlikely to have had a detrimental impact on the site.

The report indicates that the site has a moderate potential for shrinking or swelling clay ground stability hazards, and a very low potential for landslide stability hazards.

The search has indicated that the site is located in an area where less than 1% of homes are affected by radon emissions; which is the lowest classification given by the Health Protection Agency (HPA) and therefore no radon protective measures will be necessary.

According to information provided by Network Rail, the Belsize Tunnel is located at a depth of approximately 23 m below Nutley Terrace.

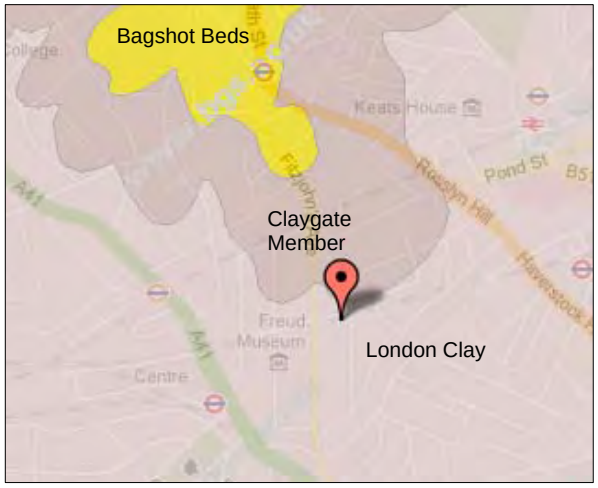
2.4 Geology and Hydrogeology

The Geological Survey map of the area (BGS sheet 256: North London) indicates that the site should be underlain by London Clay, with the Claygate Member overlying the London Clay approximately 50 m to the north of the site.

The bedrock aquifer of the site is classified by the Environment Agency (EA) as "Unproductive Strata", which are rock or drift deposits with low permeability that have negligible significance for water supply or river base flow. The Claygate Member to the north of the site is classed as a Secondary A Aquifer by the EA, which is defined as permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers.

There are no Environment Agency designated Source Protection Zones (SPZs) on the site, but there is a SPZ II, within 1 km of the site.

Groundwater is likely to be present within the Claygate Member, and other investigations carried out around the area of Hampstead Heath indicate that spring lines are present at the interface of the Bagshot Beds and the Claygate Member, and at a lower level near the boundary between the Claygate Member and the underlying essentially impermeable London Clay. These springs have been the source of a number of London's "lost" rivers, notably the Fleet, Westbourne and Tyburn, which generally rose on Hampstead Heath, to the north and northeast of the current site, mostly at the base of the Bagshot Beds.



Historically the Tyburn River[4] rose approximately 150 m to the northwest of the site. It is shown on the map dated 1871 rising from a pond near to what is annotated as Shepherd's Well, although is no longer shown on maps dated after 1874, after the construction of Fitzjohns Avenue. The stream flowed in a southerly direction, passing the site at a distance of approximately 75 m, where it merged with another tributary just north of Regent's Park and flowed into a large lake that is still present today. From there the river then flowed through central London and into the Thames, although due to the fact that the Tyburn was only a small stream, the exact course of the lower part of the river is relatively known.

Given the location of the source of the Tyburn, it is likely that it was formed by a spring issuing from within the Claygate Beds close to the boundary with the London Clay, which is located approximately 50 m to the south of the source. The direction of groundwater flow within the London Clay beneath the site is likely to be controlled by the local topography and is therefore likely to be in a southerly direction, in the direction that the former river flowed.

Any groundwater flow within the London Clay will be at a very slow rate, due to its negligible permeability; the permeability will be predominantly secondary, through fissures in the clay. Published data for the permeability of the London Clay indicates the horizontal permeability to generally range between 1 x 10^{-11} m/s and 1 x 10^{-9} m/s, with a lower vertical permeability.

The site is not located within a Flood Zone as defined by the Environment Agency. In addition, Nutley Terrace has not been identified as a street at risk of surface water flooding as a result of sewer surcharging within the London Borough of Camden. The nearest existing surface water features are the "Hampstead Ponds", which are located approximately 1.2 k m to the northeast of the site.

4 Nicholas Barton (2000) *London's Lost Rivers.* Historical Publications Ltd

2.5 Preliminary Risk Assessment

Part IIA of the Environmental Protection Act 1990, which was inserted into that Act by Section 57 of the Environment Act 1995, provides the main regulatory regime for the identification and remediation of contaminated land. The determination of contaminated sites is based on a "suitable for use" approach which involves managing the risks posed by contaminated land by making risk-based decisions. This risk assessment is carried out on the basis of a source-pathway-receptor approach.

2.5.1 Source

The historical usage of the site that has been established by the desk study indicates that the site has not had a contaminative history by virtue of it having been occupied by gardens and then a house. Thus no sources of contamination have been identified by the desk study.

2.5.2 Receptor

The redevelopment of the site as a house and garden is considered a high sensitivity end-use. Buried services are likely to come into contact with any contaminants present within the soils through which they pass and site workers are likely to come into contact with any contaminants present in the soils during demolition and construction works. Being underlain by unproductive strata, groundwater may be considered as a low sensitivity receptor.

2.5.3 Pathway

There will be limited potential contaminant exposure pathways as the building will effectively form a barrier between any contaminants within the near-surface soils and end-users or infiltration of surface water. Buried services will be exposed to any contaminants present within the soil through direct contact and site workers will come into contact with the soils during demolition and construction works. The presence of negligibly permeable London Clay beneath the site will limit the potential for groundwater percolation, therefore there is a low potential for a pathway. There is thus considered to be a low potential for a contaminant pathway to be present between any potential contaminant source and a target for the particular contaminant.

2.5.4 Preliminary Risk Appraisal

On the basis of the above it is considered that there is a very low risk of there being a significant contaminant linkage at this site which would result in a requirement for major remediation work.

3.0 EXPLORATORY WORK

In order to meet the objectives described in Section 1.2, three cable percussion boreholes were advanced to a depth of 20.0 m by means of a dismantle-able drilling rig. Standard Penetration Tests (SPTs) were carried out at regular intervals and disturbed and undisturbed samples were recovered for subsequent laboratory examination and testing.

These boreholes were supplemented by five window sample boreholes, advanced to depths of between 2.80 m and 6.00 m, in order to provide additional coverage of the site.

A selection of the samples recovered from the boreholes was submitted to a soil mechanics laboratory for a programme of geotechnical testing and an analytical laboratory for a programme of contamination testing.

The borehole and window sampling records and results of the laboratory analyses are appended together with a site plan indicating the exploratory positions.

3.1 Sampling Strategy

The cable percussion borehole locations were specified by the consulting engineers and the window samples positioned on site by GEA to provide optimum coverage of the site with due regard to the proposed development, whilst avoiding the areas of known services. In view of the presence of the Belsize Tunnel to the north of the site, all exploratory holes were positioned outside a 10 m exclusion zone around the tunnel.

Standpipe piezometers were installed in each of the cable percussion boreholes, to a depth of 6.00 m (69.18 m OD) in each of Borehole Nos 1 and 3, and to 6.20 m (68.12 m OD) in Borehole No 2. They have been monitored on a single occasion on 19th August 2011, approximately two weeks after completion of the site work.

Four samples recovered from the made ground were subjected to analysis for a range of common industrial contaminants and contamination indicative parameters. For this investigation the analytical suite for the soil included a range of metals, speciation of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols. The contamination analyses were carried out at a MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards.

The soil samples were selected to provide a general view of the chemical conditions of the soils that are likely to be involved in a human exposure and to provide advice in respect of re-use or for waste disposal classification.

4.0 GROUND CONDITIONS

The investigation has broadly confirmed the expected ground conditions in that, beneath a variable thickness of topsoil or made ground, London Clay was encountered and proved to the full depth of the investigation, of 20.00 m (55.18 m OD).

4.1 Made Ground

The made ground comprised dark brown silty sandy clay with fine gravel, brick, charcoal with variable amounts of rootlets and concrete fragments and was encountered to depths of between 0.20 m (73.10 m OD) and 1.2 m (73.71 m OD).

No evidence of significant contamination was observed within these soils, although a number of samples of the made ground were analysed for a range of contaminants and the results are summarised in section 4.4.

4.2 London Clay

This stratum initially comprised a weathered zone of soft becoming firm orange-brown mottled brown and grey silty sandy clay which extended to depths of between 4.75 m (69.57 m OD) 5.5 m (69.68 m OD). This upper weathered material is sandier than would be expected for London Clay and could represent a soliflucted material derived in part from the overlying Claygate Member to the north of the site, but it is not considered to represent insitu Claygate as it would mean that the base of the Member would be some 10 m lower than that shown by the geology map and found in other investigations in Hampstead area.

Firm dark brownish grey silty fissured clay then extended to depths of between 14.0 m (60.32 m OD) and 14.30 m (60.88 m OD), whereupon stiff grey fissured silty clay with lenses of fine grey sand was encountered to the full depth of the investigation of 20.00 m (55.18 m OD).

Selenite crystals were noted throughout the clay and carbonaceous deposits were recorded in the shallow soils.

Desiccation was observed to a depth of up to 2.50 m (72.41 m OD) in Borehole No 5 in close vicinity to the mature deciduous trees.

4.3 Groundwater

Groundwater was not encountered during drilling of any of the boreholes. Groundwater monitoring standpipes were installed in each of the three cable percussion boreholes. Two weeks after installation, groundwater was measured at depths of 1.24 m (73.94 m OD) and 6.14 m (68.18 m OD) in Borehole No 1 and 2 respectively, whereas Borehole No 3 was noted to be dry with the standpipe extending to 6 m (68.32 m OD). Whilst the relative levels are as would be expected, in that they indicate groundwater flow to the south, the wide variation in groundwater level between Borehole No 1 at the northern boundary and Borehole No 2, in the centre of the site, indicate that the water levels had not reached equilibrium at the time of the monitoring and further monitoring should be carried out.

4.4 Soil Contamination

The table below sets out the values measured within the eight samples analysed; all concentrations are in mg/kg unless otherwise stated.

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US_{95}
Arsenic	21	14	None	21.9
Cadmium	0.81	0.23	None	0.78
Chromium	58	27	None	56
Copper	110	38	None	478
Mercury	1.6	0.30	None	1.72
Nickel	93	16	None	16.8
Lead	520	61	None	99.4
Selenium	19	0.51	One	82.0
Zinc	1100	130	None	962
Total Cyanide	1.9	0.67	None	0.5
Total Phenols	<0.3	<0.3	All	-
Total Sulphate	360	280	None	354.8
Sulphide	1.9	0.67	None	1.79
Total TPH	25	11	One	23.8
Benzo(a)pyrene	3.3	0.53	None	3.6

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US_{95}
Napthalene	<0.1	<0.1	All	0.1
Total PAH	12	4.9	None	12.2
Total Organic Carbon %	3.7	2.0	None	4.1
pH	7.8	5.3	None	-

Note: The use of the normalised upper bound for 95th percentile confidence aims to remove some of the uncertainty associated with calculation of an arithmetic sample mean of a relatively small number of samples. The US95 value is the upper bound of the range within which it can be stated with 95% confidence that the true mean concentration of the data set will fall.
Figure in **bold** indicates concentration in excess of risk-based soil guideline values, as discussed in Part 2 of this report

The results of the contamination testing indicate that the soil is within the guideline limits and so no remediation action need be considered.

4.4.1 Generic Quantitative Risk Assessment

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. To this end contaminants of concern are those that have values in excess of a generic human health risk based guideline values which are either that of the CLEA[5] Soil Guideline Value where available, or is a Generic Guideline Value calculated using the CLEA UK Version 1.06 software assuming a residential end use. The key generic assumptions for this end use are as follows:

- that groundwater will not be a critical risk receptor;
- that the critical receptor for human health will be young female children aged zero to six years old;
- that the exposure duration will be six years;
- that the critical exposure pathways will be direct soil and indoor dust ingestion, consumption of home-grown produce, consumption of soil adhering to home-grown produce, skin contact with soils and indoor dust, and inhalation of indoor and outdoor dust and vapours; and
- that the building type equates to a two-storey small terraced house.

It is considered that these assumptions are acceptable for this generic assessment of this site. The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix.

Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where concentrations are measured in excess of these generic screening values there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include;

5 *Updated Technical Background to the CLEA Model (Science Report SC050021/SR3) Jan 2009* and Soil Guideline Value reports for specific contaminants; all DEFRA and Environment Agency.

- additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;

- site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or

- soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.

When comparing the results from the contamination testing to those in the Soil Guideline Values and Generic Guideline Values, the analyses have not revealed any upper bound concentrations in excess of the generic risk-based screening values.

Part 2: DESIGN BASIS REPORT

This section of the report provides an interpretation of the findings detailed in Part 1, in the form of a ground model, and then provides advice and recommendations with respect to foundation options and contamination issues.

5.0 INTRODUCTION

Consideration is being given to the redevelopment of this site through the demolition of the existing house, followed by the construction of two new three-storey houses with single level basements.

Anticipated loads for the development are not known at this stage, but are expected to be relatively light to moderate.

6.0 GROUND MODEL

The desk study has revealed that the site has not had a potentially contaminative history. On the basis of the investigation the ground conditions at this site can be characterised as follows:

- Beneath a surface covering of topsoil, a variable thickness of made ground is present, overlying the London Clay which was proved to the full depth of the investigation, of 20.0 m (55.18 m OD);
- the made ground comprises dark brown silty sandy clay, with variable amounts of brick, charcoal and concrete fragments and was encountered to depths of between 0.20 m (73.10 m OD) and 1.2 m (73.71 m OD);
- the upper part of the London Clay comprises soft becoming firm orange-brown silty sandy fissured clay with selenite crystals and carbonaceous material, which extended to depths of between 4.75 m (69.57 m OD) and 5.50 m (69.68 m OD);
- stiff dark brownish grey silty fissured clay extends to depths of between 14.0 m (60.32 m OD) and 14.3 m (60.88 m OD), whereupon stiff grey fissured silty clay with lenses of fine grey sand was encountered;
- groundwater was not encountered in any of the cable percussion boreholes or window sample boreholes during drilling;
- subsequent monitoring of the standpipes approximately two weeks after installation, has shown groundwater to be present at depths of 1.24 m (73.94 m OD) and 6.14 m (68.18 m OD) in Borehole Nos 1 and 2 respectively, with Borehole No 3 remaining dry;
- the contamination analyses have not indicated any elevated concentrations which could pose a risk to human health; and
- a Network Rail tunnel passes immediately adjacent to the northern boundary of the site.

7.0 ADVICE AND RECOMMENDATIONS

Excavations for the basement structure will require temporary support to maintain stability and prevent any excessive ground movement. On the basis of the groundwater observations to date, groundwater will be encountered in the basement excavation and a requirement for groundwater control should be envisaged, although monitoring of the standpipes should be continued to determine the equilibrium level.

In view of the anticipated light to moderate loads, spread foundations constructed from basement level may be suitable for the proposed development. Alternatively, piled foundations could be considered. Consideration should also be given to the close proximity of the tunnel to the north and liaison with Network Rail will be required with respect to the effect of the new buildings on the tunnel.

7.1 Basement Excavation

It is understood that it is proposed to form a single level basement, which will extend beneath the proposed new buildings to a depth of approximately 3.0 m (72.18 m OD). Formation level is expected to be within the weathered London Clay.

Monitoring of the standpipes has recorded groundwater at a minimum depth of 1.24 m (73.94 m OD) in the northeast of the site, whereas the standpipes to the south of the house recorded groundwater at 6.14 m (68.18 m OD), just at the base of the standpipe, whilst Borehole No 3 was dry with the standpipe extending to 6.00 m (68.32 m OD). This information indicates that groundwater is likely to be encountered within the basement excavation but is not particularly informative regarding the depth at which it may be encountered as the standpipes are unlikely to have been reflecting equilibrium levels when the monitoring was carried out. Continued monitoring of the standpipes is therefore an essential requirement.

Groundwater may be present within the weathered London Clay as discrete pockets of water rather than in continuous layers. Each individual pocket may therefore be of relatively low volume and individual inflows may cease once the pocket is emptied. On this basis inflows may not be significant and could be adequately dealt with through sump pumping. However, as the basement excavation will cover a much larger area than that covered by the investigation, it is possible that larger pockets or inter-connected layers of groundwater could be encountered. It would therefore be prudent for the chosen contractor to have a contingency plan in place to deal with more significant or prolonged inflows as a precautionary measure. It would also be prudent, once access is available, to carry out a number of trial excavations, to depths as close to the full basement depth as possible, to provide an indication of the likely ground water conditions. It is likely that the rate of inflow will be relatively slow within the London Clay.

There are a number of methods by which the sides of the basement excavation could be supported in the temporary and permanent conditions. The choice of wall may be governed to a large extent by the requirement to prevent ground water inflows and whether it is to be incorporated into the permanent works and have a load bearing function.

If trial excavations indicate that problematic groundwater inflows will not be encountered and sufficient space is available, it may be possible to form the proposed excavation in an open cut. In situ retaining walls can then be constructed within the excavation and the area behind the walls backfilled on completion. Care should be taken to protect the sides of any unsupported cut slopes during periods of rainfall and any run-off from construction operations until the retaining walls have been installed. Movement of plant at the top of any open cut should be prevented and daily inspections of the cut faces should be carried out to check stability.

If groundwater inflows cannot be suitably controlled in an open excavation, or if sufficient space is not available, consideration may be given to the use of a sheet piled or bored pile retaining wall. A sheet piled wall could be used as a temporary measure, prior to the construction of a permanent structure following the completion of the basement excavation, However the noise and vibrations associated with the installation of sheet piles may be unacceptable given the close proximity of the tunnel and the neighbouring houses, unless a "silent" installation method is adopted; the use of water jetting to assist with installation should however be carefully considered, as it may induce ground movements in nearby structures if not properly controlled.

A bored pile wall would have the advantage of being incorporated into the permanent works and will be able to provide support for structural loads. On the basis of the monitoring to date, it should be possible to adopt a contiguous bored pile wall, with the use of localised grouting and / or pumping if necessary in order to deal with groundwater inflows. A contiguous bored piled wall would have the disadvantage of reducing usable space in the basement, and in this respect a secant wall may be preferable as it would overcome the requirement for any secondary groundwater protection in the permanent works and maximise the basement area.

The ground movements associated with the basement excavation will depend on the method of excavation and support and the overall stiffness of the basement structure in the temporary condition. Thus, a suitable amount of propping will be required to provide the necessary rigidity. In this respect the timing of the provision of support to the wall will have an important effect on movements.

7.1.1 Basement Retaining Walls

The following parameters are suggested for the design of the permanent basement retaining walls.

Stratum	Bulk Density (kg/m^3)	Effective Cohesion (c' – kN/m^2)	Effective Friction Angle (Φ' – degrees)
Made ground	1700	Zero	28
London Clay	2000	Zero	25

The monitoring has indicated that groundwater will be encountered within the excavation and monitoring should be continued in order to establish equilibrium levels. At this stage, it is recommended that the basement is designed with a water level assumed to be two-thirds of the basement depth, unless a fully effective drainage system can be ensured. It may however be possible to review this requirement following additional investigation by means of trial excavations and further monitoring and the advice in BS8102:2009[6] should be followed in this respect.

6 BS8102 (2009) *Code of practice for protection of below ground structures against water from the ground*

7.1.2 Basement Heave

The excavation of the basement may result in some heave of the underlying clay, which would comprise short term elastic movement and longer term swelling that will continue over a number of years. This movement will be mitigated to some extent by the weight of the proposed structures but it would be prudent for these movements to be considered in more detail once the levels, loads and area of the basement are finalised.

7.1.3 Basement Floor Slab

Following the excavation of the basement, it should be possible to adopt a ground bearing floor slab, bearing on the natural soils. It would be prudent to proof roll the stratum with any soft spots being removed and replaced with suitably compacted granular fill.

As with all basement structures, consideration may need to be given to designing the slab to accommodate heave movements and water pressures and this should be considered in more detail once the levels and magnitude of any slab loading are known.

7.2 Basement Impact Assessment

The current development proposal includes the construction of a single level basement to a depth of about 4.0 m (71.18 m OD) below present ground level.

The investigation has indicated that groundwater is present at relatively shallow depths within the London Clay and the initial monitoring has indicated that it flows in a southerly direction. However, it is clear that the depths of water measured in the monitoring standpipes do not represent equilibrium levels and further monitoring will need to be carried out.

Notwithstanding the above the proposed basement is unlikely to have any significant effect on groundwater levels as it is wholly within the London Clay so does not provide any form of cut-off into less permeable strata and the basements will only represent a relatively small proportion of the site area. It would however be prudent to incorporate suitable drainage into the final design of the basement walls in order to ensure that any shallow surface run-off is able to freely drain around the basement structures.

Once the proposals have been finalised a check should be made on whether the development reduces the amount of soft cover available for surface water infiltration.

The desk study research has indicated that the site is not within close proximity of the Hampstead Ponds although the River Tyburn formerly flowed southwards along Fitzjohn's Avenue, approximately 75 m to the west of the site. However, the site is not at risk from flooding, and in particular is not located within an area at risk from surface water flooding. Therefore a flood risk assessment will not be required.

Apart from the local topography, which slopes down to the south, the site is relatively level as a result of terracing. Further still the proposed development will not alter any existing slopes and on this basis consideration will not need to be given to slope stabilisation measures.

7.3 Spread Foundations

The excavation of the proposed basement is likely to result in formation level within the London Clay and it should be possible to adopt moderate width pad or strip foundations in the firm to stiff clay, designed to apply a net allowable bearing pressure of 150 kN/m^2 below the level of the proposed basement floor. This value should be checked once the levels have been finalised.

The recommended bearing pressure provides an adequate factor of safety and should ensure that settlement remains within normal tolerable limits. All foundations should bypass the made ground and depths should be checked against NHBC requirements with respect to trees once the layout and depth of the basement is known.

7.4 Piled Foundations

For the ground conditions at this site a driven or bored pile could be adopted. A driven pile would have the advantage of minimising the spoil that is generated, but consideration would need to be given to the effects of noise and vibrations on neighbouring sites. Some form of bored pile may therefore be the most appropriate type. A conventional rotary augered pile may be suitable but casing will be required to maintain stability and prevent any groundwater inflows within the silty sandy clay, bored piles installed using continuous flight auger (cfa) techniques are therefore likely to be the most appropriate technique.

The following table of ultimate coefficients may be used for the preliminary design of bored piles and is based on the measured SPT and Cohesion depth graph in the appendix. Groundwater has been assumed at a level of approximately -0.5 m OD and the pile design has been given relative to a ground floor level of approximately 3.5 m OD.

Ultimate Skin Friction		**kN/m^2**
Made ground	GL to 3 m	Ignore – made ground and basement excavation
London Clay (α = 0.5)	3 m to 20 m	Increasing linearly from 35 to 80
Ultimate End Bearing		**kN/m^2**
London Clay	15 m to 20 m	1170 to 1440

In the absence of pile tests, guidance from the London District Surveyors Association[7] (LDSA) suggests that a factor of safety of 2.6 should be applied to the above coefficients in the computation of safe theoretical working loads and to apply a limiting value of 110 kN/m^2 to the average ultimate shaft friction.

On the basis of the above coefficients, applying a factor of safety of 2.6, it has been estimated that a 450 mm diameter pile extending to a depth of 15 m below existing ground level should provide a safe working load of about 400 kN, whereas a 20 m should provide a safe working load of about 600 kN.

The above examples are not intended to constitute any form of recommendation with regard to pile size or type, but merely serve to illustrate the use of the above coefficients. Specialist piling contractors should be consulted with regard to the design of an appropriate piling scheme and the need for additional deeper investigation. Their attention should be drawn to the possible presence of groundwater and silt and sand layers within the London Clay.

Consideration will need to be given to the possible effects of piled foundations on the nearby tunnel once the proposals have been finalised and should be the subject of discussions with Network Rail.

[7] LDSA (2009) *Foundations No 1 – Guidance notes for the design of straight shafted bored piles in London Clay*. LDSA Publications

7.5 Excavations

On the basis of the borehole findings it is considered that shallow excavations for foundations and services that extend through the made ground and into the underlying clay should remain generally stable in the short term. Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides considered in order to comply with normal safety requirements.

Inflows of groundwater into shallow excavations are not generally anticipated, although seepages may be encountered from perched water tables within the made ground, particularly within the vicinity of existing foundations, although such inflows should be suitably controlled by sump pumping.

7.6 Effect of Sulphates

Chemical analyses of selected samples of the London Clay have revealed generally low concentrations of soluble sulphate and near neutral pH conditions, corresponding to Class DS-1 and ACEC AC-1s of Table C2 of BRE Special Digest 1 Part C (2005). The guidelines contained in the above digest should be followed in the design of foundation concrete.

7.7 Site Specific Risk Assessment

The site is not considered to have had a potentially contaminative history, having been occupied by undeveloped land and private gardens until the existing house was built at some time between 1935 and 1946. The absence of contamination has been confirmed by the results of the laboratory testing in that no elevated concentrations of contaminants were recorded in any of the samples tested. On this basis, remedial measures to protect sensitive receptors are unlikely to be required.

7.8 Waste Disposal

Any spoil arising from excavations or landscaping works will need to be disposed of to a licensed tip. Under the European Waste Directive landfills are classified as accepting inert, non-hazardous or hazardous wastes in accordance with the EU waste Directive.

Based upon on the technical guidance provided by the Environment Agency[8] it is considered likely that the made ground from this site, as represented by the three chemical analyses carried out, would be generally classified as Non-hazardous waste, whilst the natural soils may be classified as an Inert waste. However, this classification should be confirmed by the receiving landfill once the soils to be discarded have been identified. In order to finalise this classification it will probably be necessary to carry out further analyses including WAC CEN method bulk leaching tests. Such tests should be carried out upon representative samples from the waste stream once the extent of the materials to be discarded has been established.

Under the requirements of the European Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The

[8] Environment Agency May 2008. *Hazardous Waste: Interpretation of the definition and classification of hazardous waste.* Technical Guidance WM2 Second Edition Version 2.2

Environment Agency has issued a position paper[9] which states that in certain circumstances, segregation at source may be considered as pre-treatment and thus excavated material may not have to be treated prior to landfilling if the soils can be segregated onsite by sufficiently characterising the soils insitu prior to excavation.

The above opinion with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill once the soils to be discarded have been identified. The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material but may require further testing.

8.0 OUTSTANDING RISKS AND ISSUES

This section of the report aims to highlight areas where further work is required as a result of limitations on the scope of this investigation, or where issues have been identified by this investigation that warrant further consideration. The scope of risks and issues discussed in this section is by no means exhaustive, but covers the main areas where additional work is considered to be required.

The ground is a heterogeneous natural material and variations will inevitably arise between the locations at which it is investigated. This report provides an assessment of the ground conditions based on the discrete points at which the ground was sampled, but the ground conditions should be subject to review as the work proceeds to ensure that any variations from the Ground Model are properly assessed by a suitably qualified person.

Further groundwater monitoring should be carried out to establish equilibrium levels and the extent of any seasonal fluctuations, as at this stage the depth of the groundwater is uncertain. It would be prudent to carry out a number of trial excavations, to depths as close to the full basement depth as possible, to investigate the extent to which the proposed basement excavation will be affected by groundwater inflows and to make an assessment of side stability.

Further work is required to complete the basement impact assessment once proposals have been finalised.

Further consideration will need to be given to any effect of the proposed development on the Network Rail tunnels once the foundation design has been finalised.

[9] Regulatory Position Statement *Treating non-hazardous waste for landfill - Enforcing the new requirement* Environment Agency 23 Oct 2007

APPENDIX

Borehole Records

Laboratory Geotechnical Test Results

SPT & Cohesion / Depth Graph

Chemical Analyses

Generic Risk Based Screening Values

Envirocheck Summary

Historical Maps

Site Plan

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 170.00m	75.18	Mr & Mrs Shafi	J11158
	Location	**Dates** 02/08/2011- 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							Topsoil		
0.30	D1					(0.55)			
0.50	D2				74.63	0.55	Soft becoming firm, orange-brown silty sandy fissured CLAY with selenite crystals and carbonaceous material		
1.00-1.45	SPT N=7			1,1/1,2,2,2					
1.00-1.45	D3								
1.85	D4								
2.00-2.45	U1								
2.75	D5								
3.00-3.45	SPT N=11			1,2/2,3,3,3		(4.95)			
3.00-3.45	D6								
3.75	D7								
4.00-4.45	U2								
4.75	D8								
5.00-5.45	SPT N=15			1,2/3,3,4,5					
5.00-5.45	D9								
					69.68	5.50	Firm dark brownish grey slightly silty fissured CLAY with selenite crystals		
6.00	D10								
6.50-6.95	U3								
7.50	D11								
8.00-8.45	SPT N=17			2,3/3,4,4,6					
8.00-8.45	D12								
9.00	D13								
9.50-9.95	U4								
						(8.80)			

Remarks
Man-handled drilling equipment onto site for 3 hours.
Service inspection pit excavated to 1.2 m for 1 hour.
Standpipe installed to a depth of 6.0 m and monitoring measured at 1.24 m in standpipe on 19 August 2011

Scale (approx)	**Logged By**
1:50	AV

Figure No.
J11158.BH1

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 170.00m	75.18	Mr & Mrs Shafi	J11158
	Location	**Dates** 02/08/2011- 03/08/2011	**Engineer** Elliott Wood	**Sheet** 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	D14								
11.00-11.45	SPT N=23			4,4/5,5,6,7					
11.00-11.45	D15								
12.00	D16					(8.80)			
12.50-12.95	D17								
13.50	D18								
14.00-14.45	SPT N=25			3,4/5,6,6,8					
14.00-14.45	D19				60.88	14.30	Stiff dark brown grey slightly silty fissured CLAY with lenses of fine grey sand and rare selenite crystals		
15.00	D20								
15.50-15.95	U5								
16.50	D21								
17.00-17.45	SPT N=31			6,7/7,7,8,9					
17.00-17.45	D22					(5.70)			
18.00	D23								
18.50-18.95	U6								
19.50	D24								
20.00-20.45	SPT N=35			5,6/7,8,9,11	55.18	20.00			

Remarks	**Scale (approx)**	**Logged By**
	1:50	AV
	Figure No.	
	J11158.BH1	

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 170.00m	75.18	Mr & Mrs Shafi	J11158
	Location	**Dates** 02/08/2011- 03/08/2011	**Engineer** Elliott Wood	**Sheet** 3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00-20.45	D25						Complete at 20.45m		

Remarks	**Scale (approx)**	**Logged By**
	1:50	AV
	Figure No.	
	J11158.BH1	

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: 6 Nutley Terrace, London, NW3 5BX	Borehole Number: BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 170.00m	74.32	Mr & Mrs Shafi	J11158
	Location	**Dates** 04/08/2011	**Engineer** Elliott Wood	**Sheet** 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.55)	Topsoil		
0.20	D1								
0.30	D2								
0.50	D3				73.77	0.55	Soft becoming firm orange-brown silty sandy fissured CLAY with selenite crystals		
1.20-1.65	CPT N=8			1,0/1,2,3,2					
1.20-1.65	D4								
1.85	D5								
2.00-2.45	U1								
2.75	D6								
3.00-3.45	SPT N=10			1,2/2,3,3,2		(4.95)			
3.00-3.75	D7								
4.00-4.75	U2								
4.75	D9								
5.00-5.45	SPT N=15			2,2/3,3,4,5					
5.00-5.45	D10								
					68.82	5.50	Firm dark brownish grey silty sandy fissured CLAY with occasional selenite crystals		
6.00	D11								
6.50-6.95	U3								
7.50	D12								
8.00-8.45	SPT N=36			6,7/8,9,10,9					
8.00-8.45	D13								
9.00	D14								
9.50-9.95	U4					(8.50)			

Remarks
Standpipe installed to a depth of 6. 20 m and monitoring measured at 6.14 m in standpipe on 19 August 2011
Services inspection pit excavated to 1.2 m for 1 hour.

Scale (approx)	Logged By
1:50	AV

Figure No. J11158.BH2

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: 6 Nutley Terrace, London, NW3 5BX	Borehole Number: BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 170.00m	74.32	Mr & Mrs Shafi	J11158
	Location	**Dates** 04/08/2011	**Engineer** Elliott Wood	**Sheet** 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
							... as previous		
10.50	D15								
11.00-11.45	SPT N=20			2,2/3,5,6,6					
11.00-11.45	D16								
12.00	D17					(8.50)			
12.50-12.95	U5								
13.50	D18								
14.00-14.45	SPT N=24			3,5/6,5,6,7	60.32	14.00	Stiff dark brownish grey silty sandy fissured CLAY with lenses of fine grey sand with occassional selenite crystals		
14.00-14.45	D19								
15.00	D20								
15.50-15.95	U6								
16.50	D21								
17.00-17.45	SPT N=33			5,6/7,8,9,9		(6.00)			
18.00	D23								
18.50-18.95	U7								
				slow seepage(1) at 19.00m.					▽1
19.50	D24								
20.00-20.45	SPT N=36			6,7/8,9,10,9	54.32	20.00			

Remarks

Scale (approx)	Logged By
1:50	AV

Figure No. J11158.BH2

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	Site 6 Nutley Terrace, London, NW3 5BX	Borehole Number BH2

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 170.00m	74.32	Mr & Mrs Shafi	J11158
	Location	**Dates** 04/08/2011	**Engineer** Elliott Wood	**Sheet** 3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00-20.45	D25						Complete at 20.45m		

Remarks	Scale (approx)	Logged By
	1:50	AV
	Figure No. J11158.BH2	

GEA Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Dismantleable rig	0.150mm cased to m	74.32	Mr & Mrs Shafi	J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.10	D1				74.02	(0.30)	Topsoil		
0.30	D2					0.30			
0.50	D3						Soft becoming firm, orange-brown silty sandy fissured CLAY with occasional selenite crystals		
1.00-1.45	CPT N=8			1,1/1,2,2,3					
1.00-1.45	D4								
1.75	D5								
2.00-2.45	U1					(4.45)			
2.75	D6								
3.00-3.45	SPT N=10			1,1/2,2,3,3					
3.00-3.45	D7								
3.75	D8								
4.00-4.45	CPT N=13			10,5/4,3,3,3					
4.00-4.45	D9								
4.75	D10				69.57	4.75	Firm becoming stiff dark brownish grey silty sandy fissured CLAY with rare selenite crystals		
5.00-5.75	U2								
5.50-6.95	D12								
6.00	D11								
6.50-6.95	SPT N=16			2,3/3,4,4,5					
7.50	D13								
8.00-8.45	U3								
9.00	D14					(9.25)			
9.50-9.95	SPT N=18			2,3/3,4,5,6					
9.50-9.95	D15								

Remarks
Standpipe was dry on 19.8.11
Groundwater monitoring standpipe installed to a depth of 6 m on completion.
Services inspection pit excavated to 1.2 m for 1 hour.

Scale (approx)	**Logged By**
1:50	AV

Figure No.
J11158.BH3

GEA Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	Site 6 Nutley Terrace, London, NW3 5BX	Borehole Number BH3

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Dismantleable rig	0.150mm cased to m	74.32	Mr & Mrs Shafi	J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	D16								
11.00-11.45	U4								
12.00	D17					(9.25)			
12.50-12.95	SPT N=23			3,4/5,6,6,6					
12.50-12.95	D18								
13.50	D19								
14.00-14.45	U5				60.32	14.00	Stiff dark brownish grey slightly silty fissured CLAY with lenses of fine grey sand and rare selenite crystals		
15.00	D20								
15.50-15.95	SPT N=26			6,5/6,7,6,7					
15.50-15.95	D21								
16.50	D22								
17.00-17.45	U6					(6.00)			
18.00	D23								
18.50-18.95	CPT N=37			5,7/7,30					
18.50-18.95	D24								
19.25	D25								
19.55-20.00	SPT N=36			6,7/8,8,9,11					
19.55-20.00	D26								
					54.32	20.00			

Remarks

Scale (approx)	Logged By
1:50	AV

Figure No.
J11158.BH3

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Number** **BH4**
Excavation Method Drive-in Window Sampler	**Dimensions**	**Ground Level (mOD)** 75.06	**Client** Mr & Mrs Shafi	**Job Number** J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.30	D1				(0.70)	Made Ground (topsoil over dark brown silty sandy clay with fine gravel, brick, and charcoal)		
				74.36	0.70			
					(0.30)	Made Ground (orange-brown silty sandy clay with fine gravel, brick and charcoal)		
1.00	D2			74.06	1.00			
1.20	D3					Firm orange-brown mottled grey fissured sandy CLAY		
			(p) 1.75					
			(p) 1.5		(1.80)			
2.20	D4		(p) 1.25					
2.80	D5			72.26	2.80	Stiff brown mottled grey silty sandy CLAY		
3.30	D6				(1.20)			
			(p) 1.6					
				71.06	4.00	Stiff mottled grey slightly silty slightly fissured CLAY		
			(p) 3.2		(1.00)			
				70.06	5.00			
			(p) 3			Complete at 5.00m		

Remarks
Groundwater not encountered

Scale (approx)	Logged By
1:50	AV

Figure No.
J11158.BH4

GEA Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Number** **BH5**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		74.91	Mr & Mrs Shafi	J11158
	Location	**Dates** 03/08/2011	**Engineer**	**Sheet**
			Elliott Wood	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.20	D1				(0.75)	Made Ground (dark brown silty sandy clay with roots, concrete, brick & charcoal)		
				74.16	0.75			
					(0.45)	Made Ground (orange-brown mottled brown silty sandy clay with roots, brick and charcoal)		
1.20	D2		(p) 4	73.71	1.20			
1.60	D3		(p) 3.8 (p) 4.6		(1.30)	Firm orange-brown mottled grey silty CLAY with partings of fine sand, some rootlets and black carbonaceous material. Desiccated soil.		
2.60	D4		(p) 2.2 (p) 1.6 (p) 1.25	72.41	2.50			
3.00	D5				(1.40)	Firm orange-brown mottled grey silty sandy CLAY		
			(p) 1.25					
3.90	D6		(p) 2.0	71.01	3.90			
			(p) 2.25			Stiff grey fissured CLAY with fine selenite crystals		
4.50	D7		(p) 2.5					
4.90	D8		(p) 3.6		(2.10)			
			(p) 3.8	68.91	6.00			
						Complete at 6.00m		

Remarks
Groundwater not encountered

Scale (approx)	**Logged By**
1:50	AV

Figure No.
J11158.BH5

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Number** **BH6**
Excavation Method Drive-in Window Sampler	**Dimensions**	**Ground Level (mOD)** 73.04	**Client** Mr & Mrs Shafi	**Job Number** J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Made Ground (topsoil over dark brown silty sandy clay with brick fragmants, gravel, charcoal and rootlets)		
0.20	D1			72.64	0.40			
0.50	D2					Firm orange-brown silty sandy CLAY with carbonaceous material and rootlets		
			(p) 2.5		(0.85)			
1.25	D3		(p) 2.7	71.79	1.25			
			(p) 2			Firm orange-brown mottled grey silty sandy CLAY with carbonaceous material		
					(1.15)			
2.00	D4		(p) 2.25					
2.40	D5			70.64	2.40	Stiff brown mottled grey silty CLAY with fine selenite crystals		
3.00	D6				(1.46)			
3.30	D7		(p) 2.7					
3.86	D8			69.18	3.86	Stiff brown mottled grey silty sandy CLAY with selenite crystals		
					(0.84)			
4.70	D9			68.34	4.70			
					(0.30)	Stiff dark brown mottled orange-brown fissured silty CLAY with fine selenite crystals		
				68.04	5.00			
						Complete at 5.00m		

Remarks
Groundwater not encountered

Scale (approx)	Logged By
1:50	AV

Figure No.
J11158.BH6

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX	**Number** **BH7**
Excavation Method Drive-in Window Sampler	**Dimensions**	**Ground Level (mOD)** 73.30	**Client** Mr & Mrs Shafi	**Job Number** J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				73.10	(0.20) 0.20	Made Ground (topsoil over dark brown silty sandy clay with brick fragments, gravel and rootlets)		
0.20	D1				(0.50)	Firm, locally stiff orange-brown mottled grey silty CLAY with rootlets and carbonaceous fragments. Partially desiccated soil.		
0.70	D2		(p) 3.5	72.60	0.70			
					(0.60)	"Stiff" orange-brown mottled grey silty CLAY with rootlets and carbonaceous fragments. Partially desiccated soil.		
1.20	D3		(p) 5	72.00	1.30			
1.80	D4		(p) 3.25 (p) 3			Stiff brown mottled grey fissured CLAY with partings of orange-brown silt		
2.30	D5							
2.80	D6		(p) 2.7 (p) 2.5		(3.60)			
3.50	D7							
4.50	D8			68.40	4.90			
						Complete at 4.90m		

Remarks
Groundwater not encountered

Scale (approx)	Logged By
1:50	AV

Figure No.
J11158.BH7

GEA Geotechnical & Environmental Associates Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** 6 Nutley Terrace, London, NW3 5BX		**Number** **BH8**
Excavation Method Drive-in Window Sampler	**Dimensions**	**Ground Level (mOD)** 71.86	**Client** Mr & Mrs Shafi	**Job Number** J11158
	Location	**Dates** 03/08/2011	**Engineer** Elliott Wood	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Made Ground (topsoil overlying dark brown silty sandy CLAY with brick fragments, gravel and rootlets)		
0.40	D1			71.46	0.40			
					(0.30)	Firm orange-brown silty CLAY occasional gravel and rootlets		
0.70	D2		(p) 2.7	71.16	0.70			
					(0.70)	Firm orange-brown silty CLAY with carbonaceous material		
			(p) 2.3	70.46	1.40			
1.60	D3					Firm brown mottled grey fissured CLAY		
			(p) 3.7					
2.00	D4		(p) 3.7		(1.40)			
2.80	D5		(p) 4.6	69.06	2.80	Complete at 2.80m		

Remarks
Groundwater not encountered
Becoming stiff with increasing depth

Scale (approx)	Logged By
1:50	AV

Figure No.
J11158.BH8

PROJECT NAME **6 NUTLEY TERRACE, LONDON NW3 5BX**
Job Number J11158
PROJECT NO: **GEO / 17273**

Date	31/08/2011
Approved	Simon Burke
Page	1 of 4

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
BH1	2.00	U1	U	Firm brown slightly sandy silty CLAY	29					1.89	1.47	40	101	51				
BH1	2.75	D5	D	Dark orange-brown and grey fine sandy CLAY	29	53	22	31	100									
BH1	4.00	U2	U	Firm to stiff fissured dark brown silty CLAY	30					1.98	1.52	80	166	83				
BH1	6.50	U3	U	Stiff fissured grey silty CLAY	27					2.03	1.60	130	236	118				
BH1	9.50	U4	U	Stiff fissured grey silty CLAY	28					2.02	1.58	190	223	111				
BH1	10.50	D14	D	Dark grey-brown silty CLAY	27	59	25	34	100									
BH1	15.50	U5	U	Stiff fissured grey silty CLAY	27					2.02	1.60	310	248	124				
BH1	18.50	U6	U	Stiff fissured dark grey-brown silty CLAY	29					1.97	1.53	370	248	124				
BH2	2.00	U1	U	Firm to stiff mottled brown and grey slightly sandy silty CLAY	25					1.95	1.57	40	153	77				
BH2	4.00	U2	U	Firm brown mottled grey silty CLAY	32					1.95	1.48	80	136	68				
BH2	6.50	U3	U	Firm to stiff fissured grey silty CLAY	29					2.00	1.54	130	155	78				
BH2	9.50	U4	U	Firm to stiff fissured grey silty CLAY	28					2.00	1.56	190	172	86				

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME **6 NUTLEY TERRACE, LONDON NW3 5BX**
Job Number J11158
PROJECT NO: **GEO / 17273**

Date	31/08/2011
Approved	Simon Burke
Page	2 of 4

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
BH2	12.50	U5	U	Firm to stiff fissured grey silty CLAY	25					2.05	1.64	250	184	92				
BH2	15.50	U6	U	Firm to stiff fissured grey silty CLAY with rare shell fragments	28					2.01	1.57	310	179	89				
BH2	18.50	U7	U	Stiff fissured grey silty CLAY	27					2.01	1.58	370	240	120				
BH3	2.00	U1	U	Firm mottled grey and brown sandy CLAY with rare rootlets	24					1.95	1.57	40	140	70				
BH3	5.00	U2	U	Firm to stiff fissured grey silty CLAY	29					1.98	1.53	100	176	88				
BH3	8.00	U3	U	Firm to stiff fissured grey silty CLAY with rare shell fragments	29					2.00	1.55	160	195	97				
BH3	11.00	U4	U	Stiff fissured grey silty CLAY	27					2.00	1.57	220	212	106				
BH3	14.00	U5	U	Stiff fissured grey silty CLAY	29					2.01	1.56	280	215	107				
BH3	17.00	U6	U	Stiff fissured grey silty CLAY	28					2.00	1.55	340	202	101				
BH4	1.20	D3	D												7.7	0.045		
BH5	1.20	D2	D	Mottled orange-brown and grey slightly fine sandy CLAY with rare rootlets	22													
BH5	1.60	D3	D	Mottled orange, brown and grey slightly fine sandy silty CLAY	22	61	21	40	100									

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME **6 NUTLEY TERRACE, LONDON NW3 5BX**
Job Number J11158
PROJECT NO: **GEO / 17273**

Date	31/08/2011
Approved	Simon Burke
Page	3 of 4

Sample details				Description	Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			Other tests and comments
Borehole No.	Depth (m)	No.	Type		MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	
BH5	2.60	D4	D	Dark orange and grey fine sandy silty CLAY	24													
BH5	3.00	D5	D	Brown and grey fine sandy silty CLAY	26	49	21	28	100									
BH5	3.90	D6	D	Brown and grey fine sandy silty CLAY	26										7.8	0.14		
BH5	4.50	D7	D	Brown with rare grey silty CLAY	29													
BH6	1.25	D3	D	Mottled brown, range and rare grey fine sandy silty CLAY	22	53	21	32	100									
BH6	3.30	D7	D												7.2	1.7		
BH7	0.70	D2	D	Mottled dark orange, brown with rare grey sine sandy silty CLAY	21													
BH7	1.20	D3	D	Mottled dark orange, brown with rare grey sine sandy silty CLAY	21													
BH7	1.80	D4	D	Mottled dark orange, brown with rare grey sine sandy silty CLAY	27	53	21	32	100									
BH7	2.30	D5	D	Brown and grey silty CLAY	28													
BH7	2.80	D6	D	Brown and grey silty CLAY	29													
BH7	3.50	D7	D	Brown silty CLAY	29													

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME **6 NUTLEY TERRACE, LONDON NW3 5BX**
Job Number J11158
PROJECT NO: **GEO / 17273**

Date	31/08/2011
Approved	Simon Burke
Page	4 of 4

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
BH8	0.70	D2	D	Dark orange-brown with rare grey slightly fine sandy silty CLAY	25													
BH8	1.60	D3	D	Dark orange-brown silty CLAY	28													
BH8	2.00	D4	D	Brown with rare orange and grey silty CLAY	27													
BH8	2.80	D5	D	Brown silty CLAY	26													

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

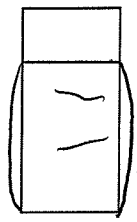
Borehole Number:	BH1
Sample Number:	U1
Depth (m):	2.00

Description:
Firm brown slightly sandy silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	203.5
Diameter (mm):	102.8
Moisture Content (%):	29
Bulk Density (Mg/m³):	1.89
Dry Density (Mg/m³):	1.47
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	40
Strain at failure (%):	20.0
Maximum Deviator Stress (kPa):	101
Shear Stress Cu (kPa):	51

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number:

GEO / 17273

Project Name:

6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

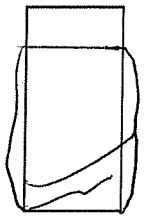
Borehole Number:	BH1
Sample Number:	U2
Depth (m):	4.00

Description:
Firm to stiff fissured dark brown silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.0
Moisture Content (%):	30
Bulk Density (Mg/m³):	1.98
Dry Density (Mg/m³):	1.52
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	80
Strain at failure (%):	15.8
Maximum Deviator Stress (kPa):	166
Shear Stress Cu (kPa):	83

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

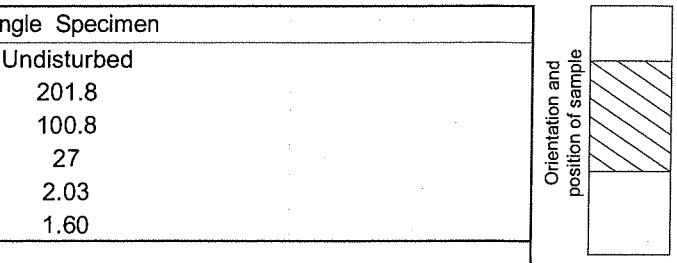
Borehole Number:	BH1
Sample Number:	U3
Depth (m):	6.50

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	100.8
Moisture Content (%):	27
Bulk Density (Mg/m³):	2.03
Dry Density (Mg/m³):	1.60
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	130
Strain at failure (%):	6.9
Maximum Deviator Stress (kPa):	236
Shear Stress Cu (kPa):	118

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1882

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

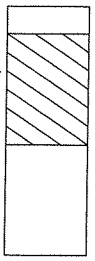
Borehole Number:	BH1
Sample Number:	U4
Depth (m):	9.50

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.7
Diameter (mm):	101.8
Moisture Content (%):	28
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.58
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	190
Strain at failure (%):	7.4
Maximum Deviator Stress (kPa):	223
Shear Stress Cu (kPa):	111

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

Borehole Number:	BH1
Sample Number:	U5
Depth (m):	15.50

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.9
Diameter (mm):	101.5
Moisture Content (%):	27
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.60
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	310
Strain at failure (%):	7.9
Maximum Deviator Stress (kPa):	248
Shear Stress Cu (kPa):	124

Orientation and position of sample

Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

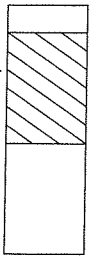
Borehole Number:	BH1
Sample Number:	U6
Depth (m):	18.50

Description:
Stiff fissured dark grey-brown silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	103.3
Moisture Content (%):	29
Bulk Density (Mg/m³):	1.97
Dry Density (Mg/m³):	1.53
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	370
Strain at failure (%):	6.4
Maximum Deviator Stress (kPa):	248
Shear Stress Cu (kPa):	124

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

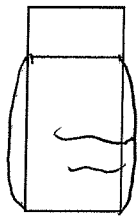
Borehole Number:	BH2
Sample Number:	U1
Depth (m):	2.00

Description:
Firm to stiff mottled brown and grey slightly sandy silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.3
Diameter (mm):	102.0
Moisture Content (%):	25
Bulk Density (Mg/m³):	1.95
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	40
Strain at failure (%):	14.9
Maximum Deviator Stress (kPa):	153
Shear Stress Cu (kPa):	77

Orientation and position of sample



Mode of failure:

Checked and Approved
Initials: SB
Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

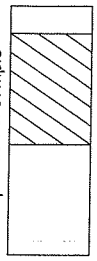
Borehole Number:	BH2
Sample Number:	U2
Depth (m):	4.00

Description:
Firm brown mottled grey silty CLAY

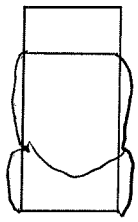
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.6
Diameter (mm):	102.2
Moisture Content (%):	32
Bulk Density (Mg/m³):	1.95
Dry Density (Mg/m³):	1.48
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	80
Strain at failure (%):	14.4
Maximum Deviator Stress (kPa):	136
Shear Stress Cu (kPa):	68

Orientation and position of sample



Mode of failure:



Checked and Approved
Initials: SB
Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

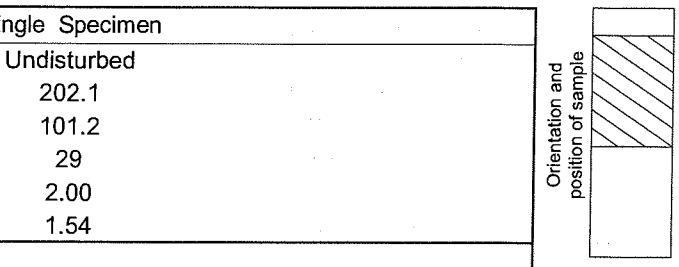
Borehole Number:	BH2
Sample Number:	U3
Depth (m):	6.50

Description:
Firm to stiff fissured grey silty CLAY

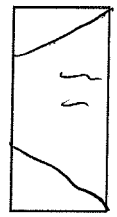
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.1
Diameter (mm):	101.2
Moisture Content (%):	29
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.54
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	130
Strain at failure (%):	9.9
Maximum Deviator Stress (kPa):	155
Shear Stress Cu (kPa):	78

Orientation and position of sample



Mode of failure:



Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

Borehole Number:	BH2
Sample Number:	U4
Depth (m):	9.50

Description:
Firm to stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.9
Diameter (mm):	101.7
Moisture Content (%):	28
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.56
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	190
Strain at failure (%):	4.5
Maximum Deviator Stress (kPa):	172
Shear Stress Cu (kPa):	86

Orientation and position of sample

Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number:

GEO / 17273

Project Name:

6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

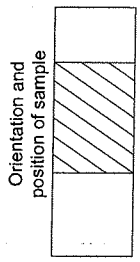
Borehole Number:	BH2
Sample Number:	U5
Depth (m):	12.50

Description:
Firm to stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	101.3
Moisture Content (%):	25
Bulk Density (Mg/m³):	2.05
Dry Density (Mg/m³):	1.64
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	250
Strain at failure (%):	19.8
Maximum Deviator Stress (kPa):	184
Shear Stress Cu (kPa):	92

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

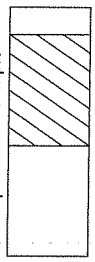
Borehole Number:	BH2
Sample Number:	U6
Depth (m):	15.50

Description:
Firm to stiff fissured grey silty CLAY with rare shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.1
Diameter (mm):	101.4
Moisture Content (%):	28
Bulk Density (Mg/m³):	2.01
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.4
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	310
Strain at failure (%):	5.5
Maximum Deviator Stress (kPa):	179
Shear Stress Cu (kPa):	89

Orientation and position of sample



Mode of failure:

Checked and Approved Initials: SB Date: 31/08/2011	Project Number: GEO / 17273 Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX Job Number J11158	UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

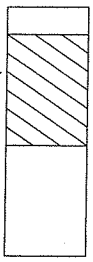
Borehole Number:	BH2
Sample Number:	U7
Depth (m):	18.50

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.4
Diameter (mm):	101.6
Moisture Content (%):	27
Bulk Density (Mg/m³):	2.01
Dry Density (Mg/m³):	1.58
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	370
Strain at failure (%):	8.4
Maximum Deviator Stress (kPa):	240
Shear Stress Cu (kPa):	120

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

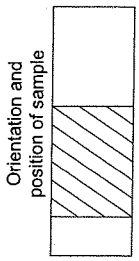
Borehole Number:	BH3
Sample Number:	U1
Depth (m):	2.00

Description:
Firm mottled grey and brown sandy CLAY with rare rootlets

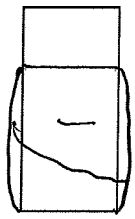
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	101.4
Moisture Content (%):	24
Bulk Density (Mg/m³):	1.95
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	40
Strain at failure (%):	19.3
Maximum Deviator Stress (kPa):	140
Shear Stress Cu (kPa):	70

Orientation and position of sample



Mode of failure:



Checked and Approved Initials: SB Date: 31/08/2011	Project Number: GEO / 17273 Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX Job Number J11158	UKAS TESTING 1982 GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

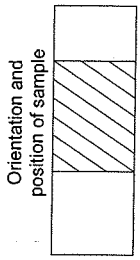
Borehole Number:	BH3
Sample Number:	U2
Depth (m):	5.00

Description:
Firm to stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.3
Diameter (mm):	101.1
Moisture Content (%):	29
Bulk Density (Mg/m³):	1.98
Dry Density (Mg/m³):	1.53
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	100
Strain at failure (%):	8.4
Maximum Deviator Stress (kPa):	176
Shear Stress Cu (kPa):	88

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

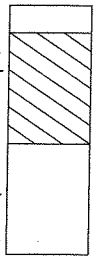
Borehole Number:	BH3
Sample Number:	U3
Depth (m):	8.00

Description:
Firm to stiff fissured grey silty CLAY with rare shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.5
Diameter (mm):	101.5
Moisture Content (%):	29
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.55
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	160
Strain at failure (%):	7.9
Maximum Deviator Stress (kPa):	195
Shear Stress Cu (kPa):	97

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

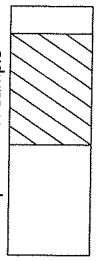
Quick Undrained Triaxial Test

Borehole Number: BH3	Description:
Sample Number: U4	Stiff fissured grey silty CLAY
Depth (m): 11.00	

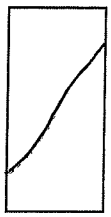
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.4
Diameter (mm):	101.6
Moisture Content (%):	27
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	220
Strain at failure (%):	4.0
Maximum Deviator Stress (kPa):	212
Shear Stress Cu (kPa):	106

Orientation and position of sample



Mode of failure:



Checked and Approved Initials: SB Date: 31/08/2011	Project Number: GEO / 17273 Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX Job Number J11158	UKAS TESTING 1982 GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

Borehole Number:	BH3
Sample Number:	U5
Depth (m):	14.00

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.3
Diameter (mm):	101.7
Moisture Content (%):	29
Bulk Density (Mg/m³):	2.01
Dry Density (Mg/m³):	1.56
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	280
Strain at failure (%):	4.5
Maximum Deviator Stress (kPa):	215
Shear Stress Cu (kPa):	107

Orientation and position of sample

Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number:

GEO / 17273

Project Name:

6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

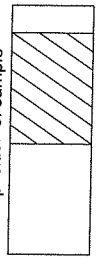
Borehole Number:	BH3
Sample Number:	U6
Depth (m):	17.00

Description:
Stiff fissured grey silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.1
Diameter (mm):	101.8
Moisture Content (%):	28
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.55
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	340
Strain at failure (%):	1.7
Maximum Deviator Stress (kPa):	202
Shear Stress Cu (kPa):	101

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: SB

Date: 31/08/2011

Project Number: GEO / 17273

Project Name: 6 NUTLEY TERRACE, LONDON NW3 5BX

Job Number J11158

UKAS TESTING 1982

GEOLABS ®

Geotechnical & Environmental Associates

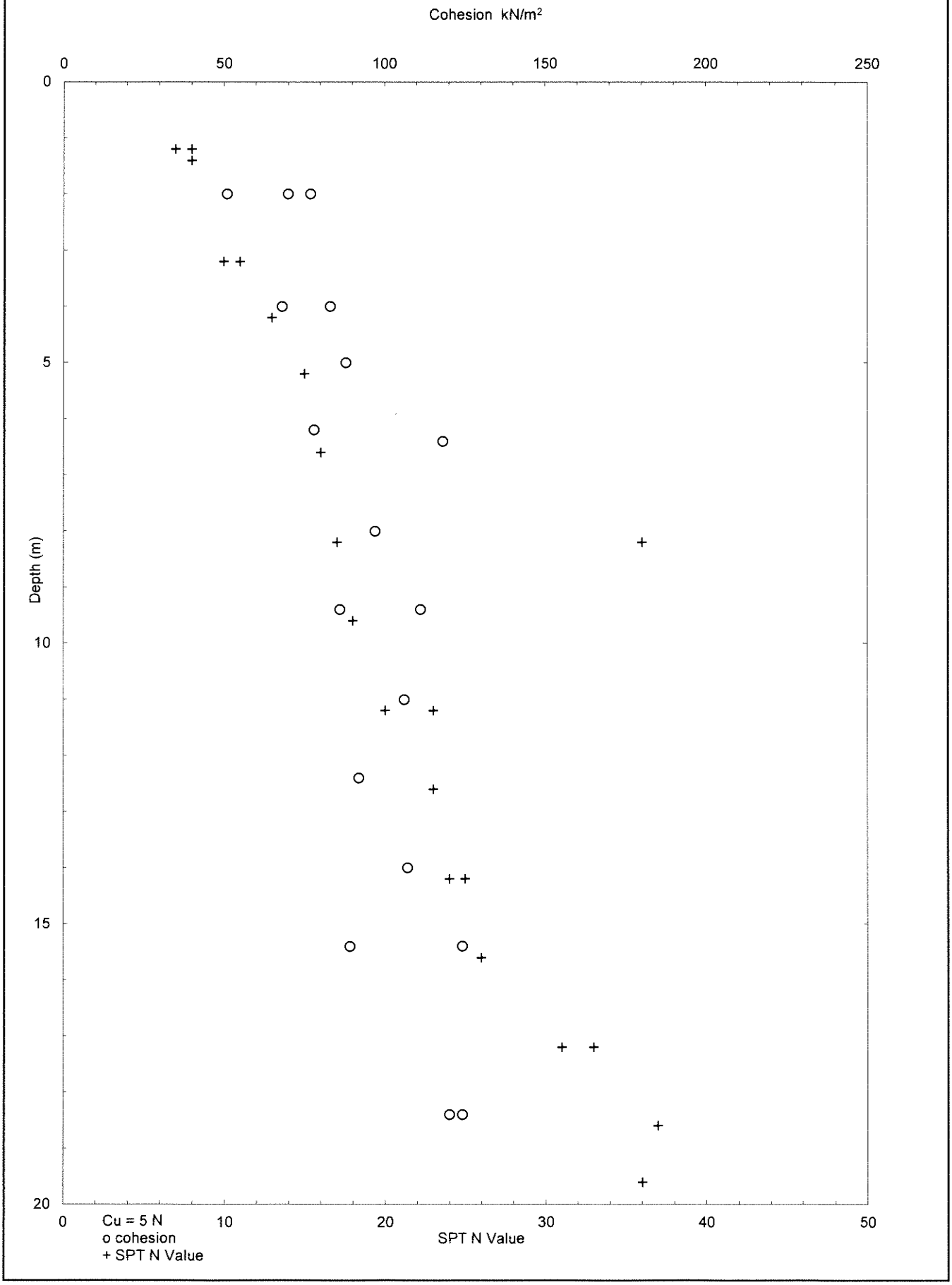
Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

SPT & Cohesion / Depth Graph

Site	6 Nutley Terrace, London, NW3 5BX
Client	Mr Omar Shafi
Engineer	Elliott Wood

Job Number J11158

Sheet 1 / 1

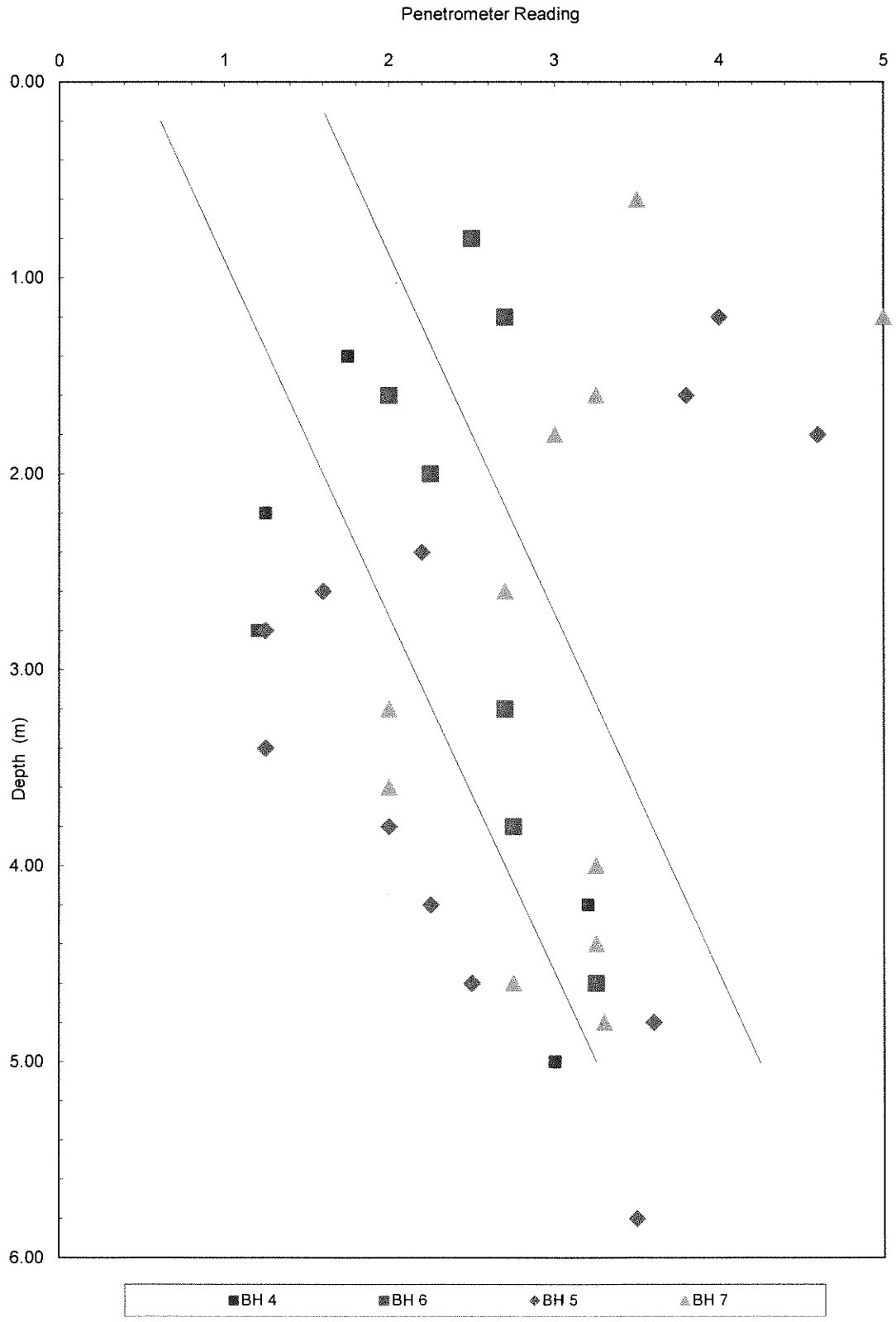


Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

Penetrometer / Depth Graph

Site	6 Nutley Terrace, London, NW3 5BX	**Job Number**	J11158
Client	Mr Omah Shafi	**Sheet**	1 / 1
Engineer	Angelina Varchione / Juliet Fuller		



Solid lines indicate typical equilibrium values for London Clay

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Angelina Varchione

LABORATORY TEST REPORT

Results of analysis of 4 samples
received 15 August 2011

6 Nutley Terrace, London, NW3 5BX J11158

Chemtest
The right chemistry to deliver results

Report Date
23 August 2011

Login Batch No					59285			
Chemtest LIMS ID					AG35417	AG35418	AG35419	AG35420
Sample ID					BH4	BH5	BH6	BH7
Sample No					D1	D1	D1	D1
Sampling Date					12/08/2011	12/08/2011	12/08/2011	12/08/2011
Depth					0.3m	0.2m	0.2m	0.2m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*				
2300	Cyanide (total)	57125	mg kg^{-1}	M	<0.50	<0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg^{-1}	M	1.9	0.77	1.2	0.67
2625	Total Organic Carbon		%	M	2.0	3.7	3.4	3.6
2220	Chloride (extractable)	16887006	g l^{-1}	M	<0.010	<0.010	<0.010	<0.010
2430	Sulfate (total) as SO4		mg kg^{-1}		280	320	360	290
2450	Arsenic	7440382	mg kg^{-1}	M	14	21	20	18
	Cadmium	7440439	mg kg^{-1}	M	0.23	0.43	0.81	0.53
	Chromium	7440473	mg kg^{-1}	M	58	42	29	27
	Copper	7440508	mg kg^{-1}	M	110	38	39	49
	Mercury	7439976	mg kg^{-1}	M	0.30	1.4	0.88	1.6
	Nickel	7440020	mg kg^{-1}	M	93	29	21	16
	Lead	7439921	mg kg^{-1}	M	61	140	250	520
	Selenium	7782492	mg kg^{-1}	M	19	0.51	<0.20	6.0
	Zinc	7440666	mg kg^{-1}	M	1100	130	180	300
2676	TPH >C5-C6		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg^{-1}	U	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C7-C8		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C8-C10		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C10-C12		mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C12-C16		mg kg^{-1}	M	< 0.1	3.9	2.1	1.1
	TPH >C16-C21		mg kg^{-1}	M	< 0.1	4.9	4.4	4.6
	TPH >C21-C35		mg kg^{-1}	M	< 0.1	16	4.4	11
	Total Petroleum Hydrocarbons		mg kg^{-1}	U	< 10	25	11	17
2700	Naphthalene	91203	mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1
	Acenaphthylene	208968	mg kg^{-1}	M	< 0.1	0.11	< 0.1	< 0.1
	Acenaphthene	83329	mg kg^{-1}	M	< 0.1	0.1	< 0.1	< 0.1
	Fluorene	86737	mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1

All tests undertaken between 15/08/2011 and 23/08/2011

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Angelina Varchione

LABORATORY TEST REPORT

Results of analysis of 4 samples
received 15 August 2011

6 Nutley Terrace, London, NW3 5BX J11158

Chemtest
The right chemistry to deliver results

Report Date
23 August 2011

					59285			
					AG35417	AG35418	AG35419	AG35420
					BH4	BH5	BH6	BH7
					D1	D1	D1	D1
					12/08/2011	12/08/2011	12/08/2011	12/08/2011
					0.3m	0.2m	0.2m	0.2m
					SOIL	*SOIL*	*SOIL*	*SOIL*
2700	Phenanthrene	85018	mg kg^{-1}	M	0.48	0.44	0.94	0.37
	Anthracene	120127	mg kg^{-1}	M	< 0.1	< 0.1	0.16	< 0.1
	Fluoranthene	206440	mg kg^{-1}	M	1.2	1.4	1.6	0.75
	Pyrene	129000	mg kg^{-1}	M	1.1	1.2	1.7	0.76
	Benzo[a]anthracene	56553	mg kg^{-1}	M	0.62	0.65	0.89	0.51
	Chrysene	218019	mg kg^{-1}	M	0.6	0.66	0.93	0.49
	Benzo[b]fluoranthene	205992	mg kg^{-1}	M	0.57	0.4	0.76	0.37
	Benzo[k]fluoranthene	207089	mg kg^{-1}	M	0.43	0.53	0.61	0.25
	Benzo[a]pyrene	50328	mg kg^{-1}	M	1.7	3.3	2.9	0.53
	Dibenzo[a,h]anthracene	53703	mg kg^{-1}	M	< 0.1	< 0.1	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg^{-1}	M	0.55	0.56	0.65	0.37
	Benzo[g,h,i]perylene	191242	mg kg^{-1}	M	0.41	0.65	0.77	0.5
	Total (of 16) PAHs		mg kg^{-1}	M	7.7	10	12	4.9
2920	Phenols (total)		mg kg^{-1}	N	<0.3	<0.3	<0.3	<0.3
2010	pH			M	7.5	7.8	7.5	5.3
2030	Moisture		%	n/a	20.8	12.4	18.9	15.6
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02	<0.02
2040	Soil colour			n/a	brown	brown	brown	brown
	Soil texture			n/a	sand	sand	sand	sand
	Other material			n/a	stones	stones	stones	stones

All tests undertaken between 15/08/2011 and 23/08/2011

* Accreditation status

This report should be interpreted in conjuction with the notes on the accompanying cover page.

Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Generic Risk-Based Soil Guideline Values

Site	6 Nutley Terrace
Client	Mr & Mrs Shafi
Engineer	Elliott Wood

Job Number J11158

Sheet 1 / 1

Proposed End Use Residential with plant uptake

Soil pH 8

Soil Organic Matter content % 6.0

Contaminant	Guideline Value mg/kg	Data Source
Metals		
Arsenic	32	SGV
Cadmium	10	SGV
Chromium (III)	3000	LQM/CIEH
Chromium (VI)	4.3	LQM/CIEH
Copper	2,330	LQM/CIEH
Lead	450	withdrawn SGV
Elemental Mercury	1	SGV
Inorganic Mercury	170	SGV
Nickel	130	LQM/CIEH
Selenium	350	SGV
Zinc	3,750	LQM/CIEH
Hydrocarbons		
Benzene	0.33	SGV
Toluene	610	SGV
Ethyl Benzene	350	SGV
Xylene	230	SGV
Aliphatic C5-C6	110	LQM/CIEH
Aliphatic C6-C8	370	LQM/CIEH
Aliphatic C8-C10	110	LQM/CIEH
Aliphatic C10-C12	540	LQM/CIEH
Aliphatic C12-C16	3000	LQM/CIEH
Aliphatic C16-C35	76,000	LQM/CIEH
Aromatic C6-C7	See Benzene	LQM/CIEH
Aromatic C7-C8	See Toluene	LQM/CIEH
Aromatic C8-C10	151	LQM/CIEH
Aromatic C10-C12	346	LQM/CIEH
Aromatic C12-C16	593	LQM/CIEH
Aromatic C16-C21	770	LQM/CIEH
Aromatic C21-C35	1230	LQM/CIEH
PRO (C_5 –C_{10})	1351	Calc
DRO (C_{12} –C_{28})	80,363	Calc
Lube Oil (C_{28} –C_{44})	77,230	Calc
TPH	**500**	Trigger for speciated testing

Contaminant	Guideline Value mg/kg	Data Source
Anions		
Soluble Sulphate	0.5 g/l	Structures
Sulphide	50	Structures
Chloride	400	Structures
Others		
Organic Carbon	6	Methanogenic potential
Total Cyanide	140	WRAS
Total Mono Phenols	420	SGV
PAH		
Naphthalene	8.70	LQM/CIEH
Acenaphthylene	850	LQM/CIEH
Acenaphthene	1,000	LQM/CIEH
Fluorene	780	LQM/CIEH
Phenanthrene	380	LQM/CIEH
Anthracene	9,200	LQM/CIEH
Fluoranthene	670	LQM/CIEH
Pyrene	1,600	LQM/CIEH
Benzo(a) Anthracene	5.9	LQM/CIEH
Chrysene	9	LQM/CIEH
Benzo(b) Fluoranthene	7.0	LQM/CIEH
Benzo(k) Fluoranthene	10.0	LQM/CIEH
Benzo(a) pyrene	1.00	LQM/CIEH
Indeno(1 2 3 cd) Pyrene	4.2	LQM/CIEH
Dibenzo(a h) Anthracene	0.90	LQM/CIEH
Benzo (g h i) Perylene	47	LQM/CIEH
Total PAH	**6.7**	B(a)P / 0.15
Chlorinated Solvents		
1,1,1 trichloroethane (TCA)	28	LQM/CIEH
tetrachloroethane (PCA)	4.8	LQM/CIEH
tetrachloroethene (PCE)	4.8	LQM/CIEH
trichloroethene (TCE)	0.49	LQM/CIEH
1,2-dichloroethane (DCA)	0.014	LQM/CIEH
vinyl chloride (Chloroethene)	0.00099	LQM/CIEH
tetrachloromethane (Carbon tetra	0.089	LQM/CIEH
trichloromethane (Chloroform)	2.7	LQM/CIEH

Notes

Concentrations measured below the above values may be considered to represent 'uncontaminated conditions' which do not pose a risk to human health. Concentrations measured in excess of these valuesindicate a potential risk, and thus require further, site specific risk assessment.

SGV - Soil Guideline Value, derived from the CLEA model and published by Environment Agency 2009

withdrawn SGV - Former SGV, derived from the CLEA 2000 model and published by DEFRA pending confirmation of new approach to modeling lead

LQM/CIEH - Generic Assessment Criteria for Human Health Risk Assessment 2nd edition (2009)derived using CLEA 1.04 model 2009

Calc - sum of nearest available carbon range specified including BTEX for PRO fraction

B(a)P / 0.15 - GEA experince indicates that Benzo(a) pyrene (one of the most common and most carcenogenic of the PAHs) rarely exceeds 15% of the total PAH concentration, hence this Total PAH threshold is regarded as being conservative

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
35611722_1_1

Customer Reference:
J11158

National Grid Reference:
526640, 184960

Slice:
A

Site Area (Ha):
0.14

Search Buffer (m):
1000

Site Details:

6 Nutley Terrace
LONDON
NW3 5BX

Client Details:

Mr S Branch
GEA Ltd
Tyttenhanger House
Corsers Road
St Albans
Herts
AL4 0PG

Prepared For:

Mr Omar Shafi

Contents

Introduction

The Environment Act 1995 has made site sensitivity a key issue, as the legislation pays as much attention to the pathways by which contamination could spread, and to the vulnerable targets of contamination, as it does the potential sources of contamination.
For this reason, Landmark's Site Sensitivity maps and Datasheet(s) place great emphasis on statutory data provided by the Environment Agency and the Scottish Environment Protection Agency; it also incorporates data from Natural England (and the Scottish and Welsh equivalents) and Local Authorities; and highlights hydrogeological features required by environmental and geotechnical consultants. It does not include any information concerning past uses of land. The datasheet is produced by querying the Landmark database to a distance defined by the client from a site boundary provided by the client.

In the attached datasheet the National Grid References (NGRs) are rounded to the nearest 10m in accordance with Landmark's agreements with a number of Data Suppliers.

Copyright Notice

Natural England Copyright Notice

Ove Arup Copyright Notice

Peter Brett Associates Copyright Notice

Radon Potential dataset Copyright Notice

Report Version v47.0

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents					
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 1		1	5	11
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 3				Yes
Pollution Incidents to Controlled Waters					
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances	pg 3				37
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions	pg 10				1 (*2)
Water Industry Act Referrals					
Groundwater Vulnerability	pg 10	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 10	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones	pg 10			1	
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites	pg 12				1
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites	pg 12			2	
Registered Waste Treatment or Disposal Sites					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS Recorded Mineral Sites					
BGS 1:625,000 Solid Geology	pg 13	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 13	Yes	Yes	n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 13	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 13		Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 13	Yes	Yes	n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 14		7	32	136
Fuel Station Entries	pg 28			1	2

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 29				1
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Local Authority Pollution Prevention and Controls** Name: Pyramid Cleaners Location: 52 Besize Lane, London, Nw3 5ar Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC8 Dated: 1st January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A13NE (E)	224	1	526872 184985
2	**Local Authority Pollution Prevention and Controls** Name: B P Harmony Location: 104a Finchley Road, London, NW3 5EY Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 1st July 1999 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Automatically positioned to the address	A8NW (S)	408	1	526471 184554
2	**Local Authority Pollution Prevention and Controls** Name: Bp Harmony Location: 104a Finchley Road, LONDON, NW3 5EY Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC18 Dated: 1st July 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A8NW (S)	408	1	526471 184554
3	**Local Authority Pollution Prevention and Controls** Name: Hampstead Express Dry Cleaning Location: 279a Finchley Road, London, Nw3 6lt Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC6 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A12SE (W)	447	1	526178 184902
3	**Local Authority Pollution Prevention and Controls** Name: Janets Hand Laundry Ltd Location: 281a Finchley Road, London, Nw3 6nd Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC14 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A12SE (W)	457	1	526167 184924
4	**Local Authority Pollution Prevention and Controls** Name: Is Dry Cleaners Location: 6 Canfield Gardens, London, Nw6 3bs Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC18 Dated: 5th February 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A12SE (SW)	456	1	526257 184662
5	**Local Authority Pollution Prevention and Controls** Name: Belsize Park Service Station Location: 215 Haverstock Hill, LONDON, NW3 4RE Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC21 Dated: 2nd January 1999 Process Type: Local Authority Pollution Prevention and Control Description: PG1/14 Petrol filling station **Status: Permitted** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	589	1	527187 185227

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
6	**Local Authority Pollution Prevention and Controls** Name: Kings Location: 25 Winchester Road, London, E4 Authority: London Borough of Waltham Forest, Environmental Health Department Permit Reference: DC05 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A8NE (S)	646	2	526812 184310
7	**Local Authority Pollution Prevention and Controls** Name: Swiss Cottage Dry Cleaners Location: 121 Finchley Road, London, Nw3 6hy Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC10 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A8SW (S)	663	1	526626 184270
8	**Local Authority Pollution Prevention and Controls** Name: Perkins Dry Cleaners Location: 171 Haverstock Hill, London, Nw3 4qs Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC7 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A14NE (E)	698	1	527342 185055
8	**Local Authority Pollution Prevention and Controls** Name: Swan Dry Cleaners Location: 163 Haverstock Hill, London, Nw3 4qt Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC42 Dated: 24th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A14NE (E)	725	1	527371 185032
9	**Local Authority Pollution Prevention and Controls** Name: The Royal Free Hospital Location: Pond Street, LONDON, NW3 2QG Authority: London Borough of Camden, Pollution Projects Team Permit Reference: Not Given Dated: 24th July 1992 Process Type: Local Authority Air Pollution Control Description: PG5/1Clinical waste incineration processes under 1 tonne an hour **Status: Authorisation revokedRevoked** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	773	1	527296 185410
10	**Local Authority Pollution Prevention and Controls** Name: Perkins Dry Cleaners Location: 40 Heath Street, London, Nw3 6te Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC9 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A18NW (N)	781	1	526374 185724
11	**Local Authority Pollution Prevention and Controls** Name: Sqweaky Clean Professional Dry Cleaners Location: 13 Fairhazel Gardens, London, Nw6 3qe Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC37 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	888	1	526237 184134

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
11	**Local Authority Pollution Prevention and Controls** Name: Connoisseur Dry Cleaners Location: 3-5 Fairhazel Gardens, London, Nw6 3qe Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC11 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A7SE (SW)	891	1	526262 184119
12	**Local Authority Pollution Prevention and Controls** Name: Chequers Textile Care Ltd Location: 48 Englands Lane, London, Nw3 4ue Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC47 Dated: 5th December 2006 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A9NE (SE)	919	1	527498 184580
13	**Local Authority Pollution Prevention and Controls** Name: Masterclean Dry Cleaners Location: 6 Langtry Walk, London, Nw8 0du Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC38 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A8SW (S)	968	1	526352 184004
	Nearest Surface Water Feature	A8NE (S)	638	-	526760 184307
14	**Registered Radioactive Substances** Name: Royal Free Hampstead NHS Trust Location: Royal Free Hospital, Pond Street, Hampstead, LONDON, Greater London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: AV8011 Dated: 25th October 1996 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	764	3	527292 185400
14	**Registered Radioactive Substances** Name: Royal Free Hampstead Nhs Trust Location: Royal Free Hospital, Pond Street, Hampstead, LONDON, Greater London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: AT8398 Dated: 17th January 1996 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	767	3	527292 185405
14	**Registered Radioactive Substances** Name: Royal Free And University College Medical School Of University College London Location: Royal Free Hospital, Pond Street, London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: Bz9758 Dated: 5th January 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	769	3	527299 185399

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Registered Radioactive Substances** Name: Royal Free And University College Medical School Of University College London Location: Royal Free Hospital, Pond Street, London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: By6010 Dated: 3rd August 2005 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	769	3	527299 185399
14	**Registered Radioactive Substances** Name: Royal Free And University College Medical School Of University College London Location: Royal Free Hospital, Pond Street, London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: Bw7635 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	769	3	527299 185399
14	**Registered Radioactive Substances** Name: Royal Free And University College Medical School Of University College London Location: Royal Free Hospital, Pond Street, London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: Bj5694 Dated: 14th February 2001 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	769	3	527299 185399
14	**Registered Radioactive Substances** Name: Royal Free Hampstead Nhs Trust Location: Royal Free Hospital, Pond Street, Hampstead, LONDON, Greater London, NW3 2QG Authority: Environment Agency, Thames Region Permit Reference: AR0446 Dated: 12th July 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A19SW (NE)	769	3	527292 185410
14	**Registered Radioactive Substances** Name: Anthony Nolan Trust (Ant) Location: Fleet Road, London, NW3 2QR Authority: Environment Agency, Thames Region Permit Reference: CB1915 Dated: 2nd October 2007 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Minor variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Manually positioned to the address or location	A19SW (NE)	773	3	527296 185410

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
16	**Water Abstractions** Operator: London Borough Of Camden Licence Number: 28/39/39/0219 Permit Version: 1 Location: Swiss Cottage Open Space- Borehole Authority: Environment Agency, Thames Region Abstraction: Municipal Grounds: Spray Irrigation - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Swiss Cottage Open Space, Winchester Road, London. Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2008 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A8SE (S)	672	3	526800 184280
	Water Abstractions Operator: Thames Water Utilities Ltd Licence Number: 28/39/39/0231 Permit Version: 1 Location: Barrow Hill Pumping Station - Borehole Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Barrow Hill Pumping Station Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 1st April 2007 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	1591	3	527640 183690
	Water Abstractions Operator: Thames Water Utilities Ltd Licence Number: 28/39/39/0202 Permit Version: 1 Location: Barrow Hill Pumping Station - Borehole Authority: Environment Agency, Thames Region Abstraction: Public Water Supply: Potable Water Supply - Direct Abstraction Type: Water may be abstracted from a single point Source: Groundwater Daily Rate (m3): Not Supplied Yearly Rate (m3): Not Supplied Details: Barrow Hill Pumping Station Authorised Start: 01 January Authorised End: 31 December Permit Start Date: 26th September 2002 Permit End Date: Not Supplied Positional Accuracy: Located by supplier to within 10m	A4NE (SE)	1591	3	527640 183690
	Groundwater Vulnerability Soil Classification: Not classified Map Sheet: Sheet 39 West London Scale: 1:100,000	A13SW (NW)	0	3	526637 184960
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Desination: Unproductive Strata	A13SW (NW)	0	4	526637 184960
	Superficial Aquifer Designations No Data Available				
17	**Source Protection Zones** Name: Barrow Hill Source: Environment Agency, Head Office Reference: Th405 Type: Zone II (Outer Protection Zone): Either 25% of the source area or a 400 day travel time whichever is greater.	A8NE (SE)	371	3	526819 184605
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
18	**Historical Landfill Sites** Licence Holder: Not Supplied Location: London NW6 Name: Canfield Place Operator Location: Not Supplied Boundary Accuracy: As Supplied Provider Reference: EAHLD12043 First Input Date: Not Supplied Last Input Date: Not Supplied Specified Waste Type: Not Supplied EA Waste Ref: 0 Regis Ref: Not Supplied WRC Ref: Not Supplied BGS Ref: Not Supplied Other Ref: DON009	A12SE (W)	566	3	526071 184814
	Local Authority Landfill Coverage Name: London Borough of Camden - Has no landfill data to supply		0	6	526637 184960
19	**Registered Waste Transfer Sites** Licence Holder: P B Donoghue Licence Reference: DL140 Site Location: BR Goods Yard at 269 Finchley Road, CAMDEN, London, NW3 Operator Location: As Site Address Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Licence lapsed/cancelled/defunct/not applicable/surrenderedCancelled Dated: 1st February 1992 Preceded By Licence: DL140 Superseded By Licence: Not Given Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Lwra Cat. A = Inert Wastes Lwra Cat. Bi Gen.Non-Putresc Max.Waste Permitted By Licence-Stated Prohibited Waste: Clinical - As In Coll/Disp.Regs Of '88 Liquid/Slurry/Sludge Wastes Poisonous, Noxious, Polluting Wastes Special Wastes Waste N.O.S.	A12SE (W)	451	3	526200 184780
19	**Registered Waste Transfer Sites** Licence Holder: P B Donoghue Licence Reference: DL140 Site Location: BR Goods Yard, 269 Finchley Road, CAMDEN, London, NW3 Operator Location: As Site Address Authority: Environment Agency - Thames Region, North East Area Site Category: Transfer Max Input Rate: Medium (Equal to or greater than 25,000 and less than 75,000 tonnes per year) Waste Source Restrictions: No known restriction on source of waste Licence Status: Record supersededSuperseded Dated: 1st August 1983 Preceded By Licence: Not Given Superseded By Licence: DL140 Positional Accuracy: Manually positioned to the address or location Boundary Quality: Not Supplied Authorised Waste: Commercial Waste Construction Ind. Wastes Max.Waste Permitted By Licence(Stated) Prohibited Waste: Clinical Waste -Clause 2 & 4 Hsc 1982 Notifiable Wastes Putrescible Waste Special Wastes	A12SE (W)	451	3	526200 184780

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13SW (NW)	0	4	526637 184960
	Coal Mining Affected Areas In an area which may not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	10	4	526637 185000
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	10	4	526637 185000
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	10	4	526637 185000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	10	4	526637 185000
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13NE (N)	61	4	526660 185050
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	10	4	526637 185000
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SW (NW)	0	4	526637 184960

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
20	**Contemporary Trade Directory Entries** Name: Continental Autos Location: 10, Daleham Mews, London, NW3 5DB Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	100	-	526749 184917
20	**Contemporary Trade Directory Entries** Name: Daleham Garage Location: 14, Daleham Mews, London, NW3 5DB Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	107	-	526749 184894
20	**Contemporary Trade Directory Entries** Name: Comac Motors Location: 19, Daleham Mews, London, NW3 5DB Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (E)	122	-	526770 184911
20	**Contemporary Trade Directory Entries** Name: Auto Reliant Suspension Co Location: 25, Daleham Mews, London, NW3 5DB Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	128	-	526768 184884
20	**Contemporary Trade Directory Entries** Name: Mr Lewis Cohens Fry Cleaning Co Location: 90, Belsize Lane, London, NW3 5BE Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	148	-	526784 184870
21	**Contemporary Trade Directory Entries** Name: Ampersand Location: 37c, Maresfield Gardens, London, NW3 5SG Classification: Lampshade Manufacturers & Distributors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (W)	202	-	526425 184896
22	**Contemporary Trade Directory Entries** Name: Pyramid Location: 52, Belsize Lane, London, NW3 5AR Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (E)	226	-	526874 184984
23	**Contemporary Trade Directory Entries** Name: Hairaway Location: 128, Finchley Road, London, NW3 5HT Classification: Electrolysis **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	360	-	526308 184759
23	**Contemporary Trade Directory Entries** Name: Wilkinson Freed (Veneers) Ltd Location: 124, Finchley Road, London, NW3 5HT Classification: Veneer Manufacturers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A13SW (SW)	362	-	526319 184738
24	**Contemporary Trade Directory Entries** Name: Clean 4 You Location: 55, Belsize Park, London, NW3 4EE Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NE (S)	363	-	526650 184571
25	**Contemporary Trade Directory Entries** Name: S E Ltd Location: 8, Frognal, London, NW3 6AJ Classification: Textile Manufacturing **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	371	-	526253 184987
26	**Contemporary Trade Directory Entries** Name: Cross Weir Ltd Location: Barkat House, 116-118, Finchley Road, London, NW3 5HT Classification: Valve Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SW (SW)	379	-	526376 184647

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
27	**Contemporary Trade Directory Entries** Name: Gerald Wise & Co Ltd Location: 225a, Finchley Road, London, NW3 6LP Classification: Metal Industries - Primary **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	402	-	526286 184714
27	**Contemporary Trade Directory Entries** Name: Quicksilver Refiners Ltd Location: 225a, Finchley Road, London, NW3 6LP Classification: Metal Industries - Primary **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	402	-	526286 184714
27	**Contemporary Trade Directory Entries** Name: Colorama Location: Flat 1, 223, Finchley Road, London, NW3 6LP Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12SE (SW)	403	-	526293 184703
28	**Contemporary Trade Directory Entries** Name: Bp Hampstead Service Station Location: A, 104, Finchley Road, London, NW3 5EY Classification: Petrol Filling Stations - 24 Hour **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	408	-	526471 184554
29	**Contemporary Trade Directory Entries** Name: American Wheels Location: 16, Frognal Parade, London, NW3 5HH Classification: Car Customisation & Conversion Specialists **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	417	-	526207 184939
30	**Contemporary Trade Directory Entries** Name: Snappy Snaps Location: 189, Finchley Road, London, NW3 6LB Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	437	-	526365 184581
30	**Contemporary Trade Directory Entries** Name: Robert Dyas Ltd Location: 183, Finchley Road, London, NW3 6LB Classification: Hardware **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	446	-	526368 184568
30	**Contemporary Trade Directory Entries** Name: H Khan Location: 17, Goldhurst Terrace, London, NW6 3HX Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	484	-	526333 184546
30	**Contemporary Trade Directory Entries** Name: Silk Dry Cleaner Location: 17, Goldhurst Terrace, London, NW6 3HX Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	484	-	526333 184546
30	**Contemporary Trade Directory Entries** Name: Silk Dry Cleaning Location: 17, Goldhurst Terrace, London, NW6 3HX Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	484	-	526333 184546
31	**Contemporary Trade Directory Entries** Name: Capacity Uk Ltd Location: 1-3, Canfield Place, London, NW6 3BT Classification: Clothing & Fabrics - Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	445	-	526251 184691
31	**Contemporary Trade Directory Entries** Name: L T C Distribution Location: 1-3, Canfield Place, London, NW6 3BT Classification: Distribution Services **Status: Active** Positional Accuracy: Manually positioned to the address or location	A12SE (SW)	445	-	526251 184691

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
31	**Contemporary Trade Directory Entries** Name: Esquire Location: 6, Canfield Gardens, London, NW6 3BS Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	458	-	526255 184661
31	**Contemporary Trade Directory Entries** Name: Oil & Gas Services Group Ltd Location: 4-6, Canfield Place, London, NW6 3BT Classification: Oil & Gas Exploration Supplies & Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (SW)	472	-	526222 184685
32	**Contemporary Trade Directory Entries** Name: Clothes Clinic Location: 279a, Finchley Road, London, NW3 6LT Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	451	-	526174 184901
32	**Contemporary Trade Directory Entries** Name: Clothes Clinic Location: 279a, Finchley Road, LONDON, NW3 6LT Classification: Dry Cleaners **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	451	-	526174 184901
33	**Contemporary Trade Directory Entries** Name: Kwik-Fit Location: 1, Northways Parade, London, NW3 5EN Classification: Tyre Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (S)	453	-	526596 184482
33	**Contemporary Trade Directory Entries** Name: Speedway Autocare Ltd Location: 1, Northways Parade, London, NW3 5EN Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	453	-	526596 184482
34	**Contemporary Trade Directory Entries** Name: Accel Pest Control Location: 176, Finchley Road, London, NW3 6BT Classification: Pest & Vermin Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	455	-	526169 185011
34	**Contemporary Trade Directory Entries** Name: A Professional Domestic Service Location: 176, Finchley Road, London, NW3 6BT Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	455	-	526169 185011
34	**Contemporary Trade Directory Entries** Name: 1st Damp Line Ltd Location: 176, Finchley Road, London, NW3 6BT Classification: Damp & Dry Rot Control **Status: Active** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	455	-	526169 185011
34	**Contemporary Trade Directory Entries** Name: Diamond Location: 190, Finchley Road, London, NW3 6BX Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	484	-	526143 185037
34	**Contemporary Trade Directory Entries** Name: T & T Cleaning Services Location: 190, Finchley Road, London, NW3 6BX Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	484	-	526143 185037
34	**Contemporary Trade Directory Entries** Name: Clean Line Location: 307c Finchley Rd, London, NW3 6EH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the road within the address or location	A12NE (W)	501	-	526124 185020

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
35	**Contemporary Trade Directory Entries** Name: Agfa-Digital Photosnap Ltd Location: 171, Finchley Road, London, NW3 6LB Classification: Photographic Processors **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (SW)	459	-	526419 184522
36	**Contemporary Trade Directory Entries** Name: Ariana Hand Laundry Location: 281a, Finchley Road, London, NW3 6ND Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	461	-	526164 184922
36	**Contemporary Trade Directory Entries** Name: Printing Works The Location: 287, Finchley Road, London, NW3 6ND Classification: Printers **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12SE (W)	467	-	526157 184941
36	**Contemporary Trade Directory Entries** Name: Multiload Technology Ltd Location: 2, Rosemont Road, London, NW3 6NE Classification: Lighting Manufacturers **Status: Active** Positional Accuracy: Automatically positioned to the address	A12SE (W)	479	-	526145 184945
36	**Contemporary Trade Directory Entries** Name: Ron'S Garage Location: 6, Rosemont Road, London, NW3 6NE Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SE (W)	502	-	526122 184934
37	**Contemporary Trade Directory Entries** Name: Trans-World Trading Ltd Location: 24, Northways Parade, London, NW3 5DN Classification: Photographic Equipment & Supplies - Wholesale **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	505	-	526630 184429
37	**Contemporary Trade Directory Entries** Name: Smart Choice Location: 23, Northways Parade, London, NW3 5DN Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A8NW (S)	505	-	526630 184429
38	**Contemporary Trade Directory Entries** Name: Cleanline Location: First Floor, 307, Finchley Road, London, NW3 6EH Classification: Commercial Cleaning Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A12NE (W)	515	-	526109 185007
38	**Contemporary Trade Directory Entries** Name: London Crystal Ltd Location: 307c, Finchley Road, London, NW3 6EH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12NE (W)	515	-	526109 185007
38	**Contemporary Trade Directory Entries** Name: Cleanline Location: 307C, Finchley Road, London, NW3 6EH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	515	-	526109 185007
38	**Contemporary Trade Directory Entries** Name: Clean Line Location: 307c, Finchley Road, London, NW3 6EH Classification: Commercial Cleaning Services **Status: Inactive** Positional Accuracy: Manually positioned to the address or location	A12NE (W)	515	-	526109 185007
39	**Contemporary Trade Directory Entries** Name: Bonsai Breakdown Location: Flat 7, Noel House, Harben Road, London, NW6 4RL Classification: Car Breakdown & Recovery Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8NW (S)	522	-	526510 184423

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
91	**Contemporary Trade Directory Entries** Name: Francis Butlin Location: 73, Loudoun Road, London, NW8 0DQ Classification: Art Restoration & Picture Cleaning **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	977	-	526346 183997
91	**Contemporary Trade Directory Entries** Name: Thorne Henderson Location: 79, Loudoun Road, London, NW8 0DQ Classification: Distribution Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A8SW (S)	977	-	526346 183997
91	**Contemporary Trade Directory Entries** Name: Susan M Moore Fbapcr Location: 73, Loudoun Road, London, NW8 0DQ Classification: Art Restoration & Picture Cleaning **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A8SW (S)	977	-	526346 183997
92	**Contemporary Trade Directory Entries** Name: Kronus (Uk) Ltd Location: 6, Park End, London, NW3 2SE Classification: Catering Equipment **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A19NW (NE)	980	-	527263 185752
93	**Contemporary Trade Directory Entries** Name: Mercedes Benz Location: Blackburn Road, London, NW6 1RZ Classification: Car Dealers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A12SW (W)	986	-	525655 184753
94	**Contemporary Trade Directory Entries** Name: Maximus Property Services Ltd Location: 459, Finchley Road, LONDON, NW3 6HN Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A17SW (W)	995	-	525683 185306
94	**Contemporary Trade Directory Entries** Name: Curtains & Blinds Location: 459, Finchley Road, London, NW3 6HN Classification: Blinds, Awnings & Canopies **Status: Active** Positional Accuracy: Automatically positioned to the address	A17SW (W)	995	-	525683 185306
95	**Contemporary Trade Directory Entries** Name: All Rubbish Cleared Location: Redington Rd, London, NW3 7QX Classification: Rubbish Clearance **Status: Active** Positional Accuracy: Manually positioned to the road within the address or location	A17NW (NW)	1000	-	525919 185694
96	**Fuel Station Entries** Name: Hampstead Connect Location: 104a, Finchley Road, London, NW3 5EY Brand: BP Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A8NW (S)	408	-	526471 184554
97	**Fuel Station Entries** Name: Belsize Park Self Serve Location: Belzier Park Service Station, 215, Haverstock Hill, London, NW3 4QE Brand: BP Premises Type: Petrol Station **Status: Open** Positional Accuracy: Automatically positioned to the address	A14NW (NE)	589	-	527187 185227
98	**Fuel Station Entries** Name: Boundary Road Service Station Location: 150 Loudon Road, St Johns Wood, LONDON, NW8 0DH Brand: Total Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A8SW (S)	993	-	526423 183961

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
99	**Local Nature Reserves** Name: Belsize Wood Multiple Area: N Area (m2): 2722.98 Source: Natural England Designation Date: 1st October 2004	A14NE (E)	866	5	527479 185232

Useful Contacts

Contact	Name and Address	Contact Details
1	**London Borough of Camden - Pollution Projects Team** Seventh Floor, Town Hall Extension, Argyle Street, London, WC1H 8EQ	Telephone: 020 7278 4444 Fax: 020 7860 5713 Website: www.camden.gov.uk
2	**London Borough of Waltham Forest - Environmental Health Department** 154 Blackhorse Road, Walthamstow, London, E17 6NW	Telephone: 020 8496 3000 Fax: 0181 524 8960 Website: www.lbwf.gov.uk
3	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
4	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
5	**Natural England** Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
6	**London Borough of Camden** Town Hall, Judd Street, London, WC1H 9JE	Telephone: 020 7974 4444 Fax: 020 7974 6866 Email: info@camden.gov.uk Website: www.camden.gov.uk
-	**Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	**Landmark Information Group Limited** The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

Please note that the Environment Agency / SEPA have a charging policy in place for enquiries.