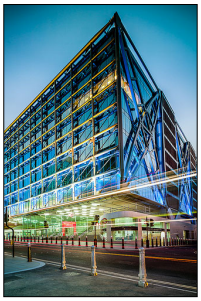
GROUND INVESTIGATION REPORT AND BASEMENT IMPACT ASSESSMENT

Nice Place
Compton Avenue
London N6 4LH

Client: Yuhong Tang

J22272

March 2026



GEA

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This report is intended as a Ground Investigation Report (GIR) as defined in BS EN1997-2, unless specifically noted otherwise. The report is not a Geotechnical Design Report (GDR) as defined in EN1997-2 and recommendations made within this report are for guidance only.

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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 has been prepared on the basis of a ground investigation carried out by Geotechnical and Environmental Associates Limited (GEA) in 2011, on the instructions of Yuhong Tang , with respect to the proposed development to include the complete demolition of 'Nice Place' to allow for the construction of a new three-storey house with a double level basement, extending to a depth of about 8.00 m. The purpose of the work was to research the history of the site, to assess the ground conditions, to provide a preliminary assessment of the presence of contamination and to provide information for the design of suitable foundations and retaining walls. The site is located within the London Borough of Haringey, but for the purpose of the Basement Impact Assessment the approach followed by the London Borough of Camden CPG Basements document has largely been adopted as it is now widely known and is considered to provide a robust approach to the issues of potential concern. This version of the report is an update of the previously issued report (reference J11150B, dated 27th March, 2020) to reflect updated guidance, planning requirements and best practice.

SITE HISTORY

At the time of the earliest Ordnance Survey map, dated 1870, the site was undeveloped within an area of woodland known as Bishop's Wood, to the north of Hampstead Heath. The site was first developed some time between 1920 and 1936 with a detached property, while the existing Far End building appears to have been constructed on the adjacent site to the south. Annotation on the map dated 1952 indicates that the property on the site was known as Bishop's Lodge. By 1975, Bishop's Lodge had been extended to form the existing layout, although it did not become known as Nice Place until sometime between 1991 and 1992. The site and surrounding area have remained essentially unchanged since that time until the present day.

GROUND CONDITIONS

Beneath a moderate thickness of made ground, the Claygate Member of the London Clay Formation was encountered and was underlain by the London Clay, which was proved to the maximum depth investigated. Made ground was encountered to depths of between 0.20 m (103.75 m OD) and 1.60 m (101.63 m OD) and generally comprised light brown and brown very silty sandy clay with roots, rootlets and occasional brick fragments. The underlying Claygate Member initially comprised firm brown mottled orange-brown and grey very silty very sandy clay with pockets of orange-brown fine sand to depths of between 3.30 m (100.15 m OD) and 4.10 m (98.51 m OD). In Borehole Nos 1, 2, 3, 6 and 7, this horizon was noted to be stiff to depths of between 1.20 m (101.41 m OD) and 3.30 m (100.18 m OD) and has been assessed as being desiccated. Below the initial horizon, firm becoming stiff dark greenish grey silty sandy clay was encountered to the maximum depth investigated in the opendrive sampler boreholes, of 7.45 m (95.16 m OD), and to depths of between 7.80 m (95.43 m OD) and 14.50 m (89.45 m OD) in the cable percussion boreholes. Below these depths, the London Clay was encountered and comprised stiff becoming very stiff brownish grey silty fissured clay with occasional shell fragments, which was proved to the maximum depth investigated, of 25.00 m (78.23 m OD).

Contamination testing has revealed elevated concentrations of total PAH, including benzo(a)pyrene, and a single elevated concentration of lead within the made ground. Inflows of groundwater were encountered in the Claygate Member at depths of between 4.00 m (98.73 m OD) and 9.20 m (94.75 m OD). Monitoring of the standpipes installed in four of the boreholes was carried out on two occasions over a one-month period in August 2011 and recorded groundwater at depths of between 1.01 m (102.22 m OD) and 2.46 m (101.49 m OD). The standpipes were monitored again about three years later in April 2014, and groundwater was measured at depths of 1.34 m (102.61 m OD) and 1.42 m (102.23 m OD and 101.81 m OD).

RECOMMENDATIONS

Excavations for the proposed basement structure will require temporary support to maintain stability and to prevent any excessive ground movements. Based on the groundwater observations to date, groundwater is likely to be encountered within the 6.5 m deep basement excavation and therefore some form of bored pile wall is likely to be the best of option of supporting the basement excavation. Spread foundations excavated from basement level to bear within the firm clay of the Claygate Member may be designed to provide an allowable bearing pressure of 150 kN/m^2, provided that groundwater inflows can be sufficiently controlled. On the basis of the chemical testing, remedial measures, in order to protect end users should not be required.

BASEMENT IMPACT ASSESSMENT

It has been concluded that the majority of the impacts identified can be mitigated by appropriate design and standard construction practice. Groundwater is expected to be present at shallow depth beneath the site although inflows from within the Claygate Member would be expected to occur at a very slow rate such that they could be suitably controlled by sump pumping. The proposed works are not considered likely to have any detrimental effect on the local groundwater regime.

GROUND MOVEMENT ASSESSMENT CONCLUSIONS

The analysis has concluded that the predicted damage to the neighbouring properties from the demolition of the existing house, installation of the retaining walls and basement excavation would generally be 'Negligible'. A monitoring strategy is recommended for the proposed construction and the horizontal movements outlined in this report to limit the predicted movement to Category 0 - Negligible, should be incorporated into the strategy. It is recommended that movement monitoring is carried out on all structures prior to and during the proposed basement construction.

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 Limited (GEA) has been commissioned by Constructure, on behalf of Yuhong Tang , to complete a desk study, ground investigation and Basement Impact Assessment at the site of Nice Place, Compton Avenue, London N6 4LH. The site was initially investigated in 2011 when a redevelopment of both this site and the site immediately to the south, known as 'Far End', was proposed, which did not subsequently proceed. The information from this original investigation has been used as the basis of this report.

Although the site is located within the London Borough of Haringey, for the purpose of the Basement Impact Assessment the Haringey guidance has been supplemented by the approach followed by the London Borough of Camden CPG Basements document as it is now widely known and is considered to provide a robust approach to the issues of potential concern.

This report is an updated of a previous GEA report (Report reference J11150B, 27th March 2020) to reflect updated best practice, guidance and planning requirements. The development proposals are unchanged.

1.1 Proposed Development

It is understood that the proposed development is to comprise the demolition of the existing buildings and the subsequent construction of a new three-storey detached house with a double level basement. The proposed basement will extend beyond the footprint of the existing building into the rear garden, and will extend to a depth of about 8.00 m, with a formation level of roughly 95.19 m OD.

This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.

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 determine the effects of the proposed basement construction on nearby structures and the wider environment;
- to provide advice with respect the design of new 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 historical Ordnance Survey (OS) maps and environmental searches sourced from the Envirocheck database;
- a review of readily available geology maps; and
- a walkover survey of the site carried out in conjunction with the fieldwork.

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

- four cable percussion boreholes, drilled to a maximum depth of 25.00 m using a standard cable percussion rig;
- an additional three boreholes drilled to a maximum depth of 7.45 m using an opendrive percussive sampler (Terrier rig) to provide additional information on the shallow soils;
- standard penetration tests (SPTs), carried out at regular intervals in the cable percussion boreholes, to provide additional quantitative data on the strength of the soils;
- groundwater monitoring standpipes installed in four of the boreholes and two monitoring visits carried out over a one-month period;
- a series of seven hand-dug trial pits to expose the foundations of the existing structures;
- six insitu California Bearing Ratio (CBR) tests carried out in order to provide parameters for the design of new roads and pavements;
- testing of selected soil samples for geotechnical and contamination purposes; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

This report includes a contaminated land assessment which has been undertaken by a suitably qualified and competent professional in accordance with the methodology presented by the Environment Agency in their Land contamination risk assessment (LCRM)[1] Updated 12 June 2025. This 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. Risk management is divided into three stages; Risk Assessment, Options Appraisal and Remediation, and each stage comprises three tiers. The Risk Assessment stage includes preliminary risk assessment (PRA), generic quantitative risk assessment (GQRA) and detailed quantitative risk assessment (DQRA) and this report includes the PRA and GQRA.

[1] https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm

The exploratory methods adopted in this investigation have been selected on the basis of the constraints of the site including but not limited to access and space limitations, together with any budgetary or timing constraints. Where it has not been possible to reasonably use an EC7 compliant investigation technique a practical alternative has been adopted to obtain indicative soil parameters and any interpretation is based upon engineering experience, local precedent where applicable and relevant published information.

1.3.1 Basement Impact Assessment

The work carried out includes a Hydrological and Hydrogeological Assessment and Land Stability Assessment (also referred to as Slope Stability Assessment). These assessments form part of the BIA procedure specified in the London Borough of Camden Planning Guidance CPG[2] and the Guidance for Subterranean Development[3] prepared by Arup (the "Arup report") in accordance with Policy A5 of the Camden Local Plan 2017. The aim of the work is to provide information on surface water, groundwater and land stability and in particular to assess whether the development will affect neighbouring properties or groundwater movements and whether any identified impacts can be appropriately mitigated by the design of the development.

1.3.2 Qualifications

The land stability element of the Basement Impact Assessment (BIA) has been carried out by Martin Cooper, a BEng in Civil Engineering, a chartered engineer (CEng), member of the Institution of Civil Engineers (MICE), and Fellow of the Geological Society (FGS) who has over 20 years' specialist experience in ground engineering. The subterranean (groundwater) flow assessment has been carried out by John Evans, MSc in Hydrogeology, Chartered Geologist (CGeol) and Fellow of the Geological Society of London (FGS). The surface water and flooding assessment has been carried out by Rupert Evans, a hydrologist with more than ten years consultancy experience in flood risk assessment, surface water drainage schemes and hydrology / hydraulic modelling. Rupert Evans is a Chartered Environmentalist, Chartered Water and Environmental Manager and a Member of CIWEM.

The assessments have 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 some 30 years' experience in geotechnical engineering and engineering geology.

All assessors meet the qualification requirements of the Council guidance.

2 https://www.camden.gov.uk/basement-developments

3 Ove Arup & Partners (2010) *Camden geological, hydrogeological and hydrological study. Guidance for Subterranean Development.* For London Borough of Camden November 2010

2.0 THE SITE

2.1 Site Description

The site is located approximately 1.3 km to the southwest of Highgate London Underground station to the north of Hampstead Heath. It fronts onto Compton Avenue to the east, and is bounded by detached houses and associated private gardens to the west and south and by Highgate Golf Course to the north. The site may be additionally located by National Grid Reference 527196 187734, as shown by the location map below.

The site comprises a roughly rectangular shaped area with maximum dimensions of 25 m by 120 m and is occupied by a three-storey detached houses known as Nice Place. The house, a block-paved and concrete driveway are situated in the eastern half of the site with the remainder being occupied by the rear garden.

With the exception of a single storey outbuilding , which is understood to house a swimming pool, the garden is largely laid to lawn with planted bedding and borders and a number of semi-mature and mature deciduous trees including oak, maple, sycamore, hawthorn and silver birch ranging between 4 m and 21 m in height. An area of paving is located at the rear of the house. The building and paved area are formed at a constant level, with the lawn areas sloping gently down to the north.

2.2 Topography

The site lies between 100 m to 105 m above ordnance datum (OD) on ground that falls away to roughly 65 m OD at Big Wood, north of Golders Green, roughly 1.7 km to the northwest and to about 65 m OD at Highgate Ponds about 1.5 km to the southeast and further beyond to the River Thames some 8 km also to the southeast. More locally, Compton Avenue slopes down from 114.3 m OD in the south, indicated by an historical OS map, to 103.5 m OD in the

north adjacent to the site, while the site itself slopes gently up from roughly 100.5 m OD in the northeast to 104.7 in the south over a distance of approximately 140 m, giving a slope angle of less than 2º.

2.3 Site History

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

At the time of the earliest Ordnance Survey map, dated 1870, the site was undeveloped within an area of woodland known as Bishop's Wood, to the north of Hampstead Heath. The site was first developed some time between 1920 and 1936 with a detached property, while the existing Far End building appears to have been constructed on the adjacent plot to the south.

Annotation on the map dated 1952 indicates that the property on the site was known as Bishop's Lodge. By 1975, Bishop's Lodge had been extended to form the existing layout, although it did not become known as Nice Place until sometime between 1991 and 1992.

The site and surrounding area have remained essentially unchanged since that time until the present day.

2.4 Other Information

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

The search has revealed that there are no existing or historical landfills, waste management, transfer, treatment or disposal sites within 500 m of the site.

The site is not indicated as being at risk from flooding, nor is it located within a Groundwater Source Protection Zone as defined by the Environment Agency (EA).

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 classifications given by the Health Protection Agency (HPA) and therefore no radon protective measures will be necessary.

2.5 Geology

The British Geological Survey map of the area (Sheet 256 and online database) indicates the site to be underlain by the Claygate Member of the London Clay. The Claygate Member forms the youngest part of the London Clay Formation. A previous investigation carried out by GEA along Sheldon Avenue, around 220 m southeast of the site indicated the base of the Claygate beds at around 101 m OD. The geology in this area is generally horizontally bedded such that the strata boundaries roughly follow the contour lines and the geology map indicates that the base of the Claygate is likely to be at about 100 m OD.

According to the British Geological Society memoir, the Claygate Member comprises alternating beds of clayey silt, very silty clay, sandy silt and glauconitic silty fine sand. The lower part of the Claygate Member is generally more bioturbated and a bed of calcareous concretions is present near the base in many places. The uppermost Unit D of the London Clay Formation comprises bioturbated glauconitic sandy clayey silt to sandy silt.

2.6 Hydrology and Hydrogeology

The Claygate Member in this area is classified as a Secondary 'A' Aquifer by the Environment Agency (EA).

The boundary between the Claygate Member and underlying London Clay is located to the north of the site on Highgate Golf Course. A number of spring lines issue on Hampstead Heath at the interface of the Bagshot Beds and the Claygate Member, and to a lesser extent at 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 all rose on Hampstead Heath at the base of the Bagshot Beds. However, there are no known documented springs on the site.

The topographical maps show that the nearest surface water feature is located 16 m to the east of the site, which appears to be a small headwater stream located within Highgate Golf Course which flows south-north for a short distance before flowing underground and re-emerging roughly 50 m north where it then flows to the northwest disappearing below ground level until it is assumed it joins with a pond and series of streams just north of Courtenay Avenue. The site is not within an area at risk from flooding as defined by the EA.

The site is partially covered by the existing house, outbuilding and area of hardstanding surrounding the house. Infiltration of rainwater into the ground beneath the site is limited to the area of soft landscaping in the rear garden and given the general topography of the site the majority of surface runoff is likely to drain towards the north and west following the topographic gradient, although infiltration into the underlying Claygate Member is likely to be limited where the soil is dominated by clay so a high proportion of surface water runoff will occur from site generally.

2.7 Preliminary Contamination 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.

2.7.1 Source

The desk study research indicated that the site has only been occupied by the existing residential property throughout its developed history. On this basis the site is not deemed to have had a contaminative history. There are no historical or existing landfill sites within 500 m of the site and therefore there is not a risk to the site from landfill gas.

2.7.2 Receptor

The future occupants of the residential dwellings will represent a relatively high sensitivity receptor. The site is underlain by a Secondary 'A' Aquifer and therefore groundwater is considered to be a relatively sensitive receptor. 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 during demolition and construction works.

2.7.3 Pathway

As the site is underlain by predominantly cohesive soils of the Claygate Member and underlying London Clay, there will be limited potential contaminant exposure pathways, although end users could conceivably come into contact with soils within private garden areas. This pathway is considered to already be in existence. In addition there will be a limited potential for contaminants to move onto or off the site, except horizontally within any made ground or topsoil layer or upon the interface with the underlying Claygate Member, in association with perched groundwater movements. A pathway for ground workers to come into contact with any contamination will exist during construction work and services will come into contact with any contamination within the soils in which they are laid.

2.7.4 Preliminary Risk Appraisal

On the basis of the above it is considered that there is a LOW risk of there being a significant contaminant linkage at this site which would result in a requirement for major remediation work. Furthermore as there is no evidence of filled ground within the vicinity of the site and no landfill sites, there is not considered to be a significant potential for hazardous soil gas to be present on or migrating towards the site.

3.0 SCREENING

The London Borough of Haringey guidance refers to the needs for screening and scoping stages and the more detailed London Borough of Camden guidance has been adopted in this respect to provide a logical sequence and method to the assessment.

3.1 Screening Assessment

A number of screening tools are included in the Arup document and for the purposes of this report reference has been made to Appendices E1, E2 and E3 which include a series of questions within screening flowcharts for surface flow and flooding, subterranean (groundwater) flow and land stability. The flowchart questions and responses to these questions are tabulated below.

3.1.1 Subterranean (groundwater) Screening Assessment

Question	Response for Nice Place
1a. Is the site located directly above an aquifer?	*Yes. The site is underlain by the Claygate Member which is classified as a Secondary 'A' aquifer by the EA.*
1b. Will the proposed basement extend beneath the water table surface?	*Yes, the proposed basement will have a formation level of 95.19 m OD and may, therefore, extend beneath the water table.*
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	*Yes, the nearest surface water feature is located 16 m east of the site.*
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No. Figure 14 of the Arup report confirms that the site is not located within this catchment area.
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	*Yes. The proposed new building and areas of hardstanding will result in approximately a significant increase in the proportion of hardstanding across the site.*
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No. It is not considered feasible that the ground would be sufficiently permeable to allow for a soakaway discharge design, nor do the details of the proposed development indicate the use of soakaway drainage.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	*Yes, the watercourse, which may be a spring line, to the northeast is at an elevation of c.100m OD which is above the level of the proposed basement.*

The above assessment has identified the following potential issues that need to be assessed:

1a. The site is located above a Secondary 'A' Aquifer as designated by the EA.
1b. The proposed basement level is about 95.19 m OD and may extend below the water table.
2. The lowest point of the proposed excavation is lower than the mean water level of the local pond in the northwest.
4. The footprint of the existing buildings and new areas of hardstanding will approximately double and a small hard-surfaced area also proposed in the northwest of site.
6. The basement will extend beneath the mean water table of a local potential spring line.

3.1.2 Stability Screening Assessment

Question	Response for Nice Place
1. Does the existing site include slopes, natural or manmade, greater than 7°?	The Slope Angle Map Fig 16 of the Arup report indicates that the site does not include slopes in excess of 7°.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	The site is not to be significantly re-profiled as part of the development. As a result, no new slopes will be formed.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	The Slope Angle Map Fig 16 of the Arup report indicates that the neighbouring land does not include slopes in excess of 7°.
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	No. As indicated on the Slope Angle Map Fig 16 of the Arup report.
5. Is the London Clay the shallowest strata at the site?	No, the site is underlain by the Claygate Member.
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	*Yes, a 3 m high lime and 4 m high maple from the front garden of Nice Place. All other trees are to remain, see plan appended.*
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	*Yes. The area is prone to these effects as a result of the presence of shrinkable London Clay.*
8. Is the site within 100 m of a watercourse or potential spring line?	*Yes, the nearest surface water feature is located 16 m east of the site.*
9. Is the site within an area of previously worked ground?	No. Not according to Figure 3 of the Arup report.
10a. Is the site within an aquifer?	*Yes, the site is underlain by the Claygate Member, which is classified as a Secondary 'A' Aquifer.*
10b. Will the proposed basement extend beneath the water table such that dewatering may be required during construction?	*Yes, the proposed basement will have a formation level of 95.19 m OD and may, therefore, extend beneath the water table.*
11. Is the site within 50 m of Hampstead Heath ponds?	No. Figure 14 of the Arup report confirms that the site is not located within this catchment area.
12. Is the site within 5 m of a highway or pedestrian right of way?	*Yes - the site fronts onto a private road to the east.*
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	*Yes. The construction of the basement will likely increase the foundation depths relative to the neighbouring structure to the south.*
14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	No. Not according to Figure 18 of the Arup report and information provided by London Underground.

The above assessment has identified the following potential issues that need to be assessed:

Q5 The London Clay is the shallowest strata on the site.
Q6 Trees will be felled as part of the proposed development
Q7 There is a history of seasonal shrink-swell associated with the underlying London Clay.
Q8 The site is within 100 m of a watercourse
Q10a The site is located above a Secondary 'A' Aquifer as designated by the EA
Q10b The proposed basement may extend beneath the water table
Q12 The site is within 5 m of a public highway.
Q13 The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties.

The potential issues that need to be assessed, along with the possible effects of the basement construction on the local hydrology and hydrogeology, are discussed further in Part 2 of this report.

3.1.3 Surface Flow and Flooding Screening Assessment

Question	Response for Nice Place
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No. Figure 14 of Arup report confirms that the site is not located within this catchment area.
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	*Yes. The footprint of the existing buildings and new areas of hardstanding will approximately double.*
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	*Yes. The basement and new building will cover a larger proportion of the site, which is currently permeable.* *SUDS attenuation prior to discharge into the sewers will reduce the impact to acceptable levels. Infiltration SUDS systems will not work due to low permeability soils.*
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	*Possibly, the site in is an area of subsurface streams that flow in a northwesterly direction on to Highgate Golf Course, given the depth of the proposed basement it is possible some impact will occur.*
5. Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?	*Possibly, the site in is an area of subsurface streams that flow in a northwesterly direction on to Highgate Golf Course, given the depth of the proposed basement it is possible some impact will occur.*
6. Is the site in an area identified to have surface water flood risk according to either the Local Flood Risk Management Strategy or the Strategic Flood Risk Assessment or is it at risk of flooding, for example because the proposed basement is below the static water level of nearby surface water feature?	No. The site is not considered to be at risk from surface water flooding.

The above assessment has identified the following potential issues that need to be assessed:

Q2. Surface water flows (.eg volume of rainfall and peak run-off) may be materially changed from the existing route
Q3. The proposed basement development may result in a change in the proportion of hard surfaced / paved areas
Q4. The proposed basement development may result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses
Q5 The proposed basement may result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses

4.0 SCOPING AND SITE INVESTIGATION

The purpose of scoping is to assess in more detail the factors to be investigated in the impact assessment. Potential impacts are assessed for each of the identified potential impact factors.

4.1 Potential Impacts

The following potential impacts have been identified by the screening process

Potential Impact	Consequence
The site is located above a Secondary 'A' Aquifer as designated by the EA.	The proposed basement level may be below the water table and this could increase flow paths and/or raise groundwater levels locally.
The proposed basement will extend beneath the water table	
The site is within 100 m of a watercourse	The proposed basement could impact upon the groundwater flow regime to a nearby watercourse, by creating a barrier to the existing groundwater profile.
The proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses	
The proposed basement development result in a change in the proportion of hard surfaced / paved areas	The proportional increase in hardstanding could potentially reduce rates of recharge reducing groundwater flow to a nearby watercourse.
Surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route	
Trees will be felled as part of the proposed development	Removal of trees in the vicinity of the proposed basement will change the quantity of water uptake in that area
Seasonal shrink-swell can result in foundation movements.	If a new basement is dug to the depth likely to be affected by tree roots this could lead to damaging differential movements
Site within 5 m of a highway or pedestrian right of way.	Excavation of a basement may result in structural damage to the road or footway.
The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties	If not designed and constructed appropriately, the excavation of a basement may result in structural damage to neighbouring buildings and structures.

These potential impacts have been investigated through the site investigation, as detailed in Section 13.0.

4.2 Exploratory Work

This report has been prepared on the basis of the investigation carried out in 2011 which was designed to cover both this site and the adjacent site to the south. The boreholes advanced on the Far End plot were located 10 m and 15 m to the south of the southern boundary of Nice Place.

In order to meet the objectives described in Section 1.2, four cable percussion boreholes were drilled, to depths of 25.00 m, three on the Nice End Plot and one on the Far End Plot. In addition, a further two boreholes were drilled using an opendrive percussive sampler on the Nice End plot, with another single borehole on the Far End Plot, in order to provide additional coverage in less accessible areas. Standard penetration tests (SPTs) were carried out at regular intervals in order to provide quantitative data on the strength of the underlying soils.

Groundwater monitoring standpipes were installed in four of the boreholes to depths of between 7.0 m and 10.0 m, two on the Nice End plot and two on the Far End plot. The standpipes were monitored on two occasions over a one-month period following installation and again in 2014.

The boreholes were supplemented by a series of seven hand-dug trial pits in order to expose the existing foundations and allow the inspection of the footings and bearing stratum. A series of in-situ CBR tests was also undertaken in order to provide parameters for the design of new roads and pavements.

The fieldwork was carried out under the supervision of a geotechnical engineer from GEA. A selection of the disturbed and undisturbed samples recovered from the boreholes and trial pits was submitted to a soil mechanics laboratory for a programme of geotechnical testing and an analytical laboratory for a programme of contamination testing.

4.3 Sampling Strategy

The borehole and trial pit locations were specified by the consulting engineers and positioned on site by GEA, along with the CBR locations, to obtain optimum coverage of the site with due regard to the proposed development, whilst avoiding buried services.

The analytical suite of testing was selected to identify a range of typical industrial contaminants for the purposes of general coverage. 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 an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards. A summary of the MCERTs accreditation and test methods are included with the attached results and further details are available upon request.

The borehole, trial pit and CBR records and the results of the laboratory analyses are appended, together with a site plan indicating the exploratory positions. The Ordnance Datum (OD) levels shown on the borehole and trial pit records have been interpolated from spot heights shown on a site survey (drawing ref. 110161/SSK 04 dated 19/05/11) provided by the consulting engineers.

5.0 GROUND CONDITIONS

This report is based upon the findings of a single investigation that covered both the Nice Place plot and the adjacent Far End plot. As the investigation was designed to cover both plots, the results of the boreholes found the ground conditions to be consistent between the two sites and in order to provide the most information possible to inform the redevelopment, the results from both plots have been described in this section.

The investigation generally encountered the expected ground conditions in that, beneath a variable thickness of topsoil or made ground, the Claygate Member was encountered overlying the London Clay, which was proved to the full depth of the investigation, of 25.00 m (78.23 m OD).

The precise location of the boundary between the Claygate Member and London Clay is often difficult to define due to its gradational contact, and the close similarities in composition and geotechnical properties of each stratum.

5.1 Topsoil / Made Ground

Topsoil was encountered in a single location to a depth of 0.30 m (103.65 m OD) and comprised light brown very silty sandy clay with roots and rootlets. Made ground was encountered in all other locations and generally comprised light brown to brown very silty sandy clay with variable amounts of gravel, brick, concrete, roots and rootlets and was encountered to depths of between 0.20 m (103.75 m OD) to 1.60 m (101.63 m OD).

No visual or olfactory evidence of contamination was observed in the made ground; however a number of samples were analysed for a range of contaminants as a precautionary measure and the results are summarised in Section 5.5.

5.2 Claygate Member

The Claygate Member initially comprised firm brown mottled orange-brown and grey very silty very sandy clay with pockets of orange brown fine sand to depths of between 2.50 (101.45 m OD) and 3.50 m (99.23 m OD). In Borehole Nos 1, 2, 3, 6 and 7, this horizon was noted to be stiff to depths of between 1.20 m (101.41 m OD) and 3.30 m (100.18 m OD) and has been assessed as desiccated.

The results of laboratory testing indicate the clay to be of moderate volume change potential.

No visual or olfactory evidence of contamination was observed in this stratum.

5.3 London Clay

The London Clay was found to initially comprise firm becoming stiff dark greenish grey silty sandy clay was encountered to the maximum depth investigated of 7.45 m (95.16 m OD) in the open-drive sampler boreholes, and to depths of between 7.80 m (95.43 m OD) and 14.50m (89.45 m OD) in the cable percussion boreholes. Below these depths, stiff becoming very stiff brownish grey silty fissured clay with occasional shell fragments and claystones and was proved to the maximum depth investigated, of 25.00 m (78.23 m OD).

The results of laboratory testing indicate the clay to be of generally moderate volume change potential.

5.4 Groundwater

Slow inflows or seepages of groundwater were encountered in the Claygate Member during drilling of the boreholes at depths of between 4.00 m (98.73 m OD) and 9.20 m (94.75 m OD).

Groundwater monitoring standpipes were installed in four of the boreholes to depths of between 7.00 m (95.65 m OD) and 10.00 m (93.95 m OD) and were monitored on two occasions as part of the ground investigation in 2011. The standpipes were monitored again about three years later in April 2014, and groundwater was measured at depths of 1.34 m (102.61 m OD) in Borehole No 1 and 1.42 m (102.23 m OD and 101.81 m OD) in Borehole Nos 2 and 5 respectively.

Date	Borehole No	Depth to water (m) [Level (m OD)]
19/07/2011 (during fieldwork)	1	2.46 [101.49]
	2	2.08 [101.57]
	3	1.83 [100.90]
	5	1.01 [102.22]
19/08/2011	1	2.27 [101.68]
	2	2.22 [101.71]
	3	2.01 [101.08]
	5	1.26 [101.97]
28/04/2014	1	1.34 [102.61]
	2	1.42 [102.23]
	3	Not accessible
	5	1.42 [101.81]

The results of the groundwater monitoring suggest that groundwater levels reflect the topographic fall across the site; however, groundwater flow will be severely limited within the low permeability clay strata and the water in each monitoring borehole is very unlikely to be in hydraulic continuity.

5.5 Soil Contamination

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

Determinant	BH7 0.30 m	BH6 0.30 m	BH2 0.20 m	TP5 0.30 m	TP3 0.30 m	TP7 0.30 m
pH	7.2	7.6	3.9	8.5	8.7	9.0
Arsenic	14	16	5.9	10	11	9.9
Cadmium	<0.10	0.19	<0.10	<0.10	0.27	0.19
Chromium	27	26	13	35	18	11
Copper	30	35	8.7	23	170	9.0
Mercury	0.54	0.29	0.68	<0.10	1.1	<0.10

Determinant	BH7 0.30 m	BH6 0.30 m	BH2 0.20 m	TP5 0.30 m	TP3 0.30 m	TP7 0.30 m
Nickel	15	19	5.8	39	20	11
Lead	110	110	45	25	**1500**	66
Selenium	0.47	0.46	<0.20	0.29	<0.20	<0.20
Zinc	86	100	26	79	520	46
Total Cyanide	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Total Phenols	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Sulphide	5.0	6.1	1.0	2.2	31	2.5
Benzo(a)pyrene	1.5	0.52	<0.1	0.24	0.21	<0.1
Naphthalene	0.67	0.52	<0.1	<0.1	0.78	<0.1
TPH	<10	<10	<10	<10	<10	<10
Total Organic Carbon %	1.8	2.7	1.8	0.45	5.2	0.81
Note: Figure in bold indicates concentration in excess of risk-based soil guideline values, as discussed in Part 2 of this report						

5.5.1 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. Contaminants of concern are those that have values in excess of generic human health risk-based guideline values, which are either the CLEA[4] Soil Guideline Values where available, the Suitable 4 Use Values[5] (S4UL) produced by LQM/CIEH calculated using the CLEA UK Version 1.07[6] software, or the DEFRA Category 4 Screening values[7], assuming a residential end use with plant uptake. 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, 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; albeit slightly conservative as the site is to be of mixed residential and commercial use. 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

4 *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.
5 *The LQM/CIEH S4Uls for Human Health Risk Assessment* S4UL3065 November 2014
6 Contaminated Land Exposure Assessment (CL|EA) Software Version 1.071 Environment Agency 2015
7 CL:AIRE (2013) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Final Project Report SP1010 and DEFRA (2014) *Development of Category 4 Screening Levels for Assessment of Land Affected by Contamination* Policy Companion Document SP1010

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;

- 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.

The results of the contamination testing have indicated the presence of a single elevated concentration of lead within one of the samples tested. The significance of these results is considered further in Part 2 of the report. In addition a sample of made ground from Borehole 2 at a depth of 0.2 m has been found to have a significantly acidic pH level of 3.9 and this is considered within Section 8.7 of this report.

5.6 Existing Foundations

A series of seven manually excavated trial pits has shown the existing buildings to be supported on relatively shallow spread foundations comprising concrete footings, bearing within the firm clay of the Claygate Member at depths of between 0.88 m (102.53 m OD) and 1.40 m (102.82 m OD). Logs and photographs are included within the appendix.

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 the proposed development.

6.0 INTRODUCTION

It is understood that the proposed development is to include the demolition of the existing building to allow for the subsequent construction of a new three-storey detached house with a double level basement. The proposed basement will extend beyond the footprint of the existing building and beneath part of the rear gardens, and will extend to a maximum depth of about 8.00m, with a formation level of roughly 95.19 m OD. The double level basement will be constructed by means of a 450 mm diameter contiguous piled retaining wall.

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

7.0 GROUND MODEL

The desk study has revealed that the site has not had a potentially contaminative history, having apparently been occupied by residential properties for the entirety of its developed history. On the basis of the investigation carried out, the ground conditions at this site can be characterised as follows.

- beneath a surface covering of topsoil or moderate thickness of made ground, the Claygate Member is present, which in turn is underlain by London Clay;
- the made ground was encountered to depths of between 0.20 m (103.75 m OD) and 1.60 m (101.63 m OD) and generally comprised light brown to brown very silty sandy clay with variable amounts of gravel, brick, concrete, roots and rootlets;
- the Claygate Member initially comprises firm brown mottled orange-brown and grey very silty very sandy clay with pockets of orange-brown fine sand to depths of between 3.30 m (100.15 m OD) and 4.10 m (98.51 m OD);
- in five locations, this horizon was noted to be stiff to depths of between 1.20 m (101.41 m OD) and 3.30 m (100.18 m OD) and has been assessed as desiccated;
- below the initial horizon, the Claygate Member comprises firm becoming stiff dark greenish grey silty sandy clay, which was encountered to depths of between 7.80 m (95.43 m OD) and 14.50 m (89.45 m OD);
- the London Clay comprises stiff becoming very stiff brownish grey silty sandy clay with occasional shell fragments and claystones, and was proved to the maximum depth investigated, of 25.00 m (78.23 m OD);
- slow inflows or seepages of groundwater were encountered in the Claygate Member during drilling of the boreholes at depths of between 4.00 m (98.73 m OD) and 9.20 m (94.75 m OD) and subsequent monitoring has recorded groundwater at depths of

between 1.01 m (102.22 m OD) and 2.46 m (101.49 m OD); and

- elevated concentrations of total PAH, including benzo(a)pyrene and a single elevated concentration of lead within the made ground.

8.0 ADVICE AND RECOMMENDATIONS

Excavations for the proposed basement structure will require temporary support to maintain stability and to prevent any excessive ground movements and it is unlikely to be feasible to construct the basement without the requirement for some level of groundwater control.

Formation level for the proposed development is likely to be within the Claygate Member, which should provide an eminently suitable bearing stratum for spread foundations excavated from basement level. Alternatively, if the loads of the proposed development are high, or if groundwater cannot be adequately controlled, such that spread foundations become unfeasible, piled foundations extending into the London Clay would provide a suitable solution.

8.1 Basement Construction

8.1.1 Basement Excavations

It is understood that it is proposed to excavate a double level basement, which will extend beneath both proposed buildings, to a depth of 8.01 m, a level of approximately 95.19 m OD; formation level should therefore be within the Claygate Member.

Groundwater inflows were encountered at depths of between 4.00 m (98.73 m OD) and 9.20 m (94.75 m OD) and subsequent monitoring has indicated groundwater at levels of between 101.49 m OD and 102.61 m OD. On this basis groundwater is likely to be encountered within the basement excavation at variable depths, although monitoring of the standpipes should be continued to establish equilibrium levels and determine the extent of any seasonal fluctuations. It would also be prudent to carry out rising head tests within the standpipes to establish the rate of rise in groundwater and permeability of the underlying Claygate Member. Groundwater is however likely to be present within the Claygate Member 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. 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, 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 groundwater conditions. It is likely that the rate of inflow will be relatively slow within the Claygate Member, although it is recommended that the chosen contractor has a contingency plan in place to deal with more significant or prolonged inflows as a precautionary measure if a watertight temporary retention scheme is not adopted.

The design of basement support in the temporary and permanent conditions needs to take account of the need to maintain the stability of the excavation and surrounding structures, namely the neighbouring house to the south and the retained façade of Far End, and to protect against groundwater inflows.

A sheet piled wall could be used as a temporary measure, prior to the construction of a permanent retaining wall, although the noise and vibrations associated with the installation of sheet piles maybe unacceptable, unless a “silent” installation method is adopted. Consideration could be given to using pressing techniques, although pressing techniques that

use water jetting should be treated with caution in view of the risk of causing heave or settlement of the surrounding structures.

Alternatively, consideration could be given to the use of a bored pile wall, which would have the advantage of being incorporated into the permanent works and will be able to provide support for structural loads. Although the monitoring carried out to date would suggest that groundwater will be encountered within the excavation, it may be possible to adopt a contiguous bored pile wall with the use of localised grouting and sump pumping if necessary in order to deal with any groundwater inflows. If however trial excavations indicate that groundwater cannot be adequately controlled through localised grouting and sump pumping, then a secant bored pile wall will be required, which has the advantage of maximising the usable space within the basement area as it could overcome the requirement for any secondary groundwater protection in the permanent works.

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.

8.1.2 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	27
Claygate Member	1900	Zero	25
London Clay	1950	Zero	23

Significant inflows of groundwater are unlikely to be encountered within the basement excavation, although monitoring of the standpipes should be continued to confirm this. Consideration should, however, be given to the risk of surface water building up behind the retaining walls and unless adequate drainage can be incorporated to prevent such build-up, it is recommended that the basement is designed with a water level assumed to be 1.0 m below ground level. Reference should be made to BS8102:2009[8] regarding requirements for waterproofing.

8.1.3 Basement Heave

The roughly 8.00 m deep basement excavation will result in a net unloading of up to approximately 150 kN/m^2. This unloading will result in elastic heave and long term swelling of the underlying clay soils, although these movements will to a certain extent be counteracted by the applied loads from the proposed development. Further consideration is given to heave movements in Part 3.0 of this report.

8.2 Spread Foundations

The excavation of the basement will result in a formation level in the Claygate Member and it should be possible to adopt moderate width pad or strip foundations in the firm clay, designed to apply a net allowable bearing pressure of 150 kN/m^2 below the level of the proposed basement floor. It is unlikely that it will be possible to attain the required depths without encountering

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

groundwater inflows, and if inflows are such that spread foundations cannot be utilised, then recourse should be made to the use of a piled foundation solution.

The depth of the basement excavation is expected to be such that foundations will be placed below the depth of actual or potential desiccation, but this should be checked once the proposals have been finalised, with the survey drawing showing former and existing trees. Notwithstanding NHBC guidelines, all foundations should extend beyond the zone of desiccation. In this respect, it would be prudent to have all foundation excavations inspected by a suitably experienced engineer. Due allowance should be made for future growth of existing / proposed trees. The requirement for compressible material alongside foundations should be determined by reference to the NHBC guidelines.

8.3 Piled Foundations

For the ground conditions at this site a bored pile could be adopted. A conventional rotary augered pile could be utilised, but consideration will need to be given to the possible instability and water ingress within the made ground. The use of bored piles installed using continuous flight auger (cfa) techniques may therefore be the most appropriate and the limited site access may be a factor in the selection of most appropriate pile type. The following table of ultimate coefficients may be used for the preliminary design of bored piles, based on the SPT and cohesion / depth graph in the appendix.

Stratum	Depths m	kN / m^2
Ultimate Skin Friction		
Basement Excavation	GL to 8.00	Ignore (Basement excavation)
London Clay	8.00 to 15.00	Increasing linearly from 57 to 132
Ultimate End Bearing		
London Clay	15.00 to 25.00	Increasing linearly from 1260 to 1980

In the absence of pile tests, guidance from the London District Surveyors Association (LDSA)[9] suggests that a factor of safety of 2.6 should be applied to the above coefficients in the computation of safe theoretical working loads. On the basis of the above coefficients, the following pile capacities have been estimated.

Pile diameter mm	Depth Below Ground Level m	Effective Pile Length m	Safe Working Load kN
450	15	7.00	345
	18	10.00	525

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 a suitable piling scheme and their attention should be drawn to potential groundwater inflows and instability within the Made Ground.

[9] LDSA (2017) *Guidance notes for the design of straight shafted bored piles in London Clay*. LDSA

8.4 Pavement Design

Formation level for the proposed roads and hardstandings is likely to be within the Claygate Member and on the basis of the insitu testing and published data, new roads and pavements should be designed on the basis of a California Bearing Ratio (CBR) of 2% to 3%. The results of the geotechnical testing indicate that the shallow soils should not be considered to be frost susceptible.

Prior to construction it would be prudent to proof roll formation level and infill any soft spots with suitably compacted granular material.

8.5 Shallow Excavations

On the basis of the trial pit findings it is considered likely that it will be feasible to form relatively shallow excavations terminating within the made ground and upper horizons of the Claygate Member without the requirement for lateral support, although localised instabilities may occur. 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.

Perched groundwater is likely to be encountered within shallow excavations for services which exceed a depth of 1.0 m, as well as the occurrence of some perched water, particularly in the vicinity of existing foundations; in this situation sump pumping should be sufficient for dealing with any such occurrences.

8.6 Basement Floor Slab

Following the excavation of the basement, it is likely that the floor slab for the proposed basement will need to be suspended over a void or layer of suitable compressible material to accommodate the anticipated heave unless the slab can be suitably reinforced to cope with these movements. In addition, consideration may also need to be given to designing the basement to cope with water pressure below the slab. Further consideration will need to be given to these issues once the levels and magnitude of any slab loading are known.

8.7 Effect of Sulphates

Chemical analyses of selected samples have revealed generally low concentrations of soluble sulphate, corresponding to Class DS-2 and ACEC AC-3z of Table C2 of BRE Special Digest 1 Part C (2005), based on mobile groundwater conditions. The guidelines contained in the above digest should be followed in the design of foundation concrete.

8.8 Site Specific Risk Assessment

The chemical analyses carried out previously highlighted the presence of a single concentration of lead, in excess of the adopted generic screening values. This concentration could thus pose a potentially unacceptable risk to human health through direct contact, accidental ingestion or inhalation of soil or soil derived dust.

The elevated concentration of lead was located on the Far End part of the site during the previous investigation and is therefore not relevant to the Nice End part of the site, which is the focus of this report. The exact source of the contamination is not known, however the trial pit was located next to an iron drainage downpipe from which flecks of wet or peeling paint may have entered the surrounding soils. Therefore, the concentration does not pose a risk to any potential receptors working on the Nice Place portion of the site.

8.9 Waste Disposal

Under the Waste Framework Directive, waste is classified as being either Hazardous or Non-Hazardous and landfills receiving waste are classified as accepting hazardous or non-hazardous wastes or the non-hazardous sub-category of inert waste in accordance with the Waste Directive. Waste classification is a staged process and this investigation represents the preliminary sampling exercise of that process. Once the extent and location of the waste that is to be removed has been defined, further sampling and testing may be necessary. The results from this ground investigation should be used to help define the sampling plan for such further testing, which could include WAC leaching tests where the totals analysis indicates the soil to be a hazardous waste or inert waste from a contaminated site. It should however be noted that the Environment Agency guidance WM3[10] states that landfill WAC analysis, specifically leaching test results, must not be used for waste classification purposes.

Any spoil arising from excavations or landscaping works, which is not to be re-used in accordance with the CL:AIRE[11] guidance, will need to be disposed of to a licensed tip. Waste going to landfill is subject to landfill tax at either the current standard rate of £126.15 per tonne (about £231.00 per m^3) or at the lower rate of £4.05 per tonne (roughly £7.50 per m^3). However, the classifications for tax purposes and disposal purposes differ and currently all made ground and topsoil is taxable at the 'standard' rate and only naturally occurring soil and stones, which are accurately described as such in terms of the 2011 Order, would qualify for the 'lower rate' of landfill tax.

Based on the technical guidance provided by the EA it is considered likely that the soils encountered during this ground investigation, as represented by the chemical analyses carried out, would be generally classified as follows.

Soil Type	Waste Classification (Waste Code)	WAC Testing Required Prior to Landfill Disposal?	Current applicable rate of Landfill Tax
Made Ground	Non-hazardous (17 05 04)	No	£91.35/tonne (Standard rate)
Natural Soils	Inert (17 05 03)	Should not be required but confirm with receiving landfill	£2.90 / tonne (Reduced rate for uncontaminated naturally occurring rocks and soils)

Under the requirements of the 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 Environment Agency has issued a position paper[12] 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 prior to excavation 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.

10 Environment Agency 2015. *Guidance on the classification and assessment of waste.* Technical Guidance WM3 First Edition
11 CL:AIRE March 2011. *The Definition of Waste: Development Industry Code of Practice* Version 2
12 Environment Agency 23 Oct 2007 *Regulatory Position Statement Treating non-hazardous waste for landfill - Enforcing the new requirement*

Part 3: GROUND MOVEMENT ANALYSIS

This section of the report comprises an analysis of the ground movements arising from the proposed basement and foundation scheme discussed in Part 2 and the information obtained from the investigation, presented in Part 1 of the report.

9.0 INTRODUCTION

The sides of an excavation will move to some extent regardless of how they are supported. The movement will typically be both horizontal and vertical and will be influenced by the engineering properties of the ground, groundwater level and flow, the efficiency of the various support systems employed in a temporary condition and the efficiency or stiffness of any support structures used.

An analysis has been carried out of the likely movements arising from the proposed excavation and the results of this analysis have been used to predict the effect of these movements on surrounding structures.

9.1 Ground Movements

An assessment of ground movements within and surrounding the excavation has been undertaken using the X-Disp and P-Disp computer programs licensed from the OASYS suite of geotechnical modelling software from Arup. These programs are commonly used within the ground engineering industry and are considered to be appropriate tools for this analysis.

The analysis of potential ground movements within the excavation, as a result of unloading of the underlying soils, has been carried out using the Oasys P-Disp (Version 20.0 – Build 12) software package and is based on the assumption that the soils behave elastically, which provides a reasonable approximation to soil behaviour at small strains.

The X-Disp program (Version 20 - Build 14) has been used to predict ground movements likely to arise from the construction of the proposed basement. This includes the lateral movement of soil behind the proposed retaining walls (horizontal movement).

For the purpose of these analyses, the corners have been defined by x and y coordinates, with the x-direction roughly parallel with the orientation northwest-southeast, whilst the y-direction is parallel with the orientation of northeast-southwest. Vertical movement is in the z-direction. All walls have been modelled as a series of 1 m long structural elements.

The full outputs of all the analyses can be provided on request, but samples of the output movement contour plots are included within the appendix.

9.2. Construction Sequence

The following sequence of operations has been assumed to enable analysis of the ground movements around the proposed basement both during and after construction.

In general, the sequence of works for basement construction is assumed to comprise the following stages.

1. Demolish existing structures where necessary;
2. Grub out existing foundations and drainage;
3. Install contiguous bored pile walls from ground level;
4. Excavate and construct reinforced concrete capping beam just below ground floor level and prop capping beam across;
5. Excavate to formation level and cast blinding layer followed by 250 mm thick basement floor slab along with any drainage and waterproofing measures;
6. Install reinforced concrete lining walls; and,
7. Once slab is in place remove props then cast ground floor slab.

It is assumed that the corners of the excavation will be locally stiffened by cross-bracing or similar and that the new retaining walls will be cantilevered for a short period in between the removal of the props at ground floor level and casting of the ground floor slab.

The detail of the support provided to adjacent walls is beyond the scope of this report at this stage and the structural engineer will be best placed to agree a methodology with the piling contractor once appointed.

9.3 P-Disp Model

At this site, unloading of the underlying London Clay will take place as a result of the excavation of the basement, such that the reduction in vertical stress in the short term will cause heave to take place. Undrained soil parameters have been used to estimate the potential short-term movements, which include the "immediate" or elastic movements as a result of the basement excavation. The model is based on the assumption that the soils behave elastically, which provides a reasonable approximation to soil behaviour at small strains. Drained parameters have been used to provide an estimate of the total movement, which includes long term swelling that will continue for a number of years.

The elastic analysis requires values of soil stiffness at various levels to calculate displacements. Values of stiffness for the soils at this site are readily available from published data and we have used a well-established method to provide our estimates. This relates values of E_u and E', the undrained and drained stiffness respectively, to values of undrained cohesion, as described by published data[13]. Relationships of $E_u = 500\ C_u$ and $E' = 300\ C_u$ for the Claygate Member and underlying London Clay, which is considered a sensible approach for this stage in the design. The profile of the underlying stratum have been interpolated from the results of the ground investigation detailed in the previous sections of the report, with a design

[13] Burland JB, Standing, JR, and Jardine, FM (2001) *Building response to tunnelling, case studies from construction of the Jubilee Line Extension*. CIRIA Special Publication 200

line being extended from the maximum depth investigated, of 25 m, to the base of the London Clay Formation. The base of the London Clay is considered to be at a depth of about 114.3 m below ground level (-11.1 m OD), as indicated by an archived BGS borehole (reference TQ28NE3, located approximately 400 m west of the site at grid reference 526750,187870).

The excavation of the proposed basement will extend to a depth of 8.01 m below ground level and will result in an approximate unloading of 150 kN/m^2, which could result in an elastic heave and long term swelling of the Claygate Member and underlying London Clay.

The effects of the longer term swelling movement will be mitigated to some extent by the presence of layers of granular material interbedded with the cohesive layers within the Claygate Member, coupled with the load applied by the proposed building.

The loading arrangement of the building is not known at this stage and as a result the loads have been omitted from the ground movement assessment which is considered to provide a conservative assessment.

The soil parameters used in this assessment are tabulated below.

Stratum	Depth range (m below ground level) [m OD]	Eu (MPa)	E' (MPa)
Made Ground	GL to 1.0 [103.2 to 102.2]	10	10
Claygate Member	1.0 to 3.0 [102.2 to 100.2]	22.50 to 30.00	13.50 to 18.00
London Clay	3.0 to 114.3 [100.2 to -11.1]	30.00 to 420.00	18.00 to 252.00

9.3.1 Results

The P-Disp analysis indicates that, by the time the basement construction is complete, about 28 mm of heave is likely to have taken place at the centre of the basement excavation, reducing to between 8 mm and 18 mm of around the edge of the basement. This will increase to 70 mm of heave at the centre of the basement excavation, reducing to between 20 mm and 40 mm of around the edge of the basement, in the overall term. The potential movements are shown in the following table and shown on contour plans in the appendix.

Location	Movement (mm) + = settlement / - = heave	
	Short-term	Total
Centre of Extension	-28 mm	-70 mm
Edge of excavation	-8 mm to -18 mm	-20 mm to -40 mm

9.4 Ground Movements – Surrounding the Basement

The basement excavation will be supported by a contiguous bored pile walls. The ground movement curves for 'installation of a contiguous bored pile wall in stiff clay' have been adopted to model the movements occurring as a result of pile installation. For the excavation phase the movement curves for 'excavation in front of a high stiffness wall in stiff clay' have been adopted. The use of the curves for stiff clay is considered to provide a conservative assessment with the movements resulting from an excavation in sand being likely to result in less movement.

It should be noted that the proposed basement footprint contains re-entrant corners. Limitations in the capabilities of the software used for the assessment result in the amplification of movements at the location of re-entrant corners and as a result we have simplified the shape of the proposed basement into a rectangle extending to the maximum length and width of the actual proposed basement. This should, therefore, represent a conservative analysis as the size of the basement modelled is significantly larger than the proposed basement.

9.4.1 Results

The movements predicted by X-Disp are summarised in the table below; and are presented to the degree of accuracy required to allow predicted variations in ground movements around the structure to be illustrated, but may not reflect the anticipated accuracy of the predictions.

Phase of Works	Movement (mm) + = settlement / - = heave	
	Vertical	Horizontal
Pile Installation	Up to 7 mm	Up to 7 mm
Combined Movements	Up to 12 mm	Up to 19 mm

9.5 Damage Assessment

In addition to the above assessment of the likely movements that will result from the proposed development, the neighbouring buildings that lie within the 1 mm contour of movement predicted by X-Disp and are, therefore, considered to be sensitive structures requiring Building Damage Assessments on the basis of the classification given in Table 6.4 of C760[1] are as follows:

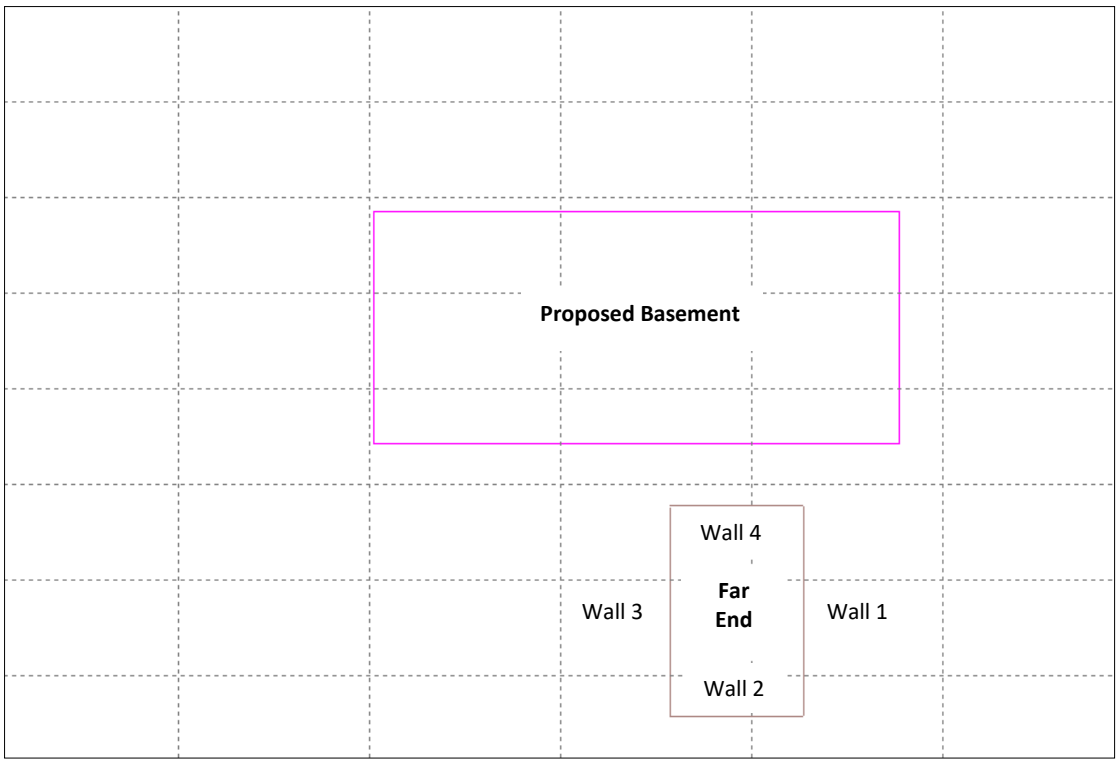
- Far End;

All other nearby structures, lie outside of the predicted zone of movements generated from the construction of the proposed basement and as such have been excluded from the analysis.

The sensitive structures outlined above have been modelled as lines in the analysis and are the lines along which the damage assessment has been undertaken. The location of each of the buildings is detailed on the plan below.

Reference to planning drawings for the most recent redevelopment of Far End found on the planning portal, the site immediately to the south of the site, shows the property to have a single level basement and the excavation to have been supported by contiguous bored pile walls. The basement has been assumed to extend to a standard depth of 3.50 m below ground level. It is not been possible to ascertain the foundation detail of the building and it has

therefore been assumed for the purposes of this assessment that it is supported by strip foundations beneath each wall extending to a depth of 0.50 m below basement level. However, this is highly conservative as the piled wall will have remained in place and will limit the scale of the movement experienced by the foundations. A standard storey height of 3.50 m has been assumed for the building, and it is known to be a two storey property with a basement level. As a result, the wall heights for the building have been calculated to be a total of 11 m.



9.5.1 Damage to Neighbouring Structures

The combined movements resulting from both retaining wall installation and basement excavation calculated using the X-Disp modelling software have been used to carry out an assessment of the likely damage to adjacent properties. All structures were predicted as sustaining damage Category 0 (Negligible). On this basis, the damage that would inevitably occur as a result of basement construction would fall within the acceptable limits. The detailed tabular output can be seen in the Appendix.

9.5.2 Monitoring of Ground Movements

Given the predicted damage categories, monitoring of the surrounding structures is unlikely to be required. However, should a monitoring regime be requested in order to ensure the ground movements align with those predicted by the analysis, it is recommended that Far End be considered for monitoring. Condition surveys of the building would need to be carried out before and after the proposed works.

The precise monitoring strategy would be developed at a later stage and it will be subject to discussions and agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed predefined trigger levels. Both contingency measures and trigger levels will need to be developed within a future monitoring specification for the works.

Part 4: BASEMENT IMPACT ASSESSMENT

This section of the report evaluates the direct and indirect implications of the proposed project, based on the findings of the previous screening and scoping, site investigation and ground movement assessment.

10.0 INTRODUCTION

The screening identified a number of potential impacts. The desk study and ground investigation information has been used below to review the potential impacts, to assess the likelihood of them occurring and the scope for reasonable engineering mitigation.

10.1 Potential Impacts

The table below summarises the previously identified potential impacts and the additional information that is now available from the ground investigation in consideration of each impact.

Potential Impact	Consequence
The site is located above a Secondary 'A' Aquifer as designated by the EA.	The investigation has indicated that the basement will extend below the water table. Although the Claygate Member is classified as a Secondary 'A' aquifer, the investigations carried out at the site have shown this stratum to predominantly comprise silty sandy clay of relatively low permeability. Consequently, there is very little potential for groundwater flow beneath the site and the Claygate Member cannot support baseflow to watercourses. Therefore, the proposed basement would not present an effective barrier to flow or impact upon groundwater sensitive features.
The proposed basement will extend beneath the water table	
The site is within 100 m of a watercourse	
The proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses	
The proposed basement development result in a change in the proportion of hard surfaced / paved	The sealing of the ground surface to rainfall, by increasing the building area, would result in decreased recharge to the underlying ground, although the low permeability of the underlying Claygate Member would result in a low recharge in any case and consequently there would be no effect on groundwater.
Surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route	
. Trees will be felled as part of the proposed development	The Claygate Member of the London Clay is prone to seasonal shrink-swell and can cause structural damage. Desiccation was not encountered during the investigation but may be present within close proximity to existing trees. The proposed basement will extend to a depth of 8.01 m therefore new foundations are likely to bypass any desiccated soils encountered, although consideration will need to be given in the foundation design to protecting against the effects of continued growth of the trees.
Seasonal shrink-swell can result in foundation movements.	
Site within 5 m of a highway or pedestrian right of way.	The investigation has not indicated any specific problems, such as weak or unstable ground, voids, high water table, that would make working within 5 m of public infrastructure particularly problematic at this site, although best practice in design and construction will ensure the stability of the highway.
The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties	The proposed basement will extend to a significant depth relative to the existing foundations of the neighbouring properties and will need to be designed to ensure the stability of the site and any potentially sensitive structures that are in close proximity to the site.

The results of the site investigation have therefore been used below to review the remaining potential impacts, to assess the likelihood of them occurring and the scope for reasonable engineering mitigation.

The site is located above a Secondary 'A' Aquifer as designated by the EA.
The proposed basement will extend beneath the water table
The site is within 100 m of a watercourse
The proposed basement development results in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses

Although the Claygate Member is classified as a Secondary 'A' aquifer, the investigations carried out at the site have shown this stratum to predominantly comprise silty sandy clay of relatively low permeability.

The proposed basement development results in a change in the proportion of hard surfaced / paved
Surface water flows (e.g. volume of rainfall and peak run-off) may be materially changed from the existing route

The sealing of the ground surface to rainfall, by increasing the building area, would result in decreased recharge to the underlying ground

Trees will be felled as part of the proposed development
Seasonal shrink-swell can result in foundation movements

Desiccation was not encountered during the investigation but may be present within close proximity to existing trees. The proposed basement will extend to a depth of 8.01 m therefore new foundations are likely to bypass any desiccated soils encountered, although consideration will need to be given in the foundation design to protecting against the effects of continued growth of the trees.

Consideration will need to be given to the effects of clay swelling following the removal of some of the trees, but similarly the foundations are to be placed at depths that should not be affected. Subject to inspection of foundation excavations in the normal way to ensure that there is not significant unexpectedly deep root growth, it is not considered that the occurrence of shrink-swell issues in the local area has any bearing on the proposed development.

Location of public highway

The basement excavation will extend to within 5.0 m from the pathways and highways to the east and therefore the basement excavation may affect the highway. The proposed development will include retaining walls that will be designed to maintain the stability of the surrounding ground, thus protecting the adjacent road and associated infrastructure beyond. There is nothing unusual or exceptional in the proposed development or the findings of the investigation that give rise to any concerns with regard to stability over and above any development of this nature.

The proposed basement will significantly increase the differential depth of foundations relative to neighbouring properties

The proposed basement will extend to a significant depth relative to the existing foundations of the neighbouring properties and will need to be designed to ensure the stability of the site and any potentially sensitive structures that are in close proximity to the site.

10.2 BIA Conclusion

A Basement Impact Assessment has been carried out following the information and guidance published by the London Borough of Camden.

It is concluded that the proposed development is unlikely to result in any specific land or slope stability issues.

10.3 Non-Technical Summary of Evidence

This section provides a short summary of the evidence acquired and used to form the conclusions made within the BIA.

10.3.1 Screening

The following table provides the evidence used to answer the surface water flow and flooding screening questions.

Question	Evidence
1. Is the site within the catchment of the pond chains on Hampstead Heath?	Topographical maps acquired as part of the desk study and Figures 12, 13 and 14 of the Arup report.
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	A site walkover and existing plans of the site have confirmed that the proposed basement scheme will not increase the amount of hardstanding.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	As above.
5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses?	
6. Is the site in an area known to be at risk from surface water flooding such as South Hampstead, West Hampstead, Gospel Oak and Kings Cross, or is it at risk of flooding because the proposed basement is below the static water level of a nearby surface water feature?	Flood risk maps acquired from the Environment Agency as part of the desk study, Figure 15 of the Arup report, the Camden Flood Risk Management Strategy dated 2013 and SFRA dated 2014.

The following table provides the evidence used to answer the subterranean (groundwater flow) screening questions.

Question	Evidence
1a. Is the site located directly above an aquifer?	Aquifer designation maps acquired from the Environment Agency as part of the desk study and Figures 3 and 8 of the Arup report.
1b. Will the proposed basement extend beneath the water table surface?	Previous nearby GEA investigations and BGS archive borehole records.
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	Topographical and historical maps acquired as part of the desk study, Figures 11 and 12 of the Arup report and the Lost Rivers of London book.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	Topographical maps acquired as part of the desk study and Figures 12, 13 and 14 of the Arup report.

Question	Evidence
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	A site walkover and existing plans of the site have confirmed that the basement development will only replace existing hardstanding areas.
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	The details of the proposed development do not indicate the use soakaway drainage.
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	Topographical maps acquired as part of the desk study and Figures 11 and 12 of the Arup report.

The following table provides the evidence used to answer the slope stability screening questions.

Question	Evidence
1. Does the existing site include slopes, natural or manmade, greater than 7°?	Topographical maps and Figures 16 and 17 of the Arup report and confirmed during a site walkover.
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	The details of the proposed development provided do not include the re-profiling of the site to create new slopes.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	Topographical maps and Figures 16 and 17 of the Arup report and confirmed during a site walkover.
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	
5. Is the London Clay the shallowest strata at the site?	Geological maps and Figures 3 and 8 of the Arup report.
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	Absence of trees confirmed during the site walkover.
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	Knowledge on the ground conditions of the area and reference to NHBC guidelines were used to make an assessment of this, in addition to a visual inspection of the buildings carried out during the site walkover.
8. Is the site within 100 m of a watercourse or potential spring line?	Topographical maps acquired as part of the desk study, Figures 11 and 12 of the Arup report and the Lost Rivers of London book.
9. Is the site within an area of previously worked ground?	Geological maps and Figures 3 and 8 of the Arup report.
10. Is the site within an aquifer?	Aquifer designation maps acquired from the Environment Agency as part of the desk study and Figures 3 and 8 of the Arup report.
11. Is the site within 50 m of Hampstead Heath ponds?	Topographical maps acquired as part of the desk study and Figures 12, 13 and 14 of the Arup report.
12. Is the site within 5 m of a highway or pedestrian right of way?	Site plans and the site walkover.
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	Camden planning portal and the site walkover confirmed the position of the proposed basement relative the neighbouring properties.
14. Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?	Maps and plans of infrastructure tunnels were reviewed.

10.3.2 Scoping and Site Investigation

The questions in the screening stage that there were answered 'yes', were taken forward to a scoping stage and the potential impacts discussed in Section 4.0 of this report, with reference to the possible impacts outlined in the Arup report.

A ground investigation has been carried out, which has allowed an assessment of the potential impacts of the basement development on the various receptors identified from the screening and scoping stages. Principally the investigation aimed to establish the ground conditions, including the groundwater level and the engineering properties of the underlying soils to enable suitable design of the basement development.

The findings of the investigation are discussed in Part 2 of this report and summarised in the Executive Summary.

10.3.3 Impact Assessment

Section 10.0 of this report summarises whether, on the basis of the findings of the investigation, the potential impacts still need to be given consideration and identifies ongoing risks that will require suitable engineering mitigation. Section 9.0 of this report also provides recommendations for the design of the proposed development.

A ground movement analysis and building damage assessment has been carried out and its findings are presented in Part 3 of this report.

11.0 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.

An issue that requires careful consideration at this site is the extent to which groundwater will affect the basement excavation in the temporary condition and the level of the water table to be adopted in the permanent design. It would be prudent to carry out additional groundwater monitoring of the existing standpipes as a minimum requirement, but it is important that the contractor is able to deal with inflows of groundwater that may be locally more significant than anticipated. It would therefore be prudent to carry out a number of trial excavations, to depths as close to the full basement depth as possible. A rising head test could be carried out within the standpipe to more accurately assess the level of groundwater and to gain some understanding of the rate at which groundwater may enter the basement excavation.

Consideration will also need to be given to measures to protect against heave as a result of the basement excavation. It is likely that the floor slab for the proposed basement will need to be suspended over a void to accommodate the anticipated heave unless the slab can be suitably reinforced to cope with these movements. It is recommended that heave movements are checked by further analysis once the loadings and final levels are known.

12.0 OUTSTANDING RISKS AND ISSUES

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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.

Monitoring of the standpipe should be continued to determine equilibrium groundwater levels and to establish any seasonal fluctuations. Ideally, trial excavations extending to as close to the full depth of the proposed basement as possible should be carried out to determine likely groundwater inflows into the basement excavation.

APPENDIX

Site Plan

Borehole Records

Geotechnical Test Results

SPT & Cohesion/Depth Graph

Contamination Test Results

Generic Risk-Based Soil Screening Values

GMA

PDISP
Overall Term Movement Plot

Short Term Movement Plot

X-DISP
Final Combined Horizontal Movements

Final Combined Vertical Movements

Final Installation Horizontal Movements

Final Installation Vertical Movements

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.95	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Far End	18/07/2011	Conisbee Consulting Engineers	1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					103.75	(0.20)	Made ground (block paving over coarse sand subbase)		
					103.55	0.20	Soft becoming firm orange brown very silty clayey fine SAND with roots and rootlets		
0.40	D1					(0.20) 0.40			
							'Stiff' orange brown silty very sandy CLAY with roots. Desiccated Soil		
1.00	D2								
1.20-1.65 1.20	SPT N=8 D3			1,2/2,2,2,2		(2.10)			
2.00-2.45	U1								
2.50	D4				101.45	2.50	Soft becoming firm dark greenish grey silty sandy CLAY with partings of orange brown sand		
3.00-3.45 3.00	SPT N=6 D5			1,1/1,1,2,2		(0.80)			
					100.65	3.30	Firm becoming stiff very silty sandy CLAY with partings of silt		
4.00-4.45	U2								
4.50	D6								
5.00-5.45 5.00	SPT N=10 D7			2,2/2,2,3,3					
6.00-6.45	U3								
6.50	D8								
7.50-7.95 7.50	SPT N=12 D9			2,3/3,2,3,4					
						(11.20)			▼1
9.00-9.45	U4								∇1
9.50	D10			slow(1) at 9.20m, rose to 8.80m in 20 mins, sealed at 10.50m.					

Remarks
Excavating services inspection pit from GL to 1.20m for 1hr.
Standpipe installed in borehole to 10.00 m, see separate sheet for details and for the results of monitoring visits.

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

Figure No.
J11150.BH1

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.95	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Far End	18/07/2011	Conisbee Consulting Engineers	2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95 10.50	SPT N=16 D11			2,3/4,4,4,4					
12.00-12.45	U5					(11.20)			
12.50	D12								
13.50-13.95 13.50	SPT N=19 D13			3,4/4,4,5,6					
					89.45	14.50	Stiff becoming very stiff greyish brown silty fissured CLAY with occasional shell fragments		
15.00-15.45	U6								
15.50	D14								
16.50-16.95 16.50	SPT N=23 D15			4,4/5,5,6,7					
18.00-18.45	U7								
18.50	D16								
19.50-19.95 19.50	SPT N=27 D17			4,4/5,7,7,8		(10.50)			

Remarks	**Scale (approx)**	**Logged By**
	1:50	CA
	Figure No.	
	J11150.BH1	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.95	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Far End	18/07/2011	Conisbee Consulting Engineers	3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.00-21.45	U8								
21.50	D18								
22.50-22.95	SPT N=30			5,6/6,7,8,9		(10.50)			
22.50	D19								
24.50-24.95	U9								
25.00	D20				78.95	25.00	Complete at 25.00m		

Remarks	**Scale (approx)**	**Logged By**
	1:50	CA
	Figure No.	
	J11150.BH1	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Number** **BH2**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Opendrive percussive sampler.	107mm to 1.00m	103.65	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Far End	13/07/2011	Conisbee Consulting Engineers	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Topsoil (light brown very silty sandy clay with roots and rootlets)		
0.20	D1			103.35	0.30	'Stiff' light brown mottled orange brown silty very sandy CLAY with pockets of orange brown sand and roots of up to 2mm in diameter to 1.5m. Desiccated soil		
0.70	D2				(1.20)			
1.00-1.45	SPT N=12		1,2/3,3,3,3					
1.50	D3			102.15	1.50	Firm orange brown mottled grey silty sandy CLAY with pockets of orange brown fine grained sand		
2.00-2.45	SPT N=12		1,2/3,2,3,4		(1.40)			
2.50	D4							
				100.75	2.90	Firm dark brown mottled light brown silty very sandy CLAY with pockets of dark orange brown fine grained sand		
3.00-3.45	SPT N=10		1,2/2,3,2,3		(0.50)			
				100.25	3.40	Firm becoming stiff dark greenish grey silty very sandy CLAY with occasional bands of silty very clayey fine grained sand		
3.50	D5							
4.00-4.45	SPT N=12		2,2/2,3,3,4					
4.50	D6							
			seepage(1) at 5.00m.					∇1
5.00-5.45	SPT N=16		2,2/3,4,4,5					
5.50	D7				(4.05)			
6.00-6.45	SPT N=15		2,2/3,4,4,4					
6.50	D8							
7.00-7.45	SPT N=16		2,3/3,4,4,5					
				96.20	7.45	Complete at 7.45m		

Remarks
Standpipe installed in borehole to 7.0 m, see separate sheet for details and for the results of monitoring visits.

Scale (approx)	**Logged By**
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Figure No.
J11150.BH2

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.48	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	15/07/2011	Conisbee Consulting Engineers	1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.35)	Made ground (block paving over coarse sand subbase)		
					103.13	0.35	Made ground (dark brown silty sandy clay with gravel and occasional brick fragments)		
0.60	D1					(0.65)			
					102.48	1.00	'Stiff' light brown mottled orange brown silty very sandy CLAY. Desiccated soil		
1.10	D2								
1.20-1.65	U1								
1.70	D3								
2.00-2.45	SPT N=10			1,2/2,3,2,3		(2.30)			
2.00	D4								
3.00-3.45	U2								
					100.18	3.30	Firm to stiff dark greenish grey very silty sandy CLAY		
3.50	D5								
4.00-4.45	SPT N=10			1,2/2,2,3,3					
4.00	D6								
5.00-5.45	U3								
5.50	D7								
6.00-6.45	SPT N=12			2,2/3,3,3,3					
6.00	D8					(6.20)			
7.50-7.95	U4								
8.00	D9								
9.00-9.45	SPT N=16			3,3/4,4,4,4 slow(1) at 9.10m, rose to 8.90m in 20 mins, sealed at 10.50m.				▼1	
9.00	D10							∇1	
					93.98	9.50	Stiff brownish grey very silty fissured CLAY with occasional shell fragments		

Remarks
Excavating services inspection pit from GL to 1.20m for 1hr

Scale (approx)	**Logged By**
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J11150.BH3

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.48	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	15/07/2011	Conisbee Consulting Engineers	2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95	U5								
11.00	D11								
12.00-12.45 12.00	SPT N=20 D12			3,4/4,5,5,6					
13.50-13.95	U6								
14.00	D13								
15.00-15.45 15.00	SPT N=24 D14			4,4/5,6,6,7					
16.50-16.95	U7								
17.00	D15					(15.50)			
18.00-18.45 18.00	SPT N=28 D16			4,5/6,7,7,8					
19.50-19.95	U8								

Remarks	**Scale (approx)**	**Logged By**
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	Figure No.	
	J11150.BH3	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 10.50m	103.48	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	15/07/2011	Conisbee Consulting Engineers	3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00	D17								
21.00-21.03 21.00	SPT 30*/25 D18			30/					
22.10	D19						Claystone encountered at a depth of 22.1 m.		
22.50-22.95	U9					(15.50)			
23.00	D20								
24.50-24.95 24.50	SPT N=35 D21			5,6/7,9,9,10					
					78.48	25.00	Complete at 25.00m		

Remarks

Scale (approx)	**Logged By**
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Figure No.
J11150.BH3

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH4**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.45	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	14/07/2011	Conisbee Consulting Engineers	1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.30)	Made ground (block paving over coarse sand subbase)		
					103.15	0.30			
						(0.40)	Made ground (dark brown silty sandy clay with occasional gravel, brick fragments and partings of sand)		
0.50	D1				102.75	0.70			
0.90	D2						Soft becoming firm light brown mottled orange brown silty sandy CLAY		
1.20-1.65	U1								
1.70	D3								
2.00-2.45 2.00	SPT N=8 D4			1,1/2,2,2,2		(2.60)			
3.00-3.45	U2								
					100.15	3.30			
3.50	D5						Firm dark greenish grey silty very sandy CLAY		
4.00-4.45 4.00	SPT N=11 D6			2,2/2,3,3,3					
5.00-5.45	U3								
5.50	D7								
6.00-4.45 6.00	SPT N=14 D8			2,3/3,3,4,4		(5.20)			
									▼1 ▽1
7.50-7.95	U4			Seepage(1) at 7.40m, rose to 7.30m in 20 mins, sealed at 9.00m.					
7.90	D9						Claystone encountered between 7.9 m and 8.2 m		
8.20	D10								
					94.95	8.50	Stiff becoming very stiff grey brown very silty fissured CLAY with occasional shell fragments. Fissured		
9.00-9.45 9.00	SPT N=17 D11			3,3/4,4,4,5					

Remarks
Chiselling on a claystone from 7.90m to 8.20m for 30 mins.

Scale (approx)	**Logged By**
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J11150.BH4

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH4**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.45	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	14/07/2011	Conisbee Consulting Engineers	2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95	U5								
11.00	D12								
12.00-12.45 12.00	SPT N=20 D13			3,4/4,5,5,6					
13.50-13.95	U6								
14.00	D14								
15.00-15.45 15.00	SPT N=24 D15			4,4/5,6,6,7					
16.50-16.95	U7								
17.00	D16								
						(16.50)			
18.00-18.45 18.00	SPT N=29 D17			5,6/7,7,7,8					
19.50-19.95	U8								

Remarks	**Scale (approx)**	**Logged By**
	1:50	CA
	Figure No.	
	J11150.BH4	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH4**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.45	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	14/07/2011	Conisbee Consulting Engineers	3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
20.00	D18								
21.00-21.45 21.00	SPT N=36 D19			6,7/7,9,9,11					
22.50-22.95	U9					(16.50)			
23.00	D20								
24.50-24.95 24.50	SPT N=36 D21			7,7/8,9,9,10					
					78.45	25.00	Complete at 25.00m		

Remarks	**Scale (approx)**	**Logged By**
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	Figure No.	
	J11150.BH4	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH5**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.23	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	13/07/2011	Conisbee Consulting Engineers	1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.30)	Made Ground (block paving over coarse sand sub-base)		
					102.93	0.30	Made Ground (dark brownish grey silty sandy clay with occasional brick fragments and gravel)		
0.50	D1								
						(1.30)			
1.00	D2								
1.20-1.65 1.20	SPT N=5 B1			1,1/1,1,1,2					
					101.63	1.60	Soft becoming firm light brown mottled orange brown silty sandy CLAY with partings of fine orange brown sand		
1.70	D3								
2.00-2.45	U1								
						(1.80)			
2.50	D4								
3.00-3.45 3.00	SPT N=8 D5			1,2/2,2,2,2					
					99.83	3.40	Firm becoming stiff dark greenish grey silty sandy CLAY		
3.70	D6								
4.00-4.45	U2								
4.50	D7								
5.00-5.45 5.00	SPT N=13 D8			2,2/3,3,3,4					
						(4.40)			
6.00-6.45	U3								
6.50	D9								
7.50	D10			seepage(1) at 7.50m, sealed at 9.00m.					∇1
					95.43	7.80	Stiff becoming very stiff dark brownish grey silty fissured CLAY		
7.50-7.95	SPT N=19	1.50	7.30	3,3/4,5,5,5					
9.00-9.45	U4								
9.50	D11								

Remarks
Excavating services inspection pit from GL to 1.20 m for 1hr.
Standpipe installed in borehole to 9.0 m, see separate sheet for details and for the results of monitoring visits.

Scale (approx)	**Logged By**
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Figure No.
J11150.BH5

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH5**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.23	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	13/07/2011	Conisbee Consulting Engineers	2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95 10.50	SPT N=20 D12			3,3/4,5,5,6					
12.00-12.45	U5								
12.50	D13								
13.50-13.95 13.50	SPT N=24 D14			4,4/5,6,6,7					
15.00-15.45	U6								
15.50	D15								
16.50-16.95 16.50	SPT N=27 D16			4,5/5,6,8,8					
						(17.20)			
18.00-18.45	U7								
18.50	D17								
19.50-19.95 19.50	SPT N=33 D18			4,5/7,8,9,9					

Remarks	**Scale (approx)**	**Logged By**
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	J11150.BH5	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Borehole Number** **BH5**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 9.00m	103.23	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	13/07/2011	Conisbee Consulting Engineers	3/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
21.00-21.45	U8								
21.50	D19								
22.50-22.95	SPT N=39			5,7/8,9,10,12		(17.20)			
22.50	D20								
24.50-24.95	U9								
25.00	D21				78.23	25.00	Complete at 25.00m		

Remarks	**Scale (approx)**	**Logged By**
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	Figure No.	
	J11150.BH5	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Number** **BH6**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Opendrive percussive sampler.	107mm to 1.00m	102.73	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	13/07/2011	Conisbee Consulting Engineers	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						Made Ground (dark brown silty sandy clay with roots and rootlets, and occasional angular gravel, and brick fragments)		
0.30	D1				(0.80)			
0.80	D2			101.93	0.80	'Stiff' light orange brown silty sandy CLAY with roots to 1.6m. Desiccated soil		
1.00-1.45	SPT N=12		2,2/2,3,3,4					
					(1.00)			
1.50	D3			100.93	1.80	Firm light orange brown very silty sandy CLAY with pockets of orange brown fine grained sand		
2.00-2.45	SPT N=11		2,2/2,3,3,3					
2.50	D4				(1.70)			
3.00-3.45	SPT N=15		2,2/3,4,4,4					
3.50	D5			99.23	3.50	Firm becoming stiff dark greenish grey silty very sandy CLAY with bands of fine grained sand		
4.00-4.45	SPT N=11		Water strike(1) at 4.00m. 2,2/2,3,3,3					▽1
4.50	D6							
5.00-5.45	SPT N=11		1,2/2,2,3,4					
5.50	D7				(3.95)			
6.00-6.45	SPT N=18		2,2/3,5,5,5					
6.50	D8							
7.00-7.45	SPT N=12		2,2/2,3,3,4					
				95.28	7.45	Complete at 7.45m		

Remarks
Standpipe installed in borehole to 7.0 m see separate sheet for details and for the results of monitoring visits.

Scale (approx)	**Logged By**
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Figure No.
J11150.BH6

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Number** **BH7**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Opendrive percussive sampler.	107mm to 1.00m	102.61	Pastor Real Estate Ltd	J11150
	Location	**Dates**	**Engineer**	**Sheet**
	Nice Place	13/07/2011	Conisbee Consulting Engineers	1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.50)	Made Ground (dark brown silty sandy clay with gravel, roots and rootlets, traces of brick and cobble sized rubble)		
0.30	D1			102.11	0.50			
					(0.20)	Light orange brown very silty fine grained SAND with roots		
				101.91	0.70			
0.70	D2				(0.50)	'Very stiff' light orange brown very silty sandy CLAY. Desiccated soil		
1.00-1.45	SPT N=11		1,2/2,3,3,3	101.41	1.20			
1.50	D3					Firm light orange brown grey very silty very sandy CLAY with pockets of orange brown fine sand		
2.00-2.45	SPT N=13		2,2/3,3,4,3		(1.80)			
2.50	D4							
3.00-3.45	SPT N=12		2,2/2,3,3,4	99.61	3.00	Firm light greyish brown mottled orange brown very silty CLAY with pockets of orange brown sand		
3.50	D5				(1.10)			
4.00-4.45	SPT N=13		2,1/3,3,3,4	98.51	4.10	Firm dark greenish grey silty CLAY with pockets of fine grained sand		
4.50	D6							
5.00-5.45	SPT N=13		2,3/2,3,4,4					
5.50	D7				(3.35)			
6.00-6.45	SPT N=12		2,2/2,3,3,4					
6.50	D8							
7.00-7.45	SPT N=13		2,2/3,3,3,4 seepage(1) at 7.25m.					∇1
				95.16	7.45	Complete at 7.45m		

Remarks	**Scale (approx)**	**Logged By**
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	Figure No.	
	J11150.BH7	

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Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Standard Penetration Test Results

Site : Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

Client : Pastor Real Estate Ltd

Engineer : Conisbee Consulting Engineers

Job Number J11150

Sheet 1 / 2

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH1	1.20	1.35	1.65	SPT	1	2	2	2	2	2	N=8	
BH1	3.00	3.15	3.45	SPT	1	1	1	1	2	2	N=6	
BH1	5.00	5.15	5.45	SPT	2	2	2	2	3	3	N=10	
BH1	7.50	7.65	7.95	SPT	2	3	3	2	3	4	N=12	
BH1	10.50	10.65	10.95	SPT	2	3	4	4	4	4	N=16	
BH1	13.50	13.65	13.95	SPT	3	4	4	4	5	6	N=19	
BH1	16.50	16.65	16.95	SPT	4	4	5	5	6	7	N=23	
BH1	19.50	19.65	19.95	SPT	4	4	5	7	7	8	N=27	
BH1	22.50	22.65	22.95	SPT	5	6	6	7	8	9	N=30	
BH2	1.00	1.15	1.45	SPT	1	2	3	3	3	3	N=12	
BH2	2.00	2.15	2.45	SPT	1	2	3	2	3	4	N=12	
BH2	3.00	3.15	3.45	SPT	1	2	2	3	2	3	N=10	
BH2	4.00	4.15	4.45	SPT	2	2	2	3	3	4	N=12	
BH2	5.00	5.15	5.45	SPT	2	2	3	4	4	5	N=16	
BH2	6.00	6.15	6.45	SPT	2	2	3	4	4	4	N=15	
BH2	7.00	7.15	7.45	SPT	2	3	3	4	4	5	N=16	
BH3	2.00	2.15	2.45	SPT	1	2	2	3	2	3	N=10	
BH3	4.00	4.15	4.45	SPT	1	2	2	2	3	3	N=10	
BH3	6.00	6.15	6.45	SPT	2	2	3	3	3	3	N=12	
BH3	9.00	9.15	9.45	SPT	3	3	4	4	4	4	N=16	
BH3	12.00	12.15	12.45	SPT	3	4	4	5	5	6	N=20	
BH3	15.00	15.15	15.45	SPT	4	4	5	6	6	7	N=24	
BH3	18.00	18.15	18.45	SPT	4	5	6	7	7	8	N=28	
BH3	21.00	21.03		SPT	30						30*/25mm	
BH3	24.50	24.65	24.95	SPT	5	6	7	9	9	10	N=35	
BH4	2.00	2.15	2.45	SPT	1	1	2	2	2	2	N=8	
BH4	4.00	4.15	4.45	SPT	2	2	2	3	3	3	N=11	
BH4	6.00	4.15	4.45	SPT	2	3	3	3	4	4	N=14	
BH4	9.00	9.15	9.45	SPT	3	3	4	4	4	5	N=17	
BH4	12.00	12.15	12.45	SPT	3	4	4	5	5	6	N=20	
BH4	15.00	15.15	15.45	SPT	4	4	5	6	6	7	N=24	
BH4	18.00	18.15	18.45	SPT	5	6	7	7	7	8	N=29	
BH4	21.00	21.15	21.45	SPT	6	7	7	9	9	11	N=36	
BH4	24.50	24.65	24.95	SPT	7	7	8	9	9	10	N=36	
BH5	1.20	1.35	1.65	SPT	1	1	1	1	1	2	N=5	
BH5	3.00	3.15	3.45	SPT	1	2	2	2	2	2	N=8	
BH5	5.00	5.15	5.45	SPT	2	2	3	3	3	4	N=13	
BH5	7.50	7.65	7.95	SPT	3	3	4	5	5	5	N=19	
BH5	10.50	10.65	10.95	SPT	3	3	4	5	5	6	N=20	
BH5	13.50	13.65	13.95	SPT	4	4	5	6	6	7	N=24	
BH5	16.50	16.65	16.95	SPT	4	5	5	6	8	8	N=27	
BH5	19.50	19.65	19.95	SPT	4	5	7	8	9	9	N=33	

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Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Standard Penetration Test Results

Site : Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

Client : Pastor Real Estate Ltd

Engineer : Conisbee Consulting Engineers

Job Number J11150

Sheet 2 / 2

Borehole Number	Base of Borehole (m)	End of Seating Drive (m)	End of Test Drive (m)	Test Type	Seating Blows per 75mm		Blows for each 75mm penetration				Result	Comments
					1	2	1	2	3	4		
BH5	22.50	22.65	22.95	SPT	5	7	8	9	10	12	N=39	
BH6	1.00	1.15	1.45	SPT	2	2	2	3	3	4	N=12	
BH6	2.00	2.15	2.45	SPT	2	2	2	3	3	3	N=11	
BH6	3.00	3.15	3.45	SPT	2	2	3	4	4	4	N=15	
BH6	4.00	4.15	4.45	SPT	2	2	2	3	3	3	N=11	
BH6	5.00	5.15	5.45	SPT	1	2	2	2	3	4	N=11	
BH6	6.00	6.15	6.45	SPT	2	2	3	5	5	5	N=18	
BH6	7.00	7.15	7.45	SPT	2	2	2	3	3	4	N=12	
BH7	1.00	1.15	1.45	SPT	1	2	2	3	3	3	N=11	
BH7	2.00	2.15	2.45	SPT	2	2	3	3	4	3	N=13	
BH7	3.00	3.15	3.45	SPT	2	2	2	3	3	4	N=12	
BH7	4.00	4.15	4.45	SPT	2	1	3	3	3	4	N=13	
BH7	5.00	5.15	5.45	SPT	2	3	2	3	4	4	N=13	
BH7	6.00	6.15	6.45	SPT	2	2	2	3	3	4	N=12	
BH7	7.00	7.15	7.45	SPT	2	2	3	3	3	4	N=13	

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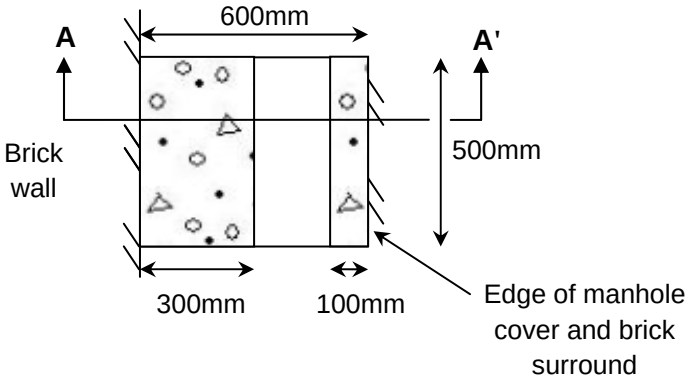
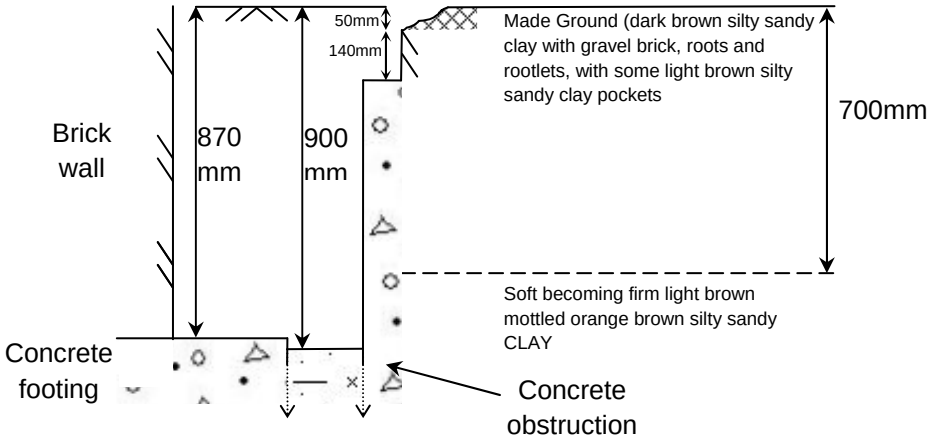
Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP1
Excavation Method Manual	**Dimensions** 600x500x900	**Ground Level (mOD)** 103.95	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Far End	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Sheet Number** Sheet 1 / 1

PLAN



SECTION A-A



Depth of foundation not proved due to a concrete obstruction

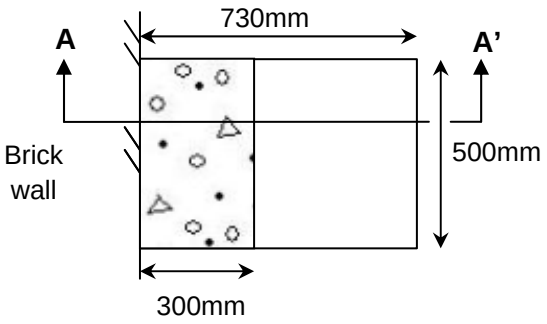
Remarks

(1) Ground water not encountered
(2) Sides remained stable during excavation

Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP2
Excavation Method Manual	**Dimensions** 730x500x1370	**Ground Level (mOD)** 104.80	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Far End	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



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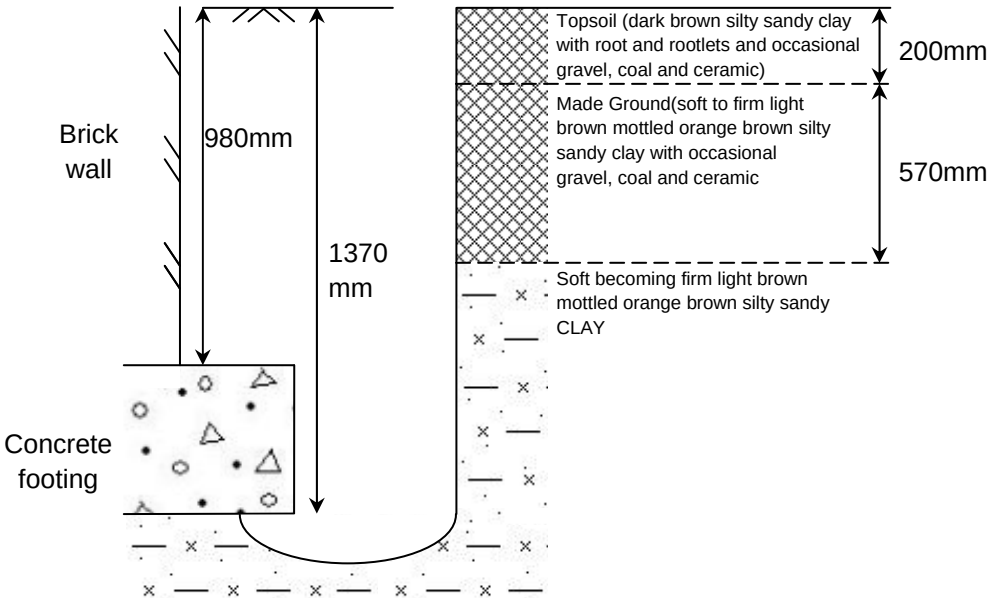


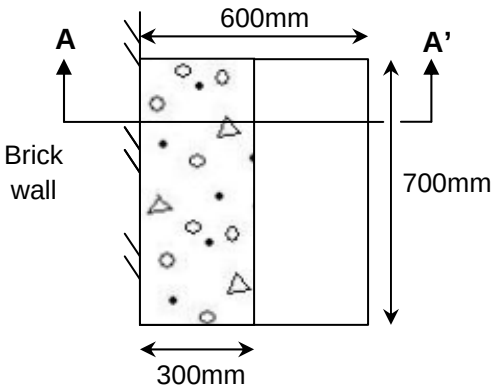
Remarks

(1) No standing water encountered
(2) No collapse during excavation
(3) No services encountered

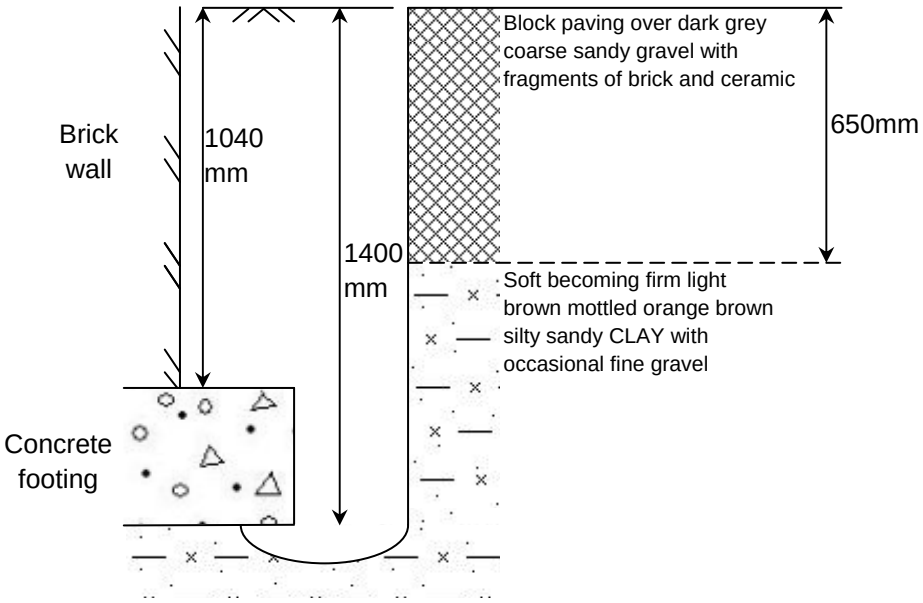
Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP3
Excavation Method Manual	**Dimensions** 600x700x1400	**Ground Level (mOD)** 104.22	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Far End	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



SECTION A-A



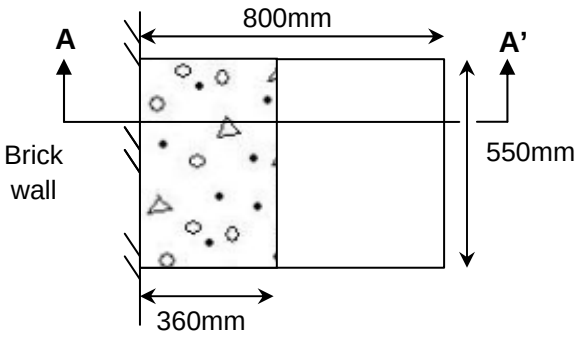
Remarks

(1) No standing water encountered
(2) No collapse during excavation
(3) No services encountered

Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP4
Excavation Method Manual	**Dimensions** 550x800x1250	**Ground Level (mOD)** 103.798	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Far End	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



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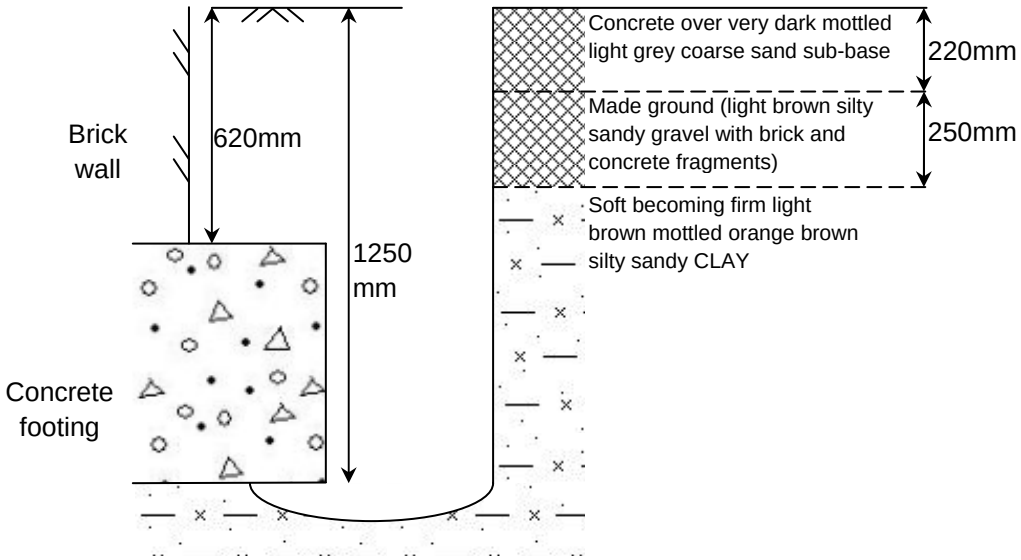


Remarks

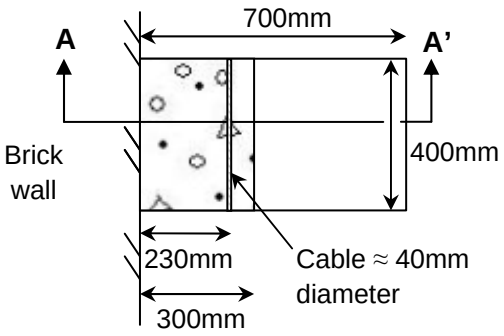
(1) No standing water encountered
(2) Partial collapse during excavation
(3) No services encountered

Scale
1 : 20

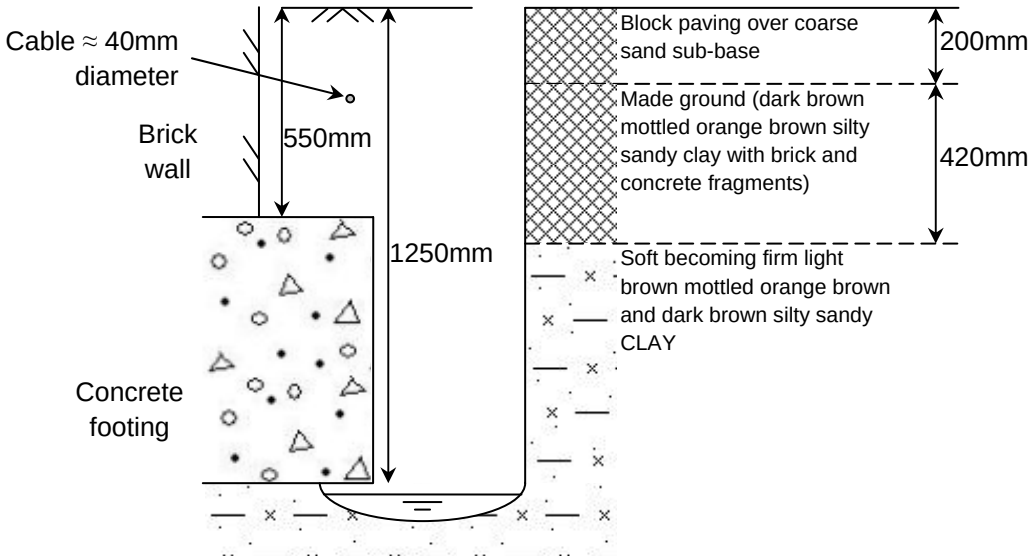
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP5
Excavation Method Manual	**Dimensions** 600x500x880	**Ground Level (mOD)** 103.25	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Nice Place	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



SECTION A-A



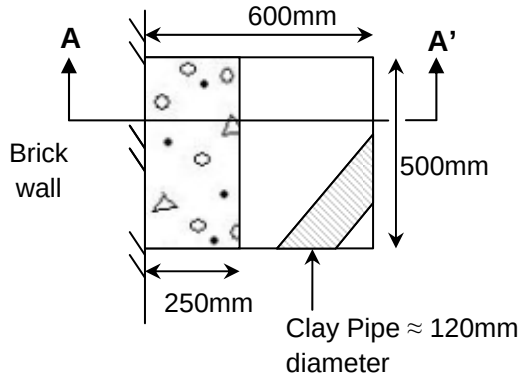
Remarks

(1) Standing water at 1.28m below GL
(2) Partial collapse of excavation overnight
(3) 40mm diameter cable encountered

Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP6
Excavation Method Manual	**Dimensions** 600x500x880	**Ground Level (mOD)** 103.41	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Nice Place	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



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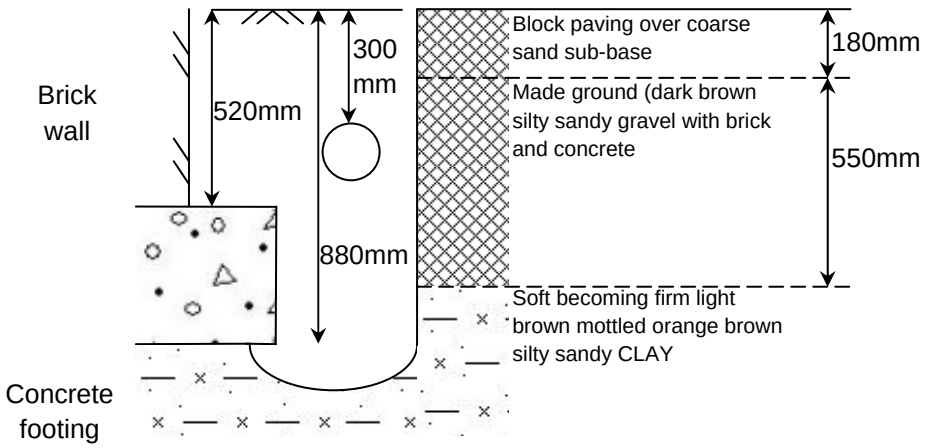


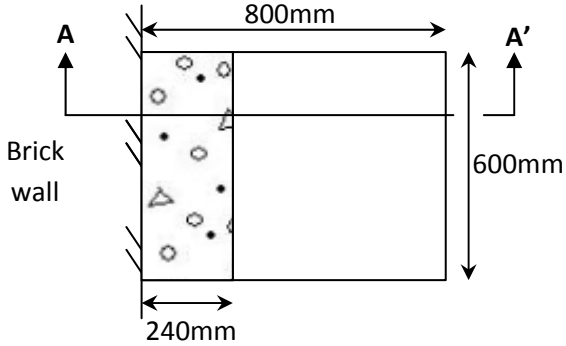
Remarks

(1) Moisture encountered at base (no standing water)
(2) Partial collapse of excavation overnight
(3) 120mm diameter clay pipe encountered

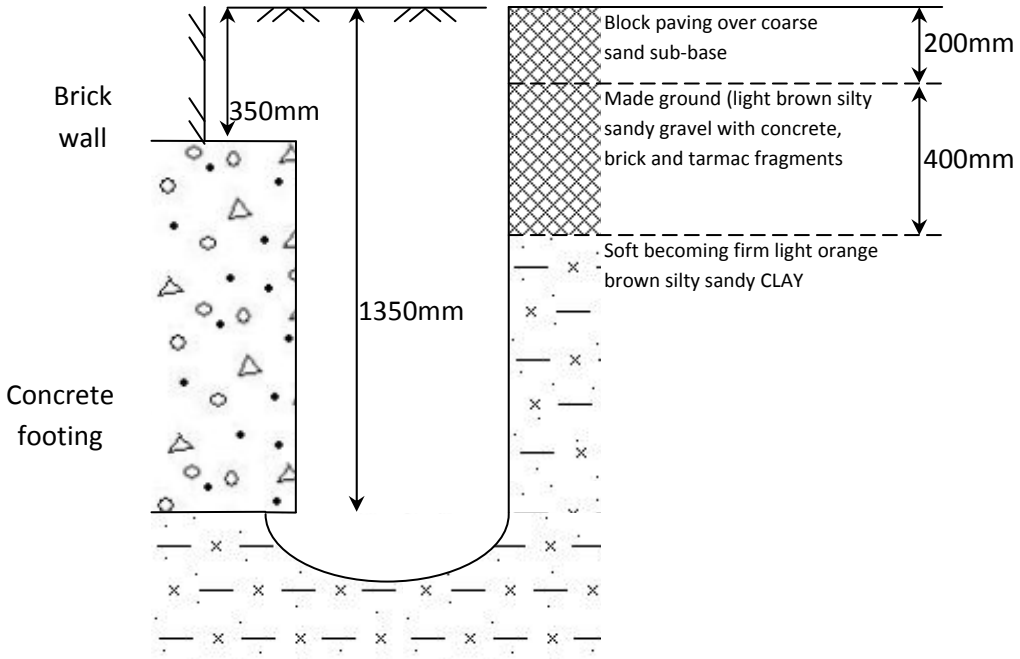
Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG		**Site** Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Trial Pit Number** TP7
Excavation Method Manual	**Dimensions** 800x600x1350	**Ground Level (mOD)** 103.41	**Client** Pastor Real Estate Limited	**Job Number** J11150
	Location Nice Place	**Dates** 19/07/11	**Engineer** Conisbee Consulting Engineers	**Job Number** Sheet 1 / 1

PLAN



SECTION A-A



Remarks

(1) No standing water encountered
(2) Sides of excavation remained stable during excavation
(3) No services encountered

Scale
1 : 20
Logged by
CA

Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

Trial Pit Photographs

Site	Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Job Number** J11150
Client	Pastor Real Estate Ltd	**Sheet** 1 / 2
Engineer	Conisbee Consulting Engineers	

Photograph 17

Trial Pit 1

Photograph 18
Trial Pit 2

Photograph 19

Trial Pit 3

Photograph 20

Trial Pit 4

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG	**Trial Pit Photographs**

Site	Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Job Number** J11150
Client	Pastor Real Estate Ltd	**Sheet** 2 / 2
Engineer	Conisbee Consulting Engineers	

Photograph 21

Trial Pit 5

Photograph 22

Trial Pit 6

Photograph 23

Trial Pit 7

PROJECT NAME	**NICE PLACE & FAR END, COMPTON AVENUE HIGHGATE N6 4LH - Job Number: J11150**	Date	12/08/2011
		Approved	J Sturges
PROJECT NO:	**GEO / 17182**	Page	1 of 5

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	1.00	D2	D	Mottled brown orange and grey silty CLAY with rare fine siltstone and rootlets	23	62	24	38	99									
BH1	2.00	U1	U	Firm mottled grey orange brown sandy CLAY	24					1.94	1.56	40	125	62				
BH1	4.00	U2	U	Firm dark grey slightly sandy CLAY	26					2.00	1.59	80	152	76				
BH1	6.00	U3	U	Stiff dark grey sandy CLAY	26					1.96	1.56	120	234	117				
BH1	9.00	U4	U	Stiff dark grey sandy CLAY with rare silt	24					2.02	1.63	180	208	104				
BH1	12.00	U5	U	Stiff dark grey brown sandy CLAY with rare silt	22					2.02	1.65	240	275	138				
BH1	15.00	U6	U	Stiff dark grey CLAY with rare silt	23					2.05	1.66	300	437	218				
BH1	18.00	U7	U	Stiff dark grey CLAY	27					1.97	1.55	360	273	137				
BH1	21.00	U8	U	Stiff dark grey laminated CLAY	22					1.99	1.64	420	361	180				
BH1	24.50	U9	U	Stiff dark grey CLAY with rare silt and coarse gravel	28					1.97	1.54	490	278	139				
BH2	1.50	D3	D	Mottled brown orange and grey fine sandy CLAY with rare rootlets	29	51	23	28	100									
BH3	1.20	U1	U	Firm mottled orange grey slightly sandy CLAY with rare roots and rootlets	29					1.91	1.48	24	132	66				

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME	**NICE PLACE & FAR END, COMPTON AVENUE HIGHGATE N6 4LH - Job Number: J11150**	Date	12/08/2011
		Approved	J Sturges
PROJECT NO:	**GEO / 17182**	Page	2 of 5

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
BH3	3.00	U2	U	Firm dark grey slightly sandy CLAY	28					1.94	1.52	60	129	65				
BH3	5.00	U3	U	Firm dark grey slightly sandy CLAY	23					2.06	1.67	100	177	89				
BH3	7.50	U4	U	Firm dark grey slightly sandy CLAY	23					2.09	1.70	150	233	116				
BH3	10.50	U5	U	Stiff dark grey brown fine sandy CLAY with rare shell fragments	23					2.04	1.67	210	335	168				
BH3	13.50	U6	U	Stiff fissured dark grey brown silty CLAY with rare fine sand and shell fragments	23					2.05	1.66	270	353	176				
BH3	16.50	U7	U	Stiff fissured dark grey brown CLAY with rare pyrite	26					1.99	1.57	330	289	144				
BH3	19.50	U8	U	Stiff fissured grey brown CLAY	26					1.98	1.58	390	381	191				
BH3	22.50	U9	U	Very stiff fissured grey brown CLAY	24					1.95	1.57	450	304	152				
BH4	0.90	D2	D	Mottled brown orange and grey fine sandy CLAY with rare rootlets	30	65	25	40	100									
BH4	1.20	U1	U	Firm to stiff orange brown and grey fine sandy CLAY with rare rootlets	28					1.91	1.49	24	148	74				
BH4	1.70	D3	D	Mottled brown orange and grey fine sandy CLAY sandy CLAY with rare rootlets	33										8.1	0.094		
BH4	2.00	D4	D	Dark orange and grey fine sandy CLAY	31	45	21	24	100									

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME	**NICE PLACE & FAR END, COMPTON AVENUE**	Date	12/08/2011
	HIGHGATE N6 4LH - Job Number: J11150	Approved	J Sturges
PROJECT NO:	**GEO / 17182**	Page	3 of 5

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
BH4	3.00	U2	U	Stiff brown and orange brown fine sandy silty CLAY	26					1.99	1.58	60	122	61				
BH4	3.50	D5	D	Grey fine sandy silty CLAY	26													
BH4	4.00	D6	D	Grey fine sandy silty CLAY	25													
BH4	5.00	U3	U	Firm to stiff grey fine sandy silty CLAY	26					2.05	1.63	100	198	99				
BH4	7.50	U4	U	Stiff grey silty CLAY with pockets of fine sand	23					2.04	1.66	150	221	111				
BH4	7.90	D9	D												6.1	0.65		
BH4	10.50	U5	U	Stiff grey silty CLAY (horizontal crack at base of sample)	24					2.03	1.64	210	221	110				
BH4	12.00	D13	D												7.1	1.3		
BH4	13.50	U6	U	Stiff grey fine sandy silty CLAY with rare shell fragments	25					2.07	1.65	270	354	177				
BH4	16.50	U7	U	Very stiff fissured dark grey brown CLAY	27					1.99	1.57	3300	335	168				
BH4	19.50	U8	U	Very stiff fissured dark grey brown CLAY	25					2.01	1.61	390	331	166				
BH4	22.50	U9	U	Very stiff fissured dark grey brown CLAY	27					1.98	1.56	450	295	147				

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

PROJECT NAME	**NICE PLACE & FAR END, COMPTON AVENUE**	Date	12/08/2011
	HIGHGATE N6 4LH - Job Number: J11150	Approved	J Sturges
PROJECT NO:	**GEO / 17182**	Page	4 of 5

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
BH5	2.00	U1	U	Firm brown grey mottled fine sandy CLAY	28					1.96	1.53	40	112	56				
BH5	4.00	U2	U	Firm to stiff grey fine sandy silty CLAY	26					2.01	1.60	80	138	69				
BH5	6.00	U3	U	Stiff dark grey brown silty CLAY with pockets of fine sand	23					2.02	1.64	120	283	142				
BH5	9.00	U4	U	Stiff grey fine sandy silty CLAY	23					2.03	1.66	180	269	134				
BH5	12.00	U5	U	Very stiff dark grey fine sandy silty CLAY	21					2.08	1.72	240	531	265				
BH5	15.00	U6	U	Stiff fissured grey CLAY	25					2.03	1.62	300	390	195				
BH5	18.00	U7	U	Very stiff fissured dark grey CLAY	26					1.99	1.58	360	283	141				
BH5	21.00	U8	U	Very stiff fissured dark grey silty CLAY with occasional pockets of fine sand	27					2.02	1.59	420	386	193				
BH7	0.70	D2	D	Mottled brown orange grey fine sandy CLAY with rare rootlets	20	60	27	33	100									
BH7	1.50	D3	D	Mottled orange brown and grey fine sandy CLAY	24													
BH7	2.50	D4	D	Mottled orange brown and grey fine sandy CLAY	28	47	23	24	100									
BH7	3.50	D5	D	Grey brown and dark orange fine sandy CLAY with rare fine sandstone gravel	27													

SUMMARY OF GEOTECHNICAL TESTING

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PROJECT NAME	**NICE PLACE & FAR END, COMPTON AVENUE**	Date	12/08/2011
	HIGHGATE N6 4LH - Job Number: J11150	Approved	J Sturges
PROJECT NO:	**GEO / 17182**	Page	5 of 5

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
BH7	4.50	D6	D	Dark grey fine sandy CLAY	26													
BH7	5.50	D7	D												5.6	0.43		

SUMMARY OF GEOTECHNICAL TESTING

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Quick Undrained Triaxial Test

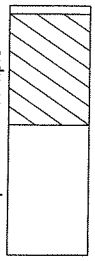
Borehole Number:	BH1
Sample Number:	U1
Depth (m):	2.00

Description:
Firm mottled grey orange brown sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.9
Diameter (mm):	103.8
Moisture Content (%):	24
Bulk Density (Mg/m³):	1.94
Dry Density (Mg/m³):	1.56
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.8
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	40
Strain at failure (%):	12.9
Maximum Deviator Stress (kPa):	125
Shear Stress Cu (kPa):	62

Orientation and position of sample



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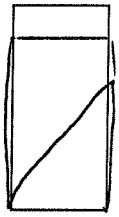

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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	GEOLABS ®

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Quick Undrained Triaxial Test

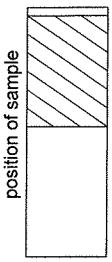
Borehole Number:	BH1
Sample Number:	U2
Depth (m):	4.00

Description:
Firm dark grey slightly sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.6
Diameter (mm):	103.4
Moisture Content (%):	26
Bulk Density (Mg/m³):	2.00
Dry Density (Mg/m³):	1.59
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	80
Strain at failure (%):	20.0
Maximum Deviator Stress (kPa):	152
Shear Stress Cu (kPa):	76

Orientation and position of sample



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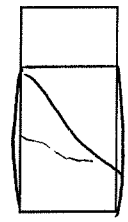

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HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

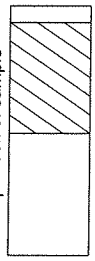
Borehole Number:	BH1
Sample Number:	U3
Depth (m):	6.00

Description:
Stiff dark grey sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.2
Diameter (mm):	104.8
Moisture Content (%):	26
Bulk Density (Mg/m³):	1.96
Dry Density (Mg/m³):	1.56
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	120
Strain at failure (%):	20.0
Maximum Deviator Stress (kPa):	234
Shear Stress Cu (kPa):	117

Orientation and position of sample



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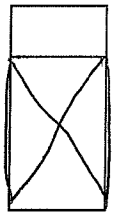

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Quick Undrained Triaxial Test

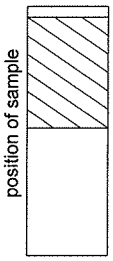
Borehole Number:	BH1
Sample Number:	U4
Depth (m):	9.00

Description:
Stiff dark grey sandy CLAY with rare silt

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.6
Diameter (mm):	103.4
Moisture Content (%):	24
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.63
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	180
Strain at failure (%):	15.4
Maximum Deviator Stress (kPa):	208
Shear Stress Cu (kPa):	104

Orientation and position of sample



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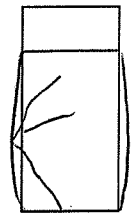

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HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

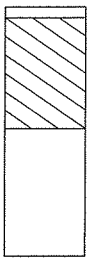
Borehole Number:	BH1
Sample Number:	U5
Depth (m):	12.00

Description:
Stiff dark grey brown sandy CLAY with rare silt

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.3
Diameter (mm):	103.3
Moisture Content (%):	22
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.65
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	240
Strain at failure (%):	8.4
Maximum Deviator Stress (kPa):	275
Shear Stress Cu (kPa):	138

Orientation and position of sample



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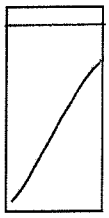

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Quick Undrained Triaxial Test

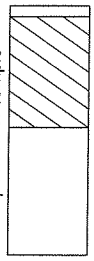
Borehole Number:	BH1
Sample Number:	U6
Depth (m):	15.00

Description:
Stiff dark grey CLAY with rare silt

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.3
Diameter (mm):	102.1
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.05
Dry Density (Mg/m³):	1.66
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.7
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	300
Strain at failure (%):	10.9
Maximum Deviator Stress (kPa):	437
Shear Stress Cu (kPa):	218

Orientation and position of sample



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Quick Undrained Triaxial Test

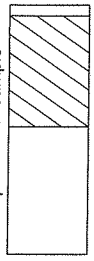
Borehole Number:	BH1
Sample Number:	U7
Depth (m):	18.00

Description:
Stiff dark grey CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.2
Diameter (mm):	103.4
Moisture Content (%):	27
Bulk Density (Mg/m³):	1.97
Dry Density (Mg/m³):	1.55
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.7
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	360
Strain at failure (%):	10.9
Maximum Deviator Stress (kPa):	273
Shear Stress Cu (kPa):	137

Orientation and position of sample



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Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	GEOLABS ®

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Authorised Signatories: ☐ J R Masters (Qual Mgr) ☐ C F Wallace (Tech Mgr) [X] J Sturges (Ops Mgr) ☐ Simon Burke (Snr Tech) ☐ J J M Powell (Tech Dir)
Client: Geotechnical & Environmental Associates Limited, Tyttenhanger House, Courses Road, St Albans, Hertfordshire AL4 0PG

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Quick Undrained Triaxial Test

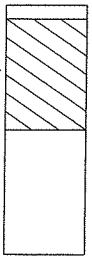
Borehole Number:	BH1
Sample Number:	U8
Depth (m):	21.00

Description:
Stiff dark grey laminated CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	195.7
Diameter (mm):	103.2
Moisture Content (%):	22
Bulk Density (Mg/m³):	1.99
Dry Density (Mg/m³):	1.64
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	420
Strain at failure (%):	3.3
Maximum Deviator Stress (kPa):	361
Shear Stress Cu (kPa):	180

Orientation and position of sample



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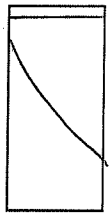

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NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

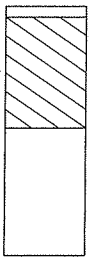
Borehole Number:	BH1
Sample Number:	U9
Depth (m):	24.50

Description:
Stiff dark grey CLAY with rare silt and coarse gravel

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.6
Diameter (mm):	103.5
Moisture Content (%):	28
Bulk Density (Mg/m³):	1.97
Dry Density (Mg/m³):	1.54
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.2
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	490
Strain at failure (%):	2.2
Maximum Deviator Stress (kPa):	278
Shear Stress Cu (kPa):	139

Orientation and position of sample



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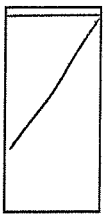

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HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

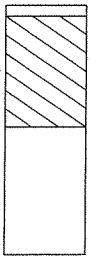
Borehole Number:	BH3
Sample Number:	U1
Depth (m):	1.20

Description:
Firm mottled orange grey slightly sandy CLAY with rare roots and rootlets

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	104.2
Moisture Content (%):	29
Bulk Density (Mg/m³):	1.91
Dry Density (Mg/m³):	1.48
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.0
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	24
Strain at failure (%):	17.8
Maximum Deviator Stress (kPa):	132
Shear Stress Cu (kPa):	66

Orientation and position of sample



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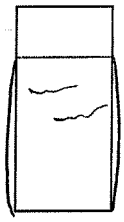

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HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

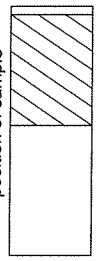
Borehole Number:	BH3
Sample Number:	U2
Depth (m):	3.00

Description:
Firm dark grey slightly sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.8
Diameter (mm):	103.5
Moisture Content (%):	28
Bulk Density (Mg/m³):	1.94
Dry Density (Mg/m³):	1.52
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	60
Strain at failure (%):	20.3
Maximum Deviator Stress (kPa):	129
Shear Stress Cu (kPa):	65

Orientation and position of sample



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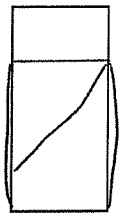

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Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

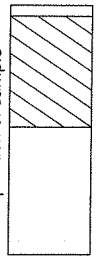
Borehole Number:	BH3
Sample Number:	U3
Depth (m):	5.00

Description:
Firm dark grey slightly sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.2
Diameter (mm):	102.1
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.06
Dry Density (Mg/m³):	1.67
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	100
Strain at failure (%):	7.0
Maximum Deviator Stress (kPa):	177
Shear Stress Cu (kPa):	89

Orientation and position of sample



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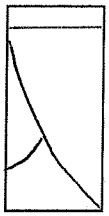

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Quick Undrained Triaxial Test

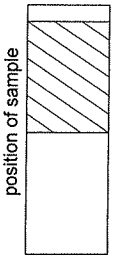
Borehole Number:	BH3
Sample Number:	U4
Depth (m):	7.50

Description:
Firm dark grey slightly sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.3
Diameter (mm):	101.4
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.09
Dry Density (Mg/m³):	1.70
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	150
Strain at failure (%):	15.3
Maximum Deviator Stress (kPa):	233
Shear Stress Cu (kPa):	116

Orientation and position of sample



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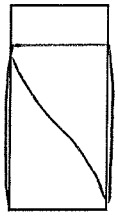

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Initials: JS	**GEO / 17182**
Date: 12/08/2011	Project Name: **NICE PLACE & FAR END, COMPTON AVENUE HIGHGATE N6 4LH - Job Number: J11150**

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Quick Undrained Triaxial Test

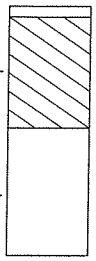
Borehole Number:	BH3
Sample Number:	U5
Depth (m):	10.50

Description:
Stiff dark grey brown fine sandy CLAY with rare shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.3
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.04
Dry Density (Mg/m³):	1.67
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	210
Strain at failure (%):	9.4
Maximum Deviator Stress (kPa):	335
Shear Stress Cu (kPa):	168

Orientation and position of sample



Mode of failure:

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Initials: JS

Date: 12/08/2011

Project Number: **GEO / 17182**

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Quick Undrained Triaxial Test

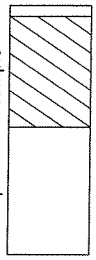
Borehole Number:	BH3
Sample Number:	U6
Depth (m):	13.50

Description:
Stiff fissured dark grey brown silty CLAY
with rare fine sand and shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.5
Diameter (mm):	102.6
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.05
Dry Density (Mg/m³):	1.66
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.8
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	270
Strain at failure (%):	11.9
Maximum Deviator Stress (kPa):	353
Shear Stress Cu (kPa):	176

Orientation and position of sample



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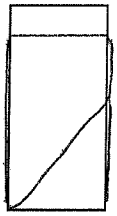

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Quick Undrained Triaxial Test

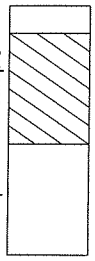
Borehole Number:	BH3
Sample Number:	U7
Depth (m):	16.50

Description:
Stiff fissured dark grey brown CLAY with rare pyrite

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.0
Diameter (mm):	102.9
Moisture Content (%):	26
Bulk Density (Mg/m³):	1.99
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	330
Strain at failure (%):	8.0
Maximum Deviator Stress (kPa):	289
Shear Stress Cu (kPa):	144

Orientation and position of sample



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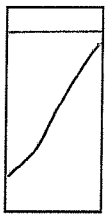

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Project Number: **GEO / 17182**

Project Name: **NICE PLACE & FAR END, COMPTON AVENUE**

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

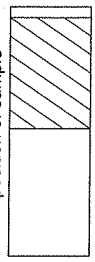
Borehole Number:	BH3
Sample Number:	U8
Depth (m):	19.50

Description:
Stiff fissured grey brown CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.0
Moisture Content (%):	26
Bulk Density (Mg/m³):	1.98
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):	390
Strain at failure (%):	8.4
Maximum Deviator Stress (kPa):	381
Shear Stress Cu (kPa):	191

Orientation and position of sample



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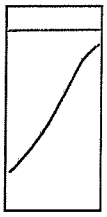

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Initials: JS	**GEO / 17182**	
Date: 12/08/2011	Project Name: **NICE PLACE & FAR END, COMPTON AVENUE**	
	HIGHGATE N6 4LH - Job Number: J11150	

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Quick Undrained Triaxial Test

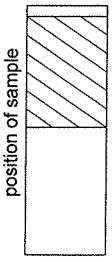
Borehole Number:	BH3
Sample Number:	U9
Depth (m):	22.50

Description:
Very stiff fissured grey brown CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	197.0
Diameter (mm):	103.4
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):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	450
Strain at failure (%):	6.6
Maximum Deviator Stress (kPa):	304
Shear Stress Cu (kPa):	152

Orientation and position of sample



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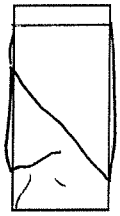

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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
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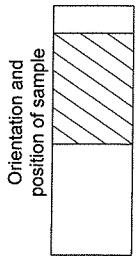
Quick Undrained Triaxial Test

Borehole Number: BH4 Sample Number: U1 Depth (m): 1.20	Description: Firm to stiff orange brown and grey fine sandy CLAY with rare rootlets

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.5
Diameter (mm):	103.5
Moisture Content (%):	28
Bulk Density (Mg/m³):	1.91
Dry Density (Mg/m³):	1.49
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	1.1
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	24
Strain at failure (%):	20.0
Maximum Deviator Stress (kPa):	148
Shear Stress Cu (kPa):	74

Orientation and position of sample



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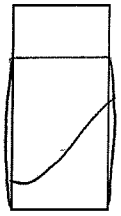

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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
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Quick Undrained Triaxial Test

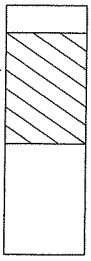
Borehole Number:	BH4
Sample Number:	U2
Depth (m):	3.00

Description:
Stiff brown and orange brown fine sandy silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.5
Moisture Content (%):	26
Bulk Density (Mg/m³):	1.99
Dry Density (Mg/m³):	1.58
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.4
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	60
Strain at failure (%):	5.0
Maximum Deviator Stress (kPa):	122
Shear Stress Cu (kPa):	61

Orientation and position of sample



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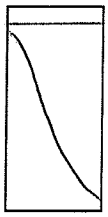

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Quick Undrained Triaxial Test

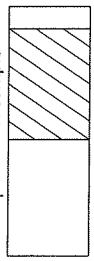
Borehole Number:	BH4
Sample Number:	U3
Depth (m):	5.00

Description:
Firm to stiff grey fine sandy silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.0
Diameter (mm):	102.5
Moisture Content (%):	26
Bulk Density (Mg/m³):	2.05
Dry Density (Mg/m³):	1.63
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.8
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	100
Strain at failure (%):	12.4
Maximum Deviator Stress (kPa):	198
Shear Stress Cu (kPa):	99

Orientation and position of sample



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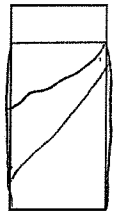

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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	GEOLABS ®

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Quick Undrained Triaxial Test

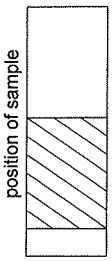
Borehole Number:	BH4
Sample Number:	U4
Depth (m):	7.50

Description:
Stiff grey silty CLAY
with pockets of fine sand

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.3
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.04
Dry Density (Mg/m³):	1.66
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	150
Strain at failure (%):	8.9
Maximum Deviator Stress (kPa):	221
Shear Stress Cu (kPa):	111

Orientation and position of sample



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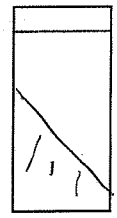

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NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

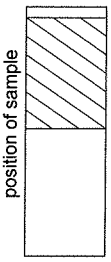
Borehole Number:	BH4
Sample Number:	U5
Depth (m):	10.50

Description:
Stiff grey silty CLAY
(horizontal crack at base of sample)

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.5
Moisture Content (%):	24
Bulk Density (Mg/m³):	2.03
Dry Density (Mg/m³):	1.64
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.9
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	210
Strain at failure (%):	15.8
Maximum Deviator Stress (kPa):	221
Shear Stress Cu (kPa):	110

Orientation and position of sample



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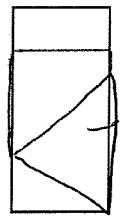

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HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

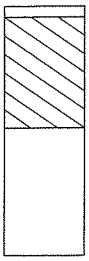
Borehole Number:	BH4
Sample Number:	U6
Depth (m):	13.50

Description:
Stiff grey fine sandy silty CLAY
with rare shell fragments

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	201.5
Diameter (mm):	102.8
Moisture Content (%):	25
Bulk Density (Mg/m³):	2.07
Dry Density (Mg/m³):	1.65
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.4
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	270
Strain at failure (%):	6.0
Maximum Deviator Stress (kPa):	354
Shear Stress Cu (kPa):	177

Orientation and position of sample



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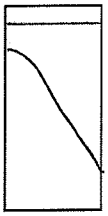

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HIGHGATE N6 4LH - Job Number: J11150

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Authorised Signatories: ☐ J R Masters (Qual Mgr) ☐ C F Wallace (Tech Mgr) [X] J Sturges (Ops Mgr) ☐ Simon Burke (Snr Tech) ☐ J J M Powell (Tech Dir)
Client: Geotechnical & Environmental Associates Limited, Tyttenhanger House, Courses Road, St Albans, Hertfordshire AL4 0PG

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Quick Undrained Triaxial Test

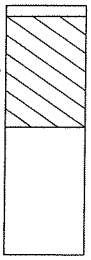
Borehole Number:	BH4
Sample Number:	U7
Depth (m):	16.50

Description:
Very stiff fissured dark grey brown CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.9
Moisture Content (%):	27
Bulk Density (Mg/m³):	1.99
Dry Density (Mg/m³):	1.57
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.7
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	3300
Strain at failure (%):	11.4
Maximum Deviator Stress (kPa):	335
Shear Stress Cu (kPa):	168

Orientation and position of sample



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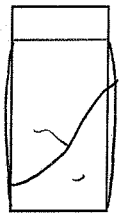

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NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

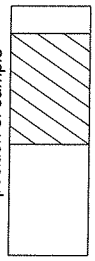
Borehole Number:	BH4
Sample Number:	U8
Depth (m):	19.50

Description:
Very stiff fissured dark grey brown CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.4
Moisture Content (%):	25
Bulk Density (Mg/m³):	2.01
Dry Density (Mg/m³):	1.61
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.3
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	390
Strain at failure (%):	4.5
Maximum Deviator Stress (kPa):	331
Shear Stress Cu (kPa):	166

Orientation and position of sample



Mode of failure:

Checked and Approved

Initials: JS

Date: 12/08/2011

Project Number:

GEO / 17182

Project Name:

NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

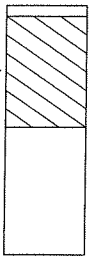
Borehole Number:	BH4
Sample Number:	U9
Depth (m):	22.50

Description:
Very stiff fissured dark grey brown CLAY

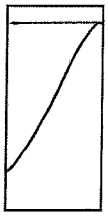
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.3
Moisture Content (%):	27
Bulk Density (Mg/m³):	1.98
Dry Density (Mg/m³):	1.56
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	450
Strain at failure (%):	6.4
Maximum Deviator Stress (kPa):	295
Shear Stress Cu (kPa):	147

Orientation and position of sample



Mode of failure:



Checked and Approved

Initials: JS

Date: 12/08/2011

Project Number:

GEO / 17182

Project Name:

NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

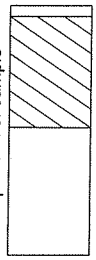
Borehole Number:	BH5
Sample Number:	U1
Depth (m):	2.00

Description:
Firm brown grey mottled fine sandy CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.4
Moisture Content (%):	28
Bulk Density (Mg/m³):	1.96
Dry Density (Mg/m³):	1.53
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):	112
Shear Stress Cu (kPa):	56

Orientation and position of sample



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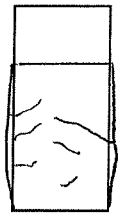

Checked and Approved

Initials: JS

Date: 12/08/2011

Project Number: **GEO / 17182**

Project Name: **NICE PLACE & FAR END, COMPTON AVENUE**

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

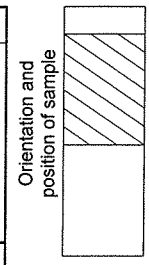
Borehole Number:	BH5
Sample Number:	U2
Depth (m):	4.00

Description:
Firm to stiff grey fine sandy silty CLAY

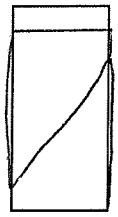
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.6
Moisture Content (%):	26
Bulk Density (Mg/m³):	2.01
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):	80
Strain at failure (%):	9.4
Maximum Deviator Stress (kPa):	138
Shear Stress Cu (kPa):	69

Orientation and position of sample



Mode of failure:



Checked and Approved

Initials: JS

Date: 12/08/2011

Project Number:

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Project Name:

NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

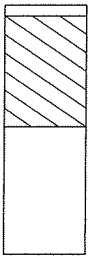
Borehole Number:	BH5
Sample Number:	U3
Depth (m):	6.00

Description:
Stiff dark grey brown silty CLAY with pockets of fine sand

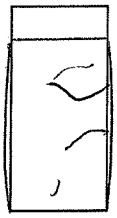
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.1
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.64
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.7
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	120
Strain at failure (%):	10.4
Maximum Deviator Stress (kPa):	283
Shear Stress Cu (kPa):	142

Orientation and position of sample



Mode of failure:



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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	GEOLABS ®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Test

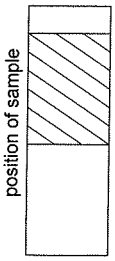
Borehole Number:	BH5
Sample Number:	U4
Depth (m):	9.00

Description:
Stiff grey fine sandy silty CLAY

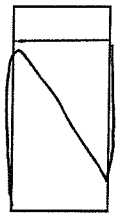
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.5
Diameter (mm):	102.6
Moisture Content (%):	23
Bulk Density (Mg/m³):	2.03
Dry Density (Mg/m³):	1.66
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.8
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	180
Strain at failure (%):	12.3
Maximum Deviator Stress (kPa):	269
Shear Stress Cu (kPa):	134

Orientation and position of sample



Mode of failure:



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Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	
Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	

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Quick Undrained Triaxial Test

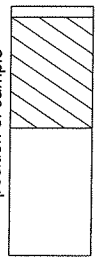
Borehole Number:	BH5
Sample Number:	U5
Depth (m):	12.00

Description:
Very stiff dark grey fine sandy silty CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.9
Moisture Content (%):	21
Bulk Density (Mg/m³):	2.08
Dry Density (Mg/m³):	1.72
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.5
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	240
Strain at failure (%):	7.4
Maximum Deviator Stress (kPa):	531
Shear Stress Cu (kPa):	265

Orientation and position of sample



Mode of failure:

Checked and Approved	Project Number:	
Initials: JS	**GEO / 17182**	
Date: 12/08/2011	Project Name: **NICE PLACE & FAR END, COMPTON AVENUE HIGHGATE N6 4LH - Job Number: J11150**	UKAS TESTING 1982

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Quick Undrained Triaxial Test

Borehole Number:	BH5
Sample Number:	U6
Depth (m):	15.00

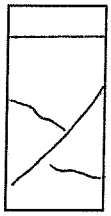
Description:
Stiff fissured grey CLAY

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	103.1
Moisture Content (%):	25
Bulk Density (Mg/m³):	2.03
Dry Density (Mg/m³):	1.62
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	300
Strain at failure (%):	9.9
Maximum Deviator Stress (kPa):	390
Shear Stress Cu (kPa):	195

Orientation and position of sample

Mode of failure:



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NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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Quick Undrained Triaxial Test

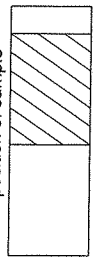
Borehole Number:	BH5
Sample Number:	U7
Depth (m):	18.00

Description:
Very stiff fissured dark grey CLAY

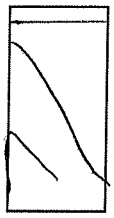
Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.8
Moisture Content (%):	26
Bulk Density (Mg/m³):	1.99
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):	360
Strain at failure (%):	6.4
Maximum Deviator Stress (kPa):	283
Shear Stress Cu (kPa):	141

Orientation and position of sample



Mode of failure:



Checked and Approved

Initials: JS

Date: 12/08/2011

Project Number:

GEO / 17182

Project Name:

NICE PLACE & FAR END, COMPTON AVENUE

HIGHGATE N6 4LH - Job Number: J11150

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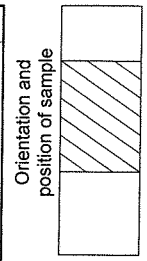
Quick Undrained Triaxial Test

Borehole Number: BH5 Sample Number: U8 Depth (m): 21.00	Description: Very stiff fissured dark grey silty CLAY with occasional pockets of fine sand

Single Stage Specimen

Specimen details	Single Specimen
Specimen condition:	Undisturbed
Length (mm):	202.0
Diameter (mm):	102.9
Moisture Content (%):	27
Bulk Density (Mg/m³):	2.02
Dry Density (Mg/m³):	1.59
Test details	
Latex membrane thickness (mm):	0.3
Membrane correction (kPa):	0.6
Axial displacement rate (%/min):	2.0
Cell pressure (kPa):	420
Strain at failure (%):	7.9
Maximum Deviator Stress (kPa):	386
Shear Stress Cu (kPa):	193

Orientation and position of sample



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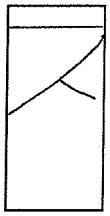

Checked and Approved	Project Number: GEO / 17182	
Initials: JS	Project Name: NICE PLACE & FAR END, COMPTON AVENUE	UKAS TESTING 1982
Date: 12/08/2011	HIGHGATE N6 4LH - Job Number: J11150	GEOLABS ®

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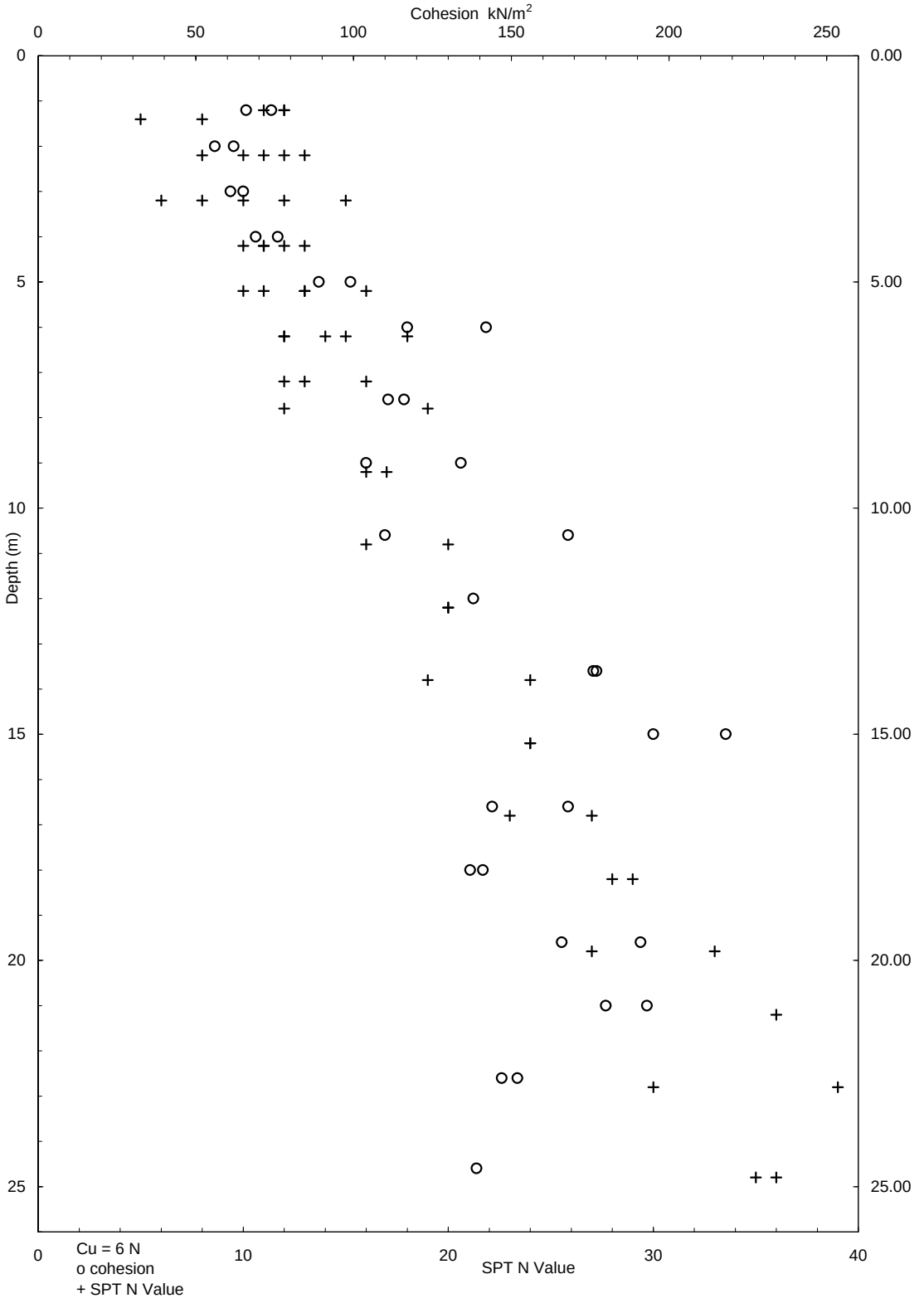
GEA Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG	**SPT & Cohesion / Depth Graph**

Site	Nice Place & Far End, Compton Avenue, Highgate, N6 4LH	**Job Number** J11150
Client	Pastor Real Estate Limited	**Sheet** 1 / 1
Engineer	Conisbee	



discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

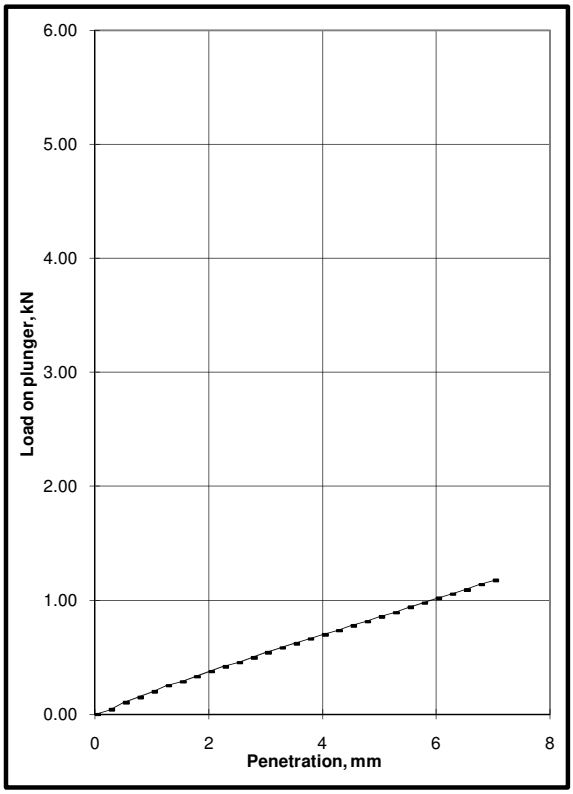
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR1	**Depth (m):**	0.40	**Test date:**	GGB010719

Visual description: Dark grey brown slightly gravelly, slightly sandy clay. Gravel is coarse to medium subrounded.

Moisture content (%):	17	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
4.3

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

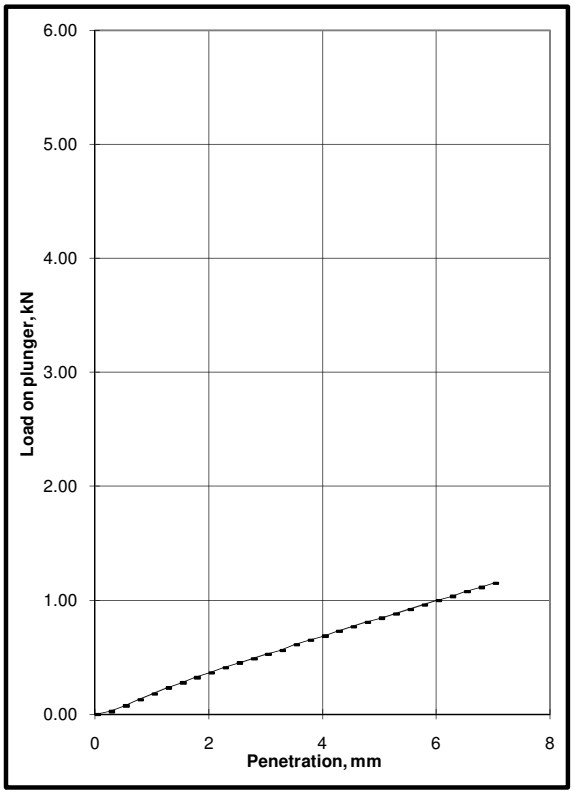
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR2	**Depth (m):**	0.35	**Test date:**	GGB010719

Visual description: Stiff brown clay

Moisture content (%):	23	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
4.2

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

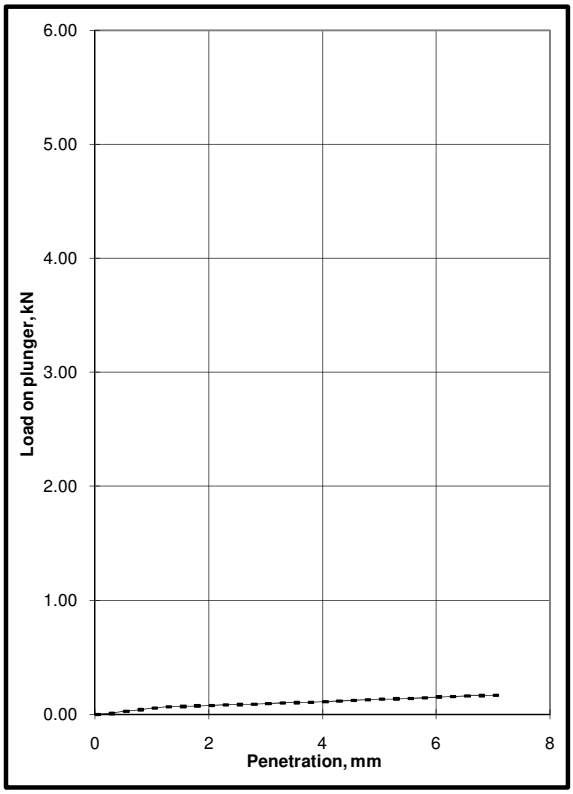
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR3	**Depth (m):**	0.35	**Test date:**	GGB010719

Visual description: Soft grey brown slightly sandy clay.

Moisture content (%):	18	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
0.7

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

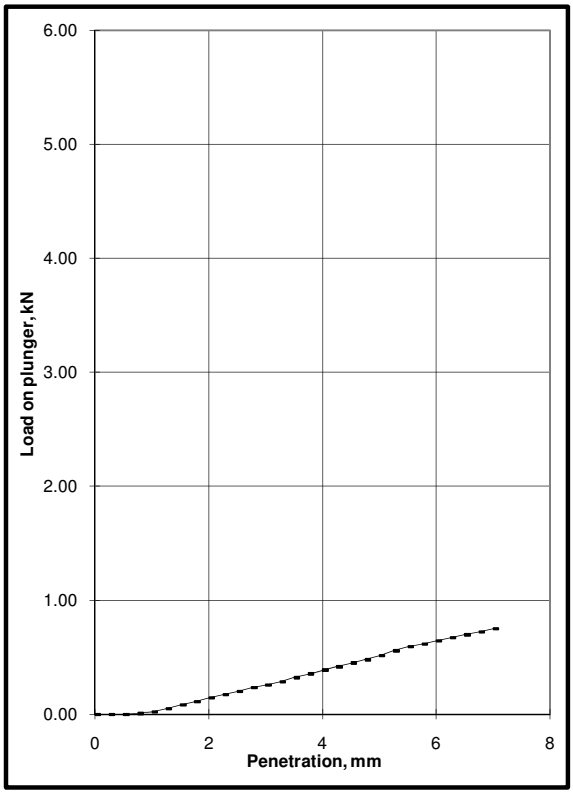
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR4	**Depth (m):**	0.35	**Test date:**	GGB010719

Visual description: Stiff grey brown occasionally gravelly clay. Gravel is coarse to medium angular flint

Moisture content (%):	28	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
2.6

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

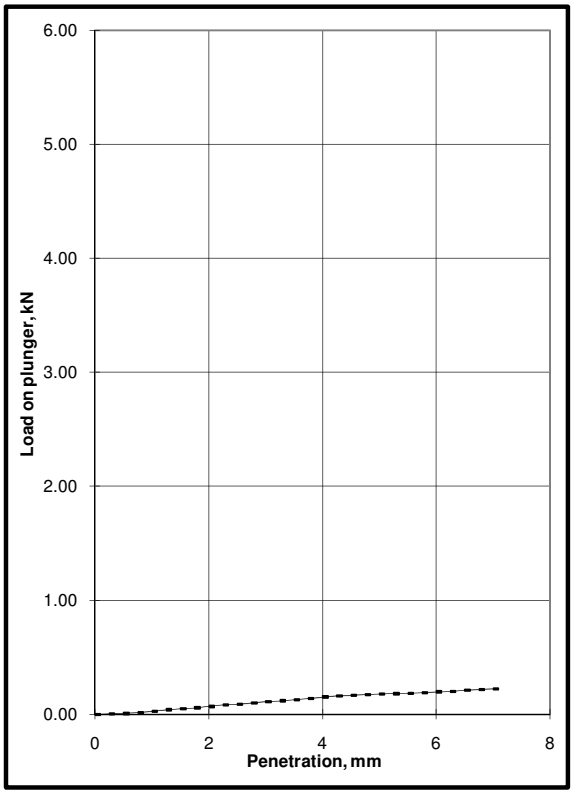
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR5	**Depth (m):**	0.35	**Test date:**	GGB010719

Visual description: Brown grey sandy gravelly clay. Gravel is coarse to fine subangular subrounded flint.

Moisture content (%):	20	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
0.9

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

discovery drilling

GEO-ENVIRONMENTAL DRILLING SPECIALISTS

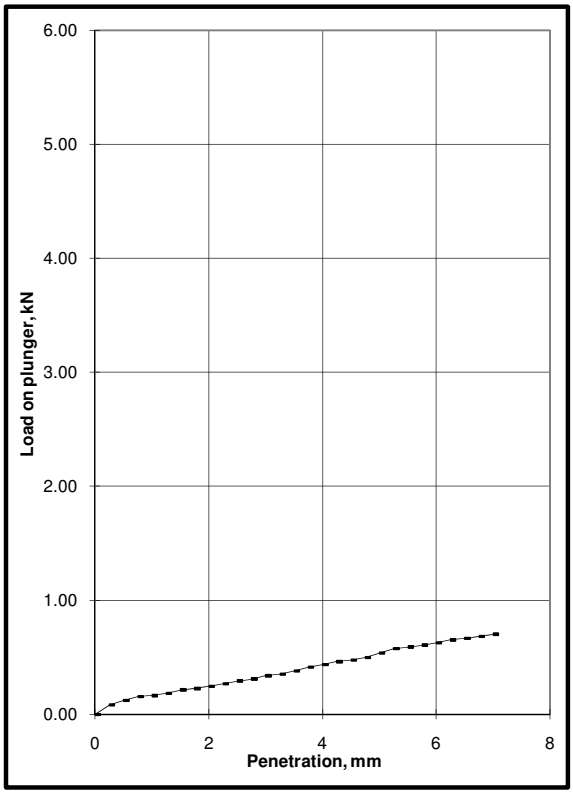
CBR TEST REPORT

Client:	GEA			**Report No:**	GGB010719
Site:	Nice Place			**Report date:**	GGB010811
Location Ref:	CBR6	**Depth (m):**	0.40	**Test date:**	GGB010719

Visual description: Brown sandy clay.

Moisture content (%):	16	**Proving Ring kN:**	10
TEST DETAILS: **Surcharge kg:**	9	**Seating load N:**	10

Force - penetration curve



CBR %
2.7

17/08/2011	**Determination of the in-situ California Bearing Ratio (CBR)** BS 1377 : Part 9 : Clause 4 : 1990	Approved Initials : Date :

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Caroline Anderson

LABORATORY TEST REPORT

Results of analysis of 3 samples
received 25 July 2011

J11150 - Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

Chemtest
The right chemistry to deliver results

Report Date
02 August 2011

Login Batch No					**124628**		
Chemtest LIMS ID					AG27951	AG27952	AG27953
Sample ID					TP5	TP3	TP7
Sample No							
Sampling Date					20/07/2011	20/07/2011	20/07/2011
Depth					0.3m	0.3m	0.3m
Matrix					*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*			
2300	Cyanide (total)	57125	mg kg-¹	M	<0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg-¹	M	2.2	31	2.5
2625	Total Organic Carbon		%	M	0.45	5.2	0.81
2220	Chloride (extractable)	16887006	g l-¹	M	<0.010	<0.010	<0.010
2430	Sulfate (total) as SO4		mg kg-¹		7800	2500	800
2450	Arsenic	7440382	mg kg-¹	M	10	11	9.9
	Cadmium	7440439	mg kg-¹	M	<0.10	0.27	0.19
	Chromium	7440473	mg kg-¹	M	35	18	11
	Copper	7440508	mg kg-¹	M	23	170	9.0
	Mercury	7439976	mg kg-¹	M	<0.10	1.1	<0.10
	Nickel	7440020	mg kg-¹	M	39	20	11
	Lead	7439921	mg kg-¹	M	25	1500	66
	Selenium	7782492	mg kg-¹	M	0.29	<0.20	<0.20
	Zinc	7440666	mg kg-¹	M	79	520	46
2676	TPH >C5-C6		mg kg-¹	U	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg-¹	U	< 0.1	< 0.1	< 0.1
	TPH >C7-C8		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C8-C10		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C10-C12		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C12-C16		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C16-C21		mg kg-¹	M	< 0.1	0.76	< 0.1
	TPH >C21-C35		mg kg-¹	M	< 0.1	1.3	< 0.1
	Total Petroleum Hydrocarbons		mg kg-¹	U	< 10	< 10	< 10
2700	Naphthalene	91203	mg kg-¹	M	< 0.1	0.78	< 0.1
	Acenaphthylene	208968	mg kg-¹	M	< 0.1	0.26	< 0.1
	Acenaphthene	83329	mg kg-¹	M	< 0.1	< 0.1	< 0.1
	Fluorene	86737	mg kg-¹	M	< 0.1	< 0.1	< 0.1

All tests undertaken between 25/07/2011 and 28/07/2011

* 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 Caroline Anderson

LABORATORY TEST REPORT

Results of analysis of 3 samples
received 25 July 2011

J11150 - Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

Chemtest
The right chemistry to deliver results

Report Date
02 August 2011

					124628		
					AG27951	AG27952	AG27953
					TP5	TP3	TP7
					20/07/2011	20/07/2011	20/07/2011
					0.3m	0.3m	0.3m
					SOIL	*SOIL*	*SOIL*
2700	Phenanthrene	85018	mg kg-¹	M	0.17	0.47	< 0.1
	Anthracene	120127	mg kg-¹	M	< 0.1	0.14	< 0.1
	Fluoranthene	206440	mg kg-¹	M	0.86	0.64	< 0.1
	Pyrene	129000	mg kg-¹	M	0.66	0.47	< 0.1
	Benzo[a]anthracene	56553	mg kg-¹	M	0.61	0.47	< 0.1
	Chrysene	218019	mg kg-¹	M	0.46	0.36	< 0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	0.79	0.34	< 0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	M	0.41	0.19	< 0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	0.24	0.21	< 0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	M	< 0.1	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	0.26	0.11	< 0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	0.46	< 0.1	< 0.1
	Total (of 16) PAHs		mg kg-¹	M	4.9	4.4	< 2
2920	Phenols (total)		mg kg-¹	N	<0.3	<0.3	<0.3
2010	pH			M	8.5	8.7	9.0
2030	Moisture		%	n/a	8.57	20.8	11.1
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brown	brown	brown
	Soil texture			n/a	sand	sand	sand
	Other material			n/a	stones	stones	stones

All tests undertaken between 25/07/2011 and 28/07/2011

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AL4 0PG

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LABORATORY TEST REPORT

Results of analysis of 3 samples
received 18 July 2011

J11150 - Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

Chemtest
The right chemistry to deliver results

Report Date
26 July 2011

Login Batch No					**118683**		
Chemtest LIMS ID					AG25910	AG25911	AG25912
Sample ID					BH7	BH6	BH2
Sample No							
Sampling Date					13/07/2011	13/07/2011	13/07/2011
Depth					0.3m	0.3m	0.2m
Matrix					*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*			
2300	Cyanide (total)	57125	mg kg-¹	M	<0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg-¹	M	5.0	6.1	1.0
2625	Total Organic Carbon		%	M	1.8	2.7	1.8
2220	Chloride (extractable)	16887006	g l-¹	M	<0.010	<0.010	<0.010
2430	Sulfate (total) as SO4		mg kg-¹		400	600	100
2450	Arsenic	7440382	mg kg-¹	M	14	16	5.9
	Cadmium	7440439	mg kg-¹	M	<0.10	0.19	<0.10
	Chromium	7440473	mg kg-¹	M	27	26	13
	Copper	7440508	mg kg-¹	M	30	35	8.7
	Mercury	7439976	mg kg-¹	M	0.54	0.29	0.68
	Nickel	7440020	mg kg-¹	M	15	19	5.8
	Lead	7439921	mg kg-¹	M	110	110	45
	Selenium	7782492	mg kg-¹	M	0.47	0.46	<0.20
	Zinc	7440666	mg kg-¹	M	86	100	26
2676	TPH >C5-C6		mg kg-¹	U	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg-¹	U	< 0.1	< 0.1	< 0.1
	TPH >C7-C8		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C8-C10		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C10-C12		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C12-C16		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C16-C21		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	TPH >C21-C35		mg kg-¹	M	< 0.1	< 0.1	< 0.1
	Total Petroleum Hydrocarbons		mg kg-¹	U	< 10	< 10	< 10
2700	Naphthalene	91203	mg kg-¹	M	0.67	0.52	< 0.1
	Acenaphthylene	208968	mg kg-¹	M	2.4	1.7	< 0.1
	Acenaphthene	83329	mg kg-¹	M	2	0.95	< 0.1
	Fluorene	86737	mg kg-¹	M	0.61	0.34	< 0.1

All tests undertaken between 19/07/2011 and 26/07/2011

* Accreditation status

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

GEA
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LABORATORY TEST REPORT

Results of analysis of 3 samples
received 18 July 2011

J11150 - Nice Place & Far End, Compton Avenue, Highgate, N6 4LH

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Report Date
26 July 2011

					118683		
					AG25910	AG25911	AG25912
					BH7	BH6	BH2
					13/07/2011	13/07/2011	13/07/2011
					0.3m	0.3m	0.2m
					SOIL	*SOIL*	*SOIL*
2700	Phenanthrene	85018	mg kg-¹	M	1.8	0.61	< 0.1
	Anthracene	120127	mg kg-¹	M	0.21	< 0.1	< 0.1
	Fluoranthene	206440	mg kg-¹	M	3.1	0.69	< 0.1
	Pyrene	129000	mg kg-¹	M	2.2	0.56	< 0.1
	Benzo[a]anthracene	56553	mg kg-¹	M	1.5	0.35	< 0.1
	Chrysene	218019	mg kg-¹	M	1.7	0.39	< 0.1
	Benzo[b]fluoranthene	205992	mg kg-¹	M	2	0.68	< 0.1
	Benzo[k]fluoranthene	207089	mg kg-¹	M	1.1	0.49	< 0.1
	Benzo[a]pyrene	50328	mg kg-¹	M	1.5	0.52	< 0.1
	Dibenzo[a,h]anthracene	53703	mg kg-¹	M	< 0.1	< 0.1	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	0.93	0.36	< 0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	1.3	0.44	< 0.1
	Total (of 16) PAHs		mg kg-¹	M	23	8.6	< 2
2920	Phenols (total)		mg kg-¹	N	<0.3	<0.3	<0.3
2010	pH			M	7.2	7.6	3.9
2030	Moisture		%	n/a	17.3	13.1	9.23
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02
2140	Soil colour			n/a	brawn	brawn	brawn
	Soil texture			n/a	loam	clay	sand
	Other material			n/a	stones roots	stones roots	stones roots

All tests undertaken between 19/07/2011 and 26/07/2011

* Accreditation status

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

Column page 1

LIMS sample ID range AG25910 to AG25912

GEA

Geotechnical & Environmental Associates

www.gea-ltd.co.uk

Generic Risk-Based Soil Screening Values

Site	Nice Place, Compton Avenue, London N6 4LH	**Job Number** J22272
Client	WT Capital Group Ltd	**Sheet** 1 / 2
Engineer	Conisbee Consulting Engineers	

Proposed End Use **Residential with plant uptake**

Soil Organic Matter content % **1.0**

Contaminant	Screening Value mg/kg	Data Source
Metals		
Arsenic	37	C4SL
Cadmium	22	C4SL
Chromium (III)	910	S4UL
Chromium (VI)	21	C4SL
Copper	2,400	S4UL
Lead	200	C4SL
Elemental Mercury	1.2	S4UL
Inorganic Mercury	200	C4SL
Nickel	130	S4UL
Selenium	250	S4UL
Zinc	3,700	S4UL
Anions		
Soluble Sulphate	500 mg/l	Structures
Sulphide	50	Structures
Chloride	400	Structures
Others		
Organic Carbon (%)	6	Methanogenic potential
Total Cyanide	140	WRAS
Total Mono Phenols	184	SGV
PAH		
Naphthalene	15.00	C4SL
Acenaphthylene	170	S4UL
Acenaphthene	210	S4UL
Fluorene	170	S4UL
Phenanthrene	95	S4UL
Anthracene	2,400	S4UL
Fluoranthene	280	S4UL
Pyrene	620	S4UL
Benzo(a)anthracene	7.2	S4UL
Chrysene	15	S4UL
Benzo(b)fluoranthene	2.6	S4UL
Benzo(k)fluoranthene	77.0	S4UL
Benzo(a)pyrene	4.35	C4SL
Indeno(1 2 3 cd)pyrene	27.0	S4UL
Dibenz(a h)anthracene	0.24	S4UL
Benzo (g h i)perylene	320	S4UL

Contaminant	Screening Value mg/kg	Data Source
Hydrocarbons		
Banded TPH (8-10)	52	Calc1
Banded TPH (10-12)	114	Calc1
Banded TPH (12-16)	215	Calc1
Banded TPH (16-21)	400	Calc1
Banded TPH (21-35)	1692	Calc1
Benzene	0.2	C4SL
Toluene	120	SGV
Ethyl Benzene	65	SGV
Xylene	42	SGV
Aliphatic C5-C6	42	S4UL
Aliphatic C6-C8	100	S4UL
Aliphatic C8-C10	27	S4UL
Aliphatic C10-C12	130	S4UL
Aliphatic C12-C16	1100	S4UL
Aliphatic C16-C35	65,000	S4UL
Aromatic C6-C7	See Benzene	S4UL
Aromatic C7-C8	See Toluene	S4UL
Aromatic C8-C10	34	S4UL
Aromatic C10-C12	74	S4UL
Aromatic C12-C16	140	S4UL
Aromatic C16-C21	260	S4UL
Aromatic C21-C35	1100	S4UL
PRO (C_5 –C_{10})	323	Calc2
DRO (C_{12} –C_{28})	66,500	Calc2
Lube Oil (C_{28} –C_{44})	66,100	Calc2
TPH	**500**	Trigger to consider speciated testing
Chlorinated Solvents		
1,1,1 trichloroethane (TCA)	8.8	S4UL
tetrachloroethane (PCA)	1.2	S4UL
tetrachloroethene (PCE)	0.31	C4SL
trichloroethene (TCE)	0.0093	C4SL
1,2-dichloroethane (DCA)	0.11	C4SL
vinyl chloride (Chloroethene)	0.0064	C4SL
tetrachloromethane (Carbon tetra	0.026	S4UL
trichloromethane (Chloroform)	0.91	S4UL
cis1-2 dichloroethene (DCE)	0.46	C4SL

Notes

Concentrations measured below these screening values may be considered to represent 'uncontaminated conditions' which pose a 'LOW' risk to human health. Concentrations measured in excess of these values indicate a potential risk which require further, site specific risk assessment.

C4SL - Defra Category 4 Screening value based on Low Level of Toxicological Risk

SGV - Soil Guideline Value, derived from the CLEA model and published by Environment Agency 2009 - where not superseded by C4SL

S4UL - LQM/CIEH Suitable for use Level (2015) Reproduced with permission Publication No S4UL3848

Calc1 - sum of thresholds for Ali & Aro fractions - assuming a 35% Aro:65% Ali ratio as is commonly encountered in the soil

Calc2 - sum of nearest available carbon range specified including BTEX for PRO fraction

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
35380198_1_1

Customer Reference:
J11150

National Grid Reference:
527180, 187840

Slice:
A

Site Area (Ha):
0.61

Search Buffer (m):
1000

Site Details:

Nice Place
Compton Avenue
LONDON
N6 4LH

Client Details:

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

Prepared For:

Pastor Real Estate

Geotechnical & Environmental Associates

Contents

Report Section	Page Number
Summary	-
Agency & Hydrological	1
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Hazardous Substances	-
Geological	5
Industrial Land Use	6
Sensitive Land Use	7
Data Currency	8
Data Suppliers	14
Useful Contacts	15

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.

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Report Version v47.0

Geotechnical & Environmental Associates

Summary

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	pg 1			1	
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
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 1		Yes		
Pollution Incidents to Controlled Waters	pg 1		2	2	8
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances					
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals					
Groundwater Vulnerability	pg 3	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 3	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
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					
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					
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 5	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				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 5	Yes		n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 5	Yes	Yes	n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 5	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 6			2	n/a
Fuel Station Entries	pg 6				1

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					
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest	pg 7		1		
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: Reservoir/Borehole Site Location: Bishops Wood Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0030 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A18SE (N)	432	1	527300 188300
2	**Local Authority Pollution Prevention and Controls** Name: Wellington Service StationRoc Uk Location: 513 Archwwy Road, LONDON, N6 4HX Authority: London Borough of Haringey, Planning and Environmental Health Permit Reference: PV-02/v1 Dated: 17th April 2001 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A19SE (NE)	950	2	527908 188517
	Nearest Surface Water Feature	A13NE (E)	16	-	527254 187850
3	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: 7 White Lodge Close Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Confirmed As A Pollution Incident Incident Date: 1st September 1989 Incident Reference: N1890461 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	167	1	527000 188000
4	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: White Lodge Close Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 16th January 1990 Incident Reference: N1900017 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A13NW (NW)	240	1	527000 188100
5	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: HAMPSTEAD Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 10th August 1990 Incident Reference: N1900464 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18SW (N)	400	1	527100 188300

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Hampstead Garden Suburb Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed incident Incident Date: 20th March 1999 Incident Reference: THNE1999042277 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 10m	A17NE (NW)	905	1	526700 188695
12	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: NORRICE LEA Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed incident Incident Date: 19th March 1999 Incident Reference: THNE1999042263 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A17NE (NW)	910	1	526700 188700
13	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Belvedere Court, FINCHLEY Authority: Environment Agency, Thames Region Pollutant: Unknown Sewage Note: Not Supplied Incident Date: 18th May 1997 Incident Reference: THN11997032177 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A18NW (N)	958	1	527000 188850
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 39 West London Scale: 1:100,000	A13SW (SE)	0	1	527185 187844
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Desination: Secondary Aquifer - A	A13SW (SE)	0	3	527185 187844
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: London Borough of Haringey - Has supplied landfill data		0	5	527185 187844
	Local Authority Landfill Coverage Name: London Borough of Barnet - Has supplied landfill data		168	6	526942 187824
	Local Authority Landfill Coverage Name: London Borough of Camden - Has no landfill data to supply		205	7	527151 187599

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13SW (SE)	0	3	527185 187844
	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 No Hazard				
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	3	527185 187844
	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 (SE)	0	3	527185 187844
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	3	527185 187844
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13NW (N)	24	3	527185 187900
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (S)	63	3	527150 187750
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SW (SE)	0	3	527185 187844
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	163	3	527225 187625
	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 (SE)	0	3	527185 187844
	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 (SE)	0	3	527185 187844

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
14	**Contemporary Trade Directory Entries** Name: Ravtex (Uk) Ltd Location: 8, White Lodge Close, London, N2 0BL Classification: Packaging Materials Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (NW)	262	-	526987 188117
15	**Contemporary Trade Directory Entries** Name: Simply For You Location: 8, Stormont Road, London, N6 4NL Classification: Cleaning Services - Domestic **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13SE (SE)	275	-	527493 187708
16	**Fuel Station Entries** Name: Wellington Service Station Location: 513, Archway Road, London, N6 4HX Brand: ESSO Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A19NE (NE)	950	-	527905 188520

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
17	**Sites of Special Scientific Interest** Name: Hampstead Heath Woods Multiple Areas: Y Total Area (m2): 161715.25 Source: Natural England Reference: 1003451 Designation Details: Not Supplied Designation Date: 18th April 1990 Date Type: Notified	A13SW (S)	201	4	527147 187602

Data Suppliers

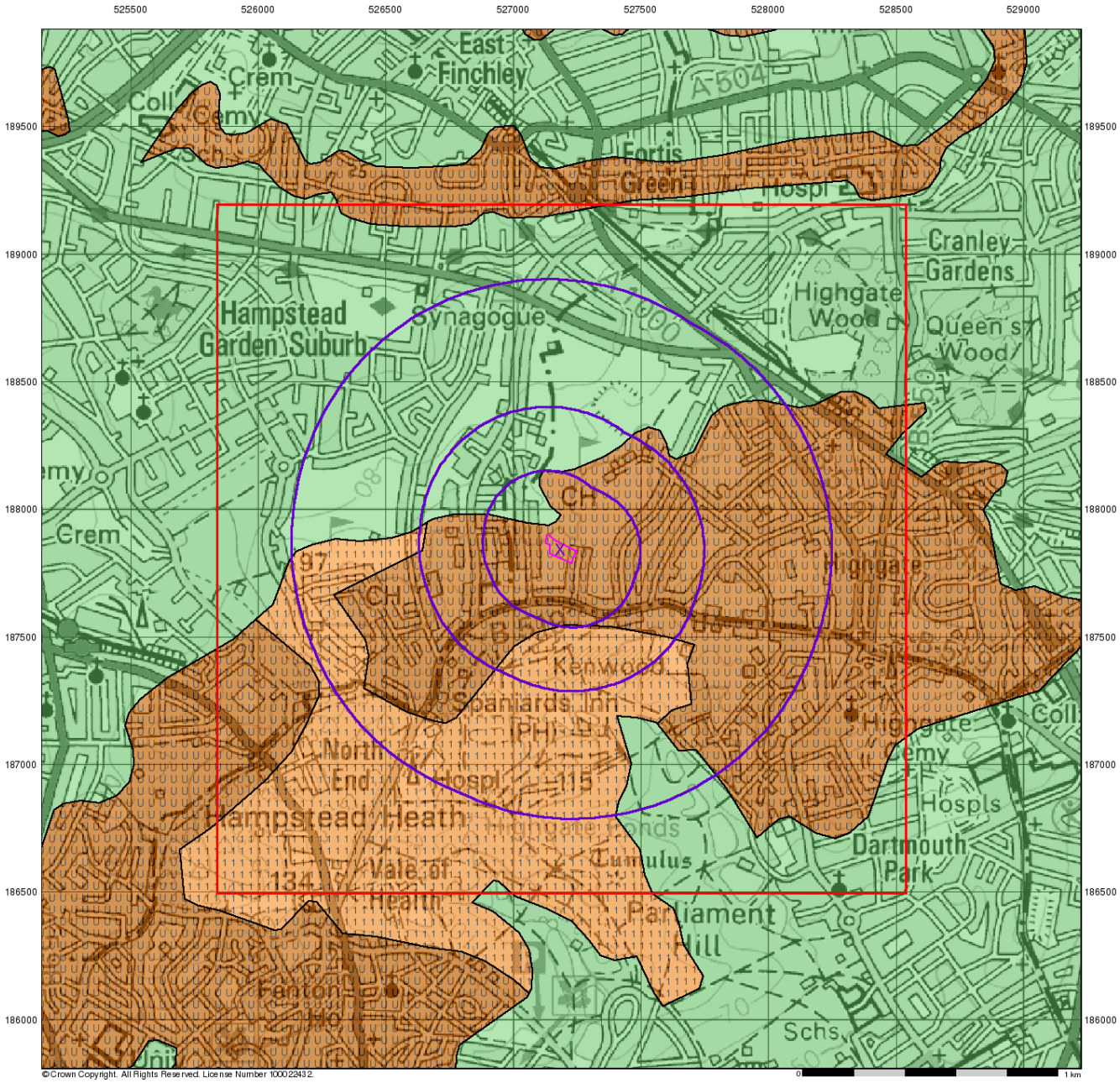
A selection of organisations who provide data within this report

Data Supplier	Data Supplier Logo
Ordnance Survey	Ordnance Survey Licensed Partner
Environment Agency	Environment Agency
Scottish Environment Protection Agency	SEPA Scottish Environment Protection Agency
The Coal Authority	THE COAL AUTHORITY
British Geological Survey	British Geological Survey NATURAL ENVIRONMENT RESEARCH COUNCIL
Centre for Ecology and Hydrology	Centre for Ecology & Hydrology NATURAL ENVIRONMENT RESEARCH COUNCIL
Countryside Council for Wales	CYNGOR CEFN GWLAD CYMRU COUNTRYSIDE COUNCIL FOR WALES
Scottish Natural Heritage	SCOTTISH NATURAL HERITAGE
Natural England	NATURAL ENGLAND
Health Protection Agency	Health Protection Agency
Ove Arup	ARUP
Peter Brett Associates	pba

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	**London Borough of Haringey - Planning and Environmental Health** 639 High Road, Tottenham, London, N17 8BD	Telephone: 0208 489 5183 Fax: 0208 489 5117 Website: www.haringey.gov.uk
3	**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
4	**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
5	**London Borough of Haringey - Planning Department** Civic Centre, 639 High Road, Tottenham, London, N17 8BD	Website: www.haringey.gov.uk
6	**London Borough of Barnet - Land Charges** The Town Hall, The Burroughs, Hendon, LONDON, NW4 4BQ	Telephone: 0208 3592482 Fax: 0208 3592493 Website: www.barnet.gov.uk
7	**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.



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GEA Geotechnical & Environmental Associates

Groundwater Vulnerability

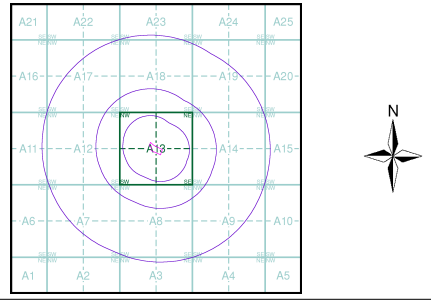
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes	Soil Classes
Major Aquifer (Highly Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Minor Aquifer (Variably Permeable)	High (H) 1, 2, 3, U
	Intermediate (I) 1, 2
	Low
Non Aquifer (Negligibly Permeable)	
Water or Sea	
Drift Deposit	

Site Sensitivity Context Map - Slice A



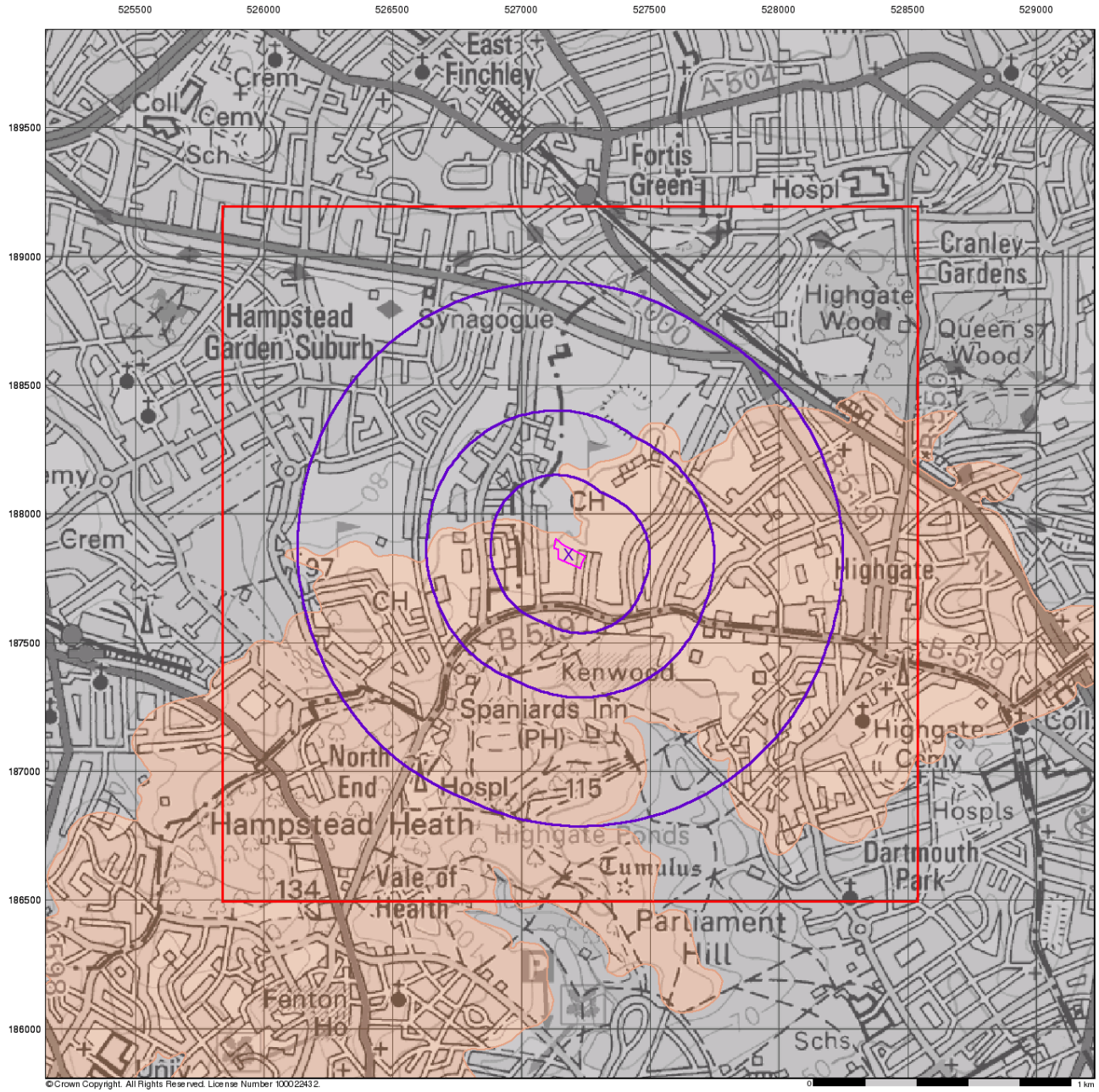
Order Details

Order Number:	35380198_1_1
Customer Ref:	J11150
National Grid Reference:	527180, 187840
Slice:	A
Site Area (Ha):	0.61
Search Buffer (m):	1000

Site Details

Nice Place, Compton Avenue, LONDON, N6 4LH

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk



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GEA Geotechnical & Environmental Associates

Bedrock Aquifer Designation

General

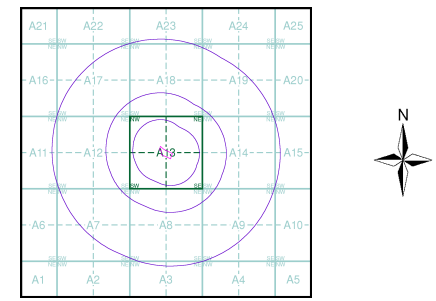
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



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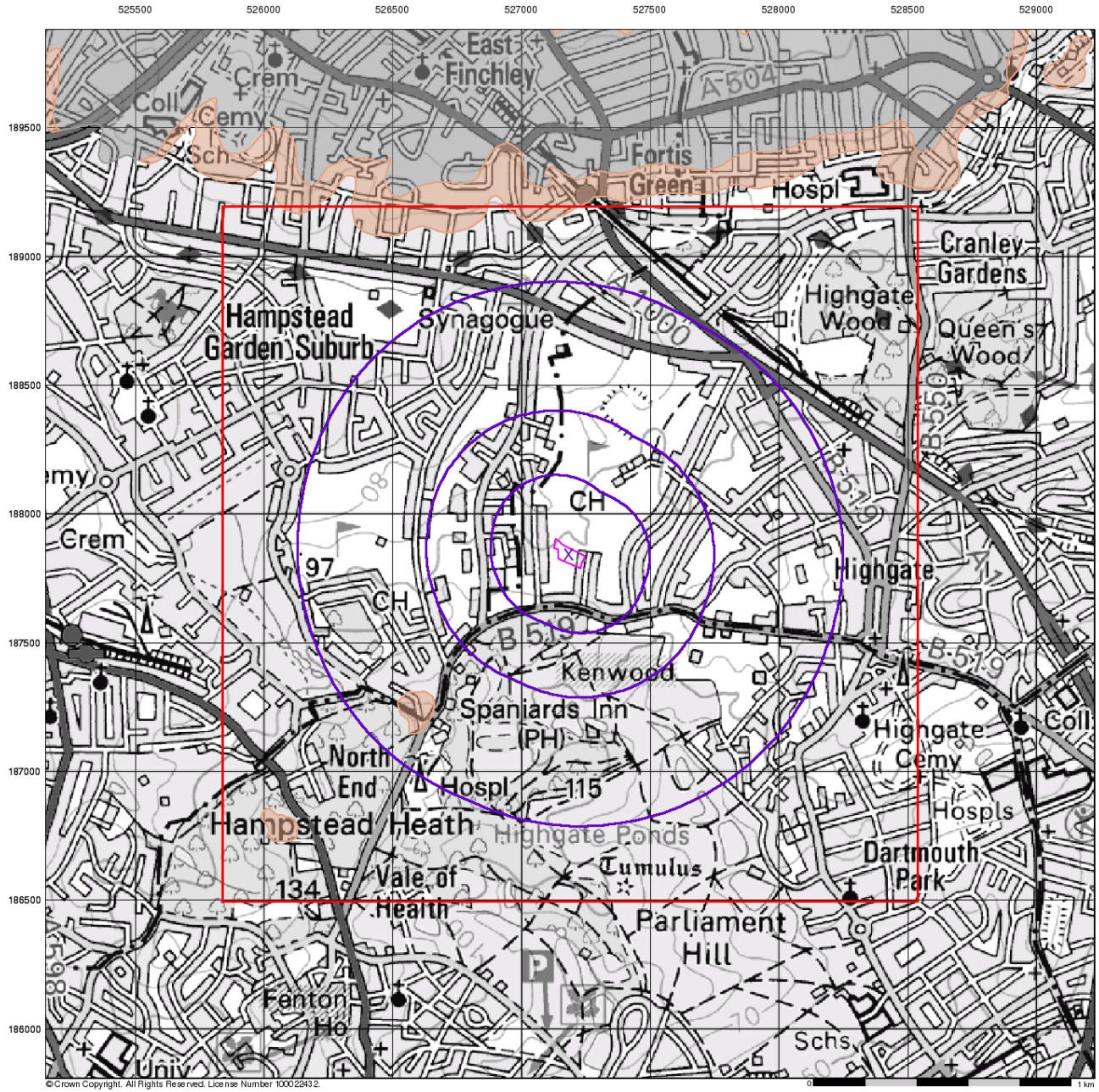

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Superficial Aquifer Designation

General

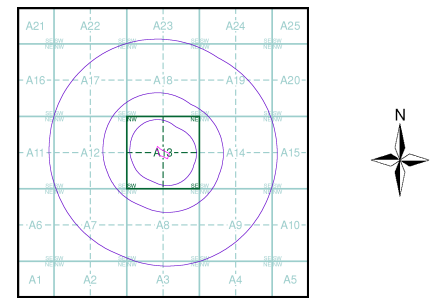
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes

- Principal Aquifer
- Secondary A Aquifer
- Secondary B Aquifer
- Secondary Undifferentiated
- Unproductive Strata
- Unknown

Site Sensitivity Context Map - Slice A



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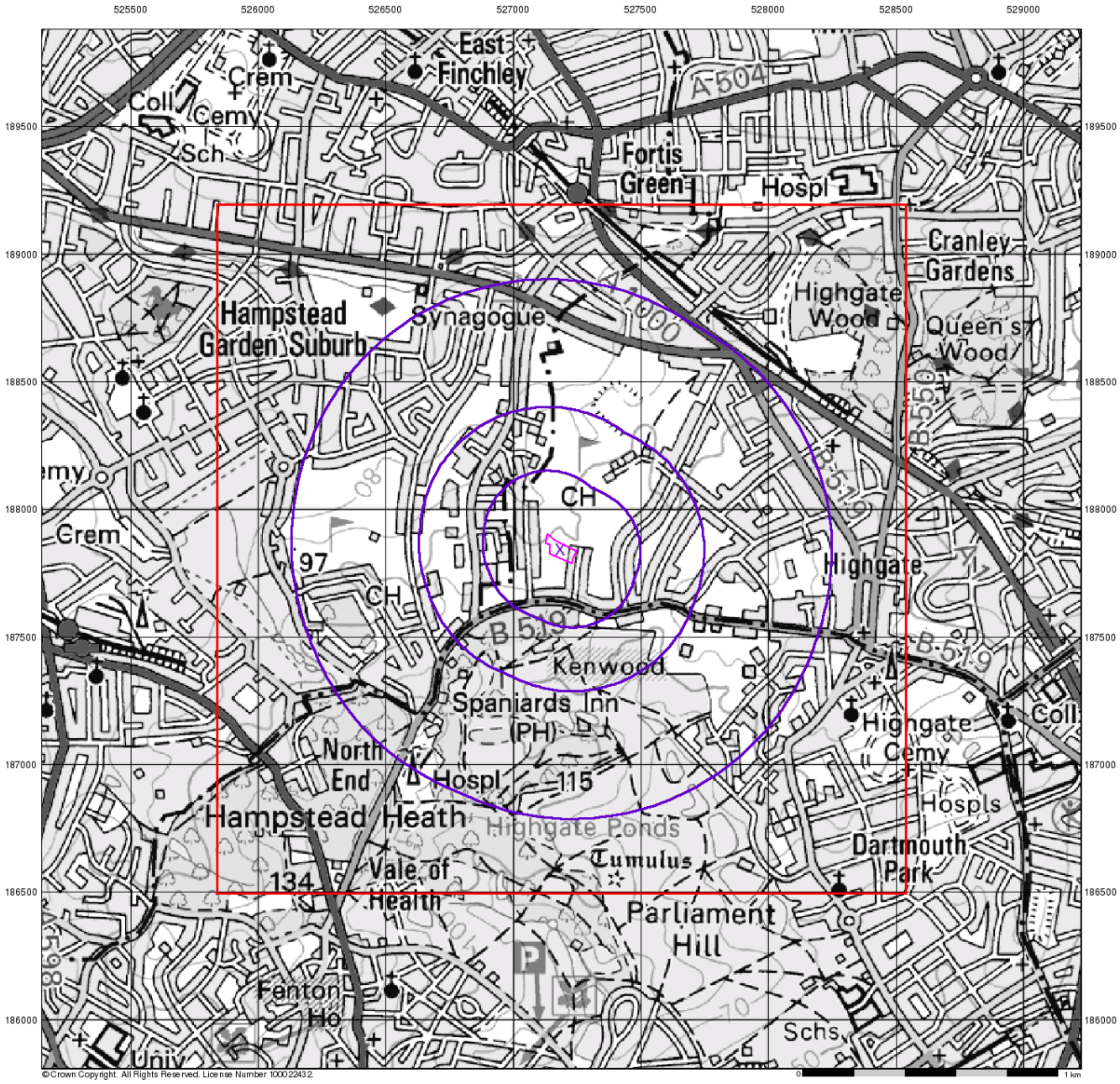

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GEA Geotechnical & Environmental Associates

Source Protection Zones

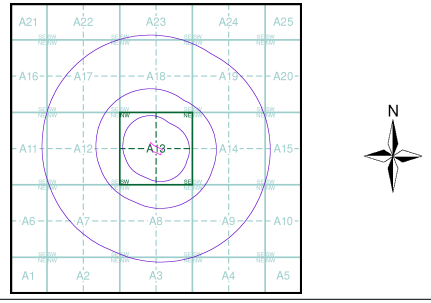
General

Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Source Protection Zone I
Source Protection Zone II
Source Protection Zone III
Zone of Special Interest
Source Protection Zone Borehole

Site Sensitivity Context Map - Slice A



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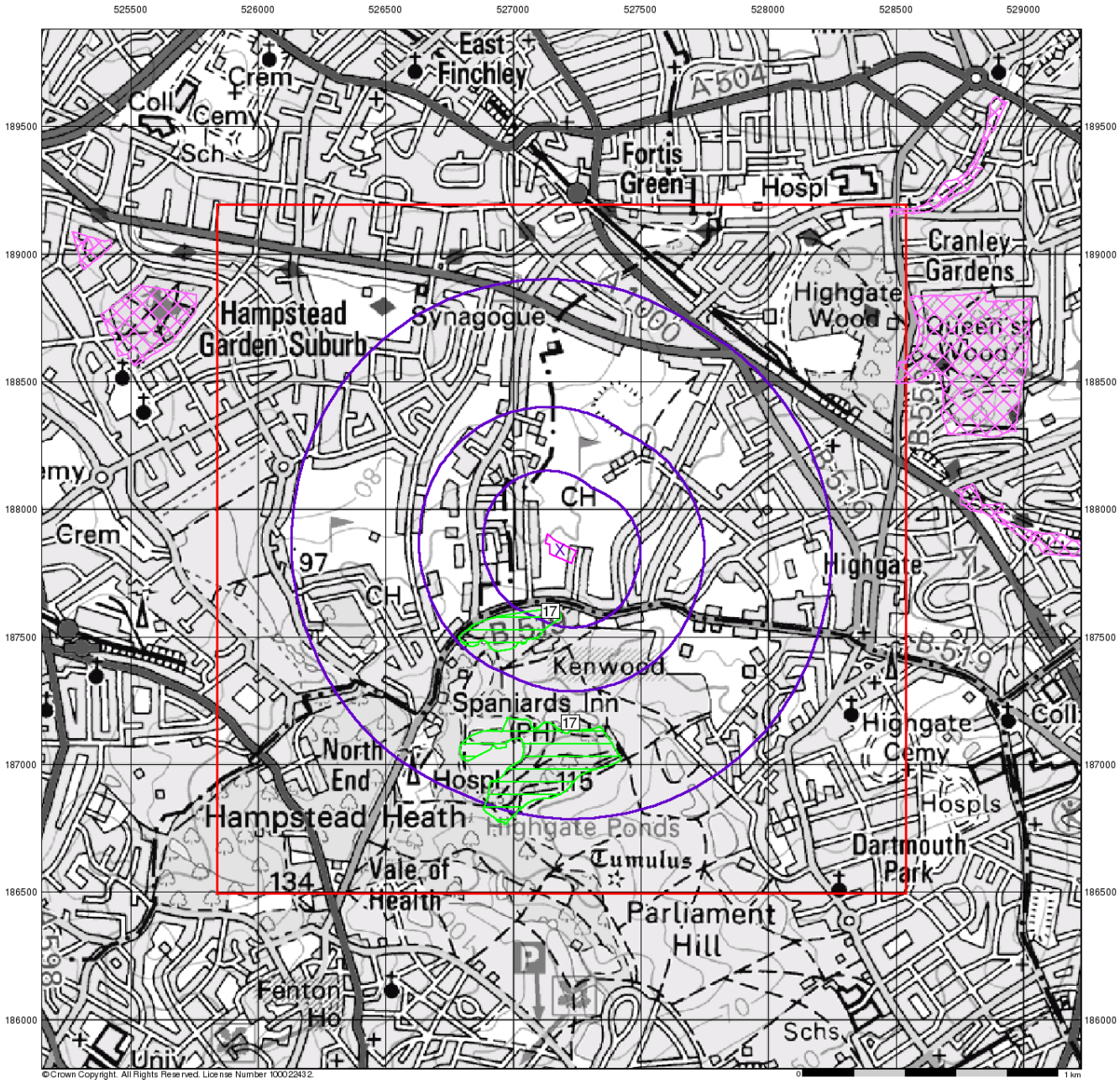

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Sensitive Land Uses

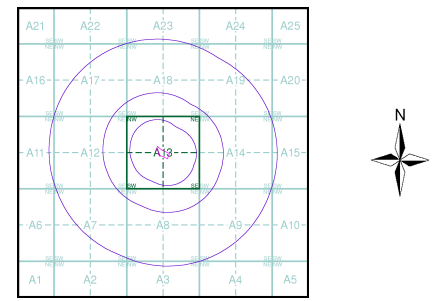
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Slice
- Map ID

Sensitive Land Uses

- Area of Adopted Green Belt
- Area of Unadopted Green Belt
- Area of Outstanding Natural Beauty
- Environmentally Sensitive Area
- Forest Park
- Local Nature Reserve
- Marine Nature Reserve
- National Nature Reserve
- National Park
- Nitrate Sensitive Area
- Nitrate Vulnerable Zone
- Ramsar Site
- Site of Special Scientific Interest
- Special Area of Conservation
- Special Protection Area

Site Sensitivity Context Map - Slice A



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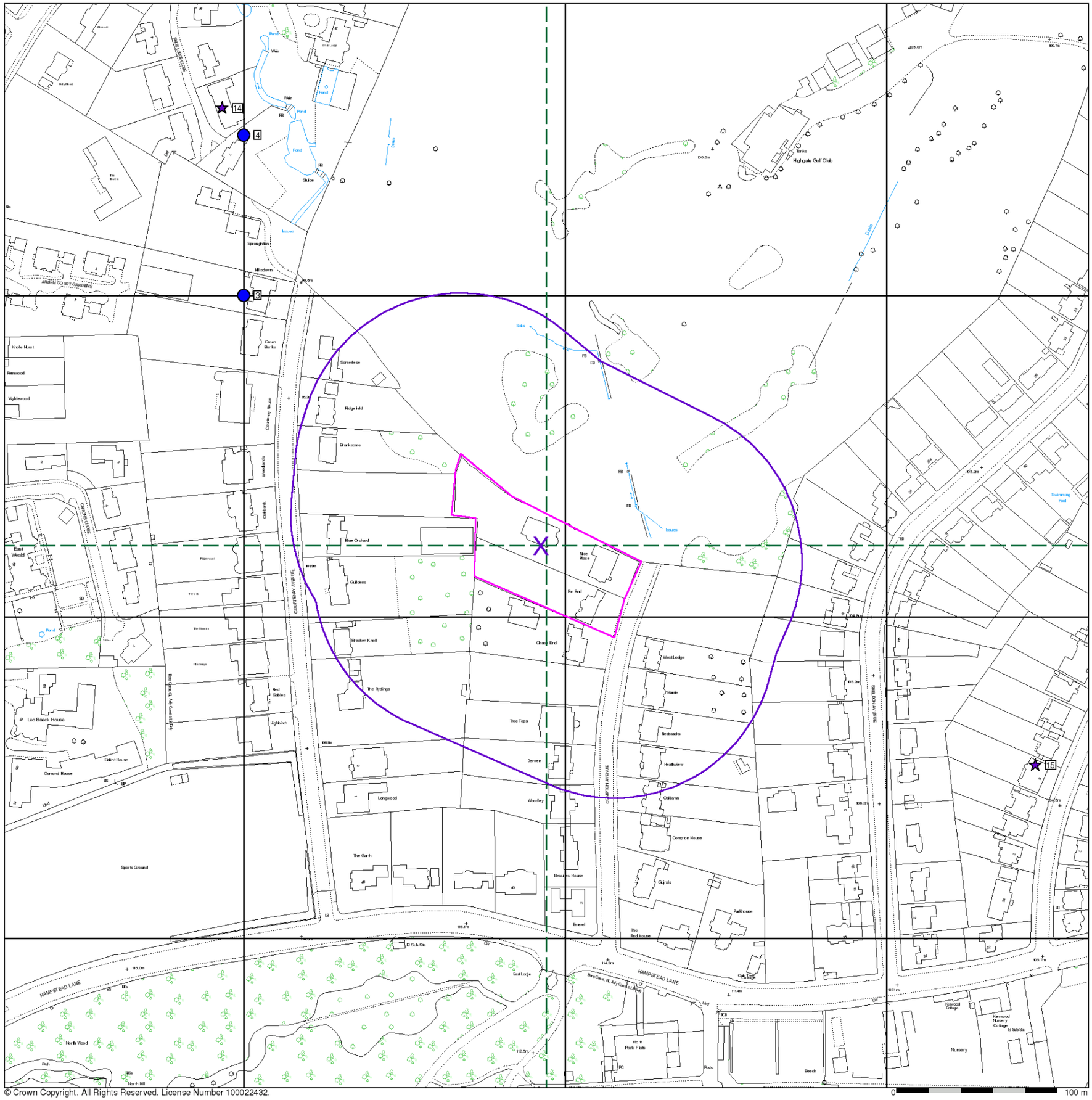
527000
527200
527400
188000
187800
187600
14
4
3
15
Highgate Golf Club
Tennis
Ardenn Court Gardens
Knole Hurst
Fernwood
Wyldewood
Green Banks
Somedene
Ridgefield
Brankstone
Blue Orchard
Guildens
Nice Place
Far End
Bracken Knoll
Chang End
The Rydings
Tree Tops
Derwen
Woodley
Longwood
The Garth
Sports Ground
Leo Black House
Ormond House
Balint House
Red Gables
Highbirch
Courtenay House
Woodlands
Oakbank
Courtenay Avenue
Compton Avenue
Shell Oak Avenue
West Lodge
Marie
Redstacks
Heathview
Oakfarm
Compton House
Gujrals
Parkhouse
The Red House
Beaumont House
Esterel
Swimming Pool
Hampstead Lane
East Lodge
Park Flats
Nursery
Keswood Cottage
Keswood Nursery Cottage
North Wood
North Hill
Pond
Weir
Sluice
Issues
Drain
Sproughton
Hillsdown
Crown Close
East Weald
Ivy Villa
The Beeches
Hilltops
Pilgrimscot
Tile House
Fir Trees
Pond
Sub Sta
Posts
Beech
Pc
Lbd
Gw
Bs
Bp
Rb
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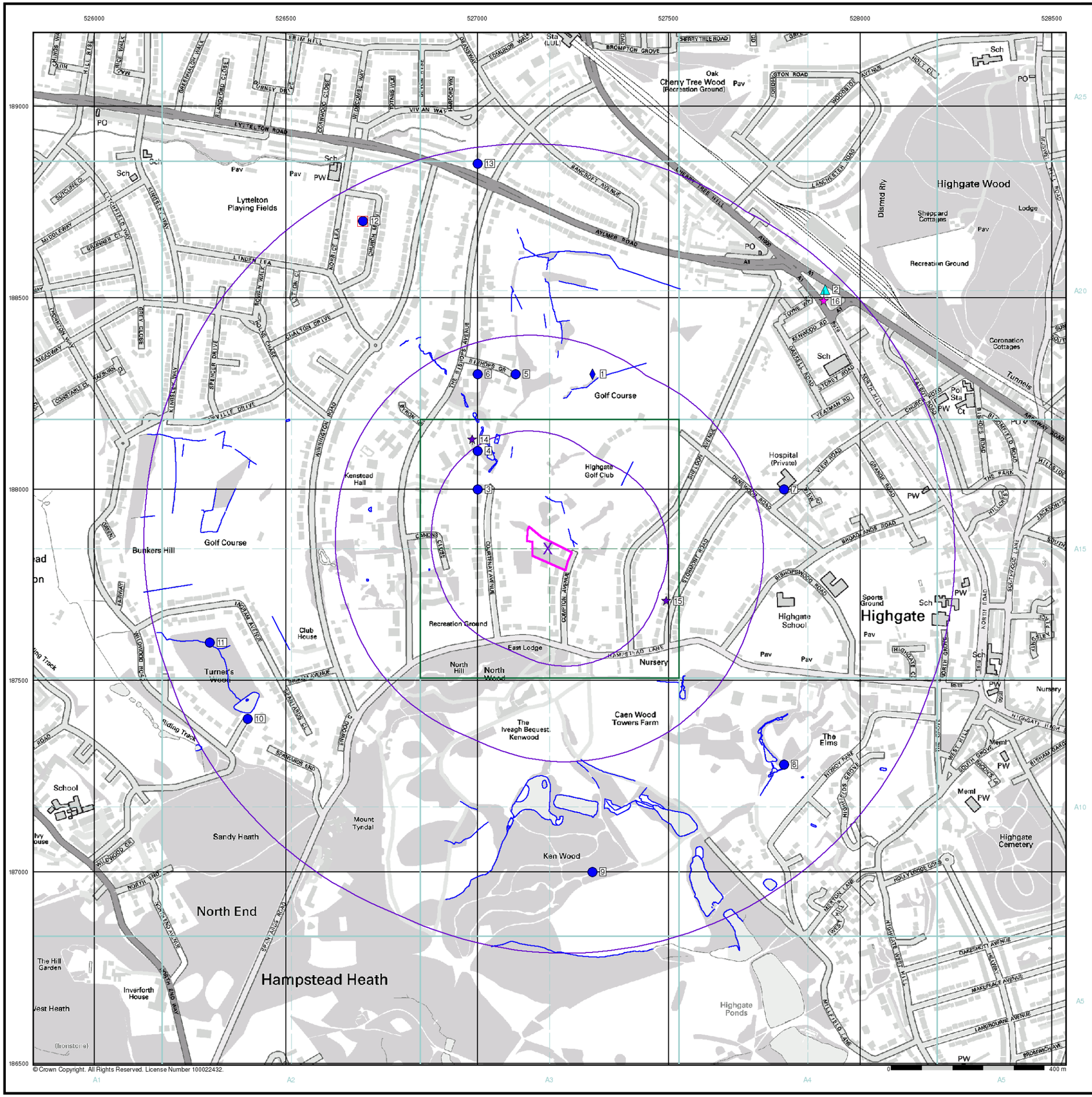
Lb
Sd
Cb
Ub
Ub
Ub



GEA Geotechnical & Environmental Associates

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

Agency and Hydrological

- Contaminated Land Register Entry or Notice (Location)
- Contaminated Land Register Entry or Notice
- Discharge Consent
- Enforcement or Prohibition Notice
- Integrated Pollution Control
- Integrated Pollution Prevention Control
- Local Authority Integrated Pollution Prevention and Control
- Local Authority Pollution Prevention and Control
- Local Authority Pollution Prevention and Control Enforcement
- Pollution Incident to Controlled Waters
- Prosecution Relating to Authorised Processes
- Prosecution Relating to Controlled Waters
- Registered Radioactive Substance
- River Network or Water Feature
- River Quality Sampling Point
- Substantiated Pollution Incident Register
- Water Abstraction
- Water Industry Act Referral

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

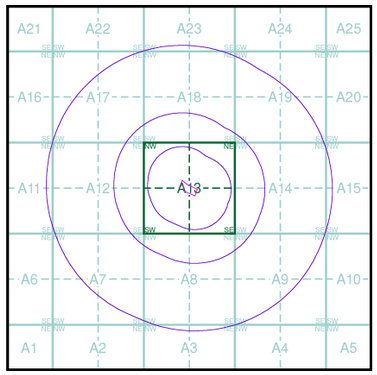
Waste

- BGS Recorded Landfill Site (Location)
- BGS Recorded Landfill Site
- EA Historic Landfill (Buffered Point)
- EA Historic Landfill (Polygon)
- Integrated Pollution Control Registered Waste Site
- Licensed Waste Management Facility (Landfill Boundary)
- Licensed Waste Management Facility (Location)
- Local Authority Recorded Landfill Site (Location)
- Local Authority Recorded Landfill Site
- Registered Landfill Site
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment or Disposal Site

Hazardous Substances

- COMAH Site
- Explosive Site
- NIHHS Site
- Planning Hazardous Substance Consent
- Planning Hazardous Substance Enforcement

Site Sensitivity Map - Slice A



Order Details

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National Grid Reference:	527180, 187840
Slice:	A
Site Area (Ha):	0.61
Search Buffer (m):	1000

Site Details

Nice Place, Compton Avenue, LONDON, N6 4LH

Landmark Information Group

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Web: www.envirocheck.co.uk

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GEA Geotechnical & Environmental Associates

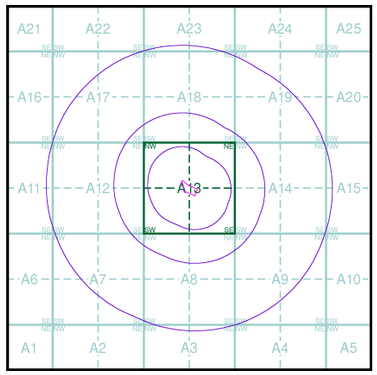
General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point

Agency and Hydrological (Flood)

- Extreme Flooding from Rivers or Sea without Defences (Zone 2)
- Flooding from Rivers or Sea without Defences (Zone 3)
- Area Benefiting from Flood Defence
- Flood Water Storage Areas
- Flood Defence

Flood Map - Slice A



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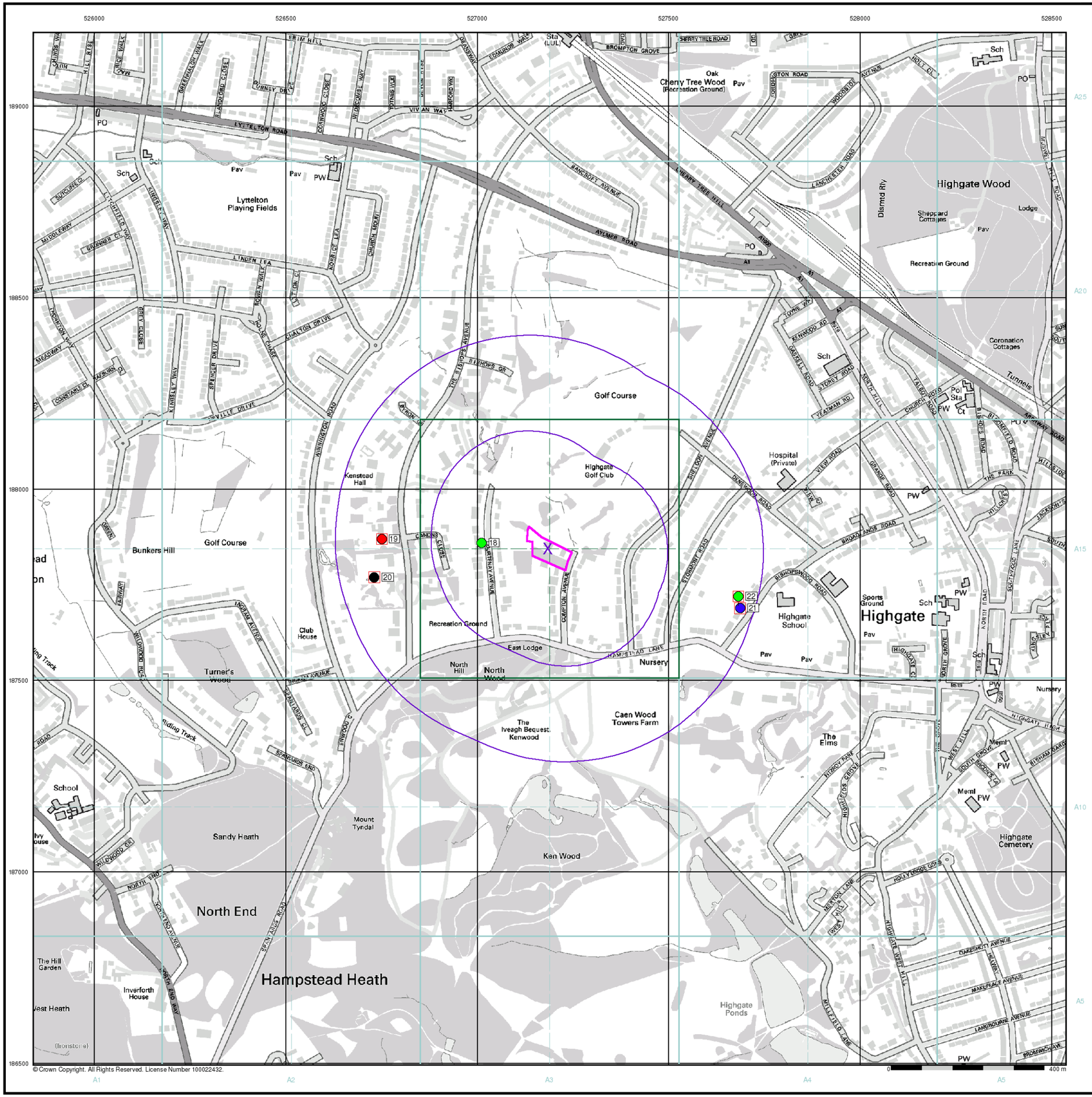

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GEA Geotechnical & Environmental Associates

General

- Specified Site
- Specified Buffer(s)
- Bearing Reference Point
- Map ID
- Several of Type at Location

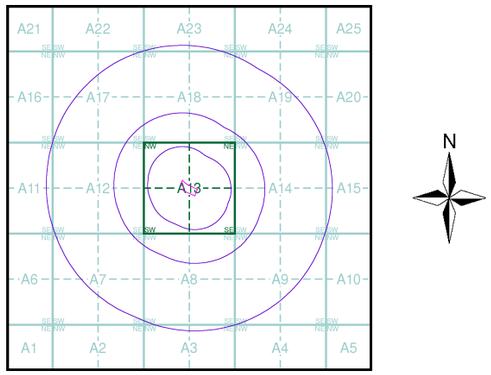
Agency and Hydrological (Boreholes)

- BGS Borehole Depth 0 - 10m
- BGS Borehole Depth 10 - 30m
- BGS Borehole Depth 30m +
- Confidential
- Other

For Borehole information please refer to the Borehole .csv file which accompanied this slice.

A copy of the BGS Borehole Ordering Form is available to download from the Support section of www.envirocheck.co.uk.

Borehole Map - Slice A



Order Details

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Slice:	A
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Site Details

Nice Place, Compton Avenue, LONDON, N6 4LH

Landmark Information Group
Tel: 0844 844 9952
Fax: 0844 844 9951
Web: www.envirocheck.co.uk

Historical Mapping Legends

Ordnance Survey County Series and Ordnance Survey Plan 1:2,500

Quarry
Gravel Pit
Sand Pit
Clay Pit
Shingle
Refuse Heap
Sloping Masonry
Flat Rock
Marsh
Reeds
Osiers
Rough Pasture
Furze
Wood
Mixed Wood
Brushwood
Orchard
Fir
Ford
Stepping Stones
Ferry
Waterfall
Lock
Trig. Station
507 Altitude at Trig. Station
B.M.325·9 Bench Mark
342 Surface Level
Arrow denotes flow of water
Antiquities (site of)
Cutting
Embankment
Railway crossing Road
Level Crossing
Road crossing Railway
Railway crossing River or Canal
Road over single stream
Road over River or Canal

County Boundary (Geographical)
County & Civil Parish Boundary
Administrative County & Civil Parish Boundary
Co. Boro. Bdy. County Borough Boundary (England)
Co. Burgh Bdy. County Burgh Boundary (Scotland)

B P B S	Boundary Post or Stone	P.C.B	Police Call Box
B.R.	Bridle Road	P	Pump
E.P	Electricity Pylon	S.P	Signal Post
F.B.	Foot Bridge	Sl.	Sluice
F.P.	Foot Path	Sp.	Spring
G.P	Guide Post or Board	T.C.B	Telephone Call Box
M.S	Mile Stone	Tr.	Trough
M.P M.R	Mooring Post or Ring	W	Well

Ordnance Survey Plan, Additional SIMs and Supply of Unpublished Survey Information 1:2,500 and 1:1,250

Inactive Quarry, Chalk Pit or Clay Pit
Active Quarry, Chalk Pit or Clay Pit
Rock
Boulders
Cliff
Slopes
Top
Roofed Building
Glazed Roof Building
Sloping Masonry
Archway
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Bench Mark
Antiquity (site of)
Cave Entrance
Triangulation Station
Electricity Pylon
Electricity Transmission Line

County Boundary (Geographical)
County & Civil Parish Boundary
Civil Parish Boundary
Admin. County or County Bor. Boundary
L B Bdy London Borough Boundary
Symbol marking point where boundary mereing changes

BH	Beer House	P	Pillar, Pole or Post
BP, BS	Boundary Post or Stone	PO	Post Office
Cn, C	Capstan, Crane	PC	Public Convenience
Chy	Chimney	PH	Public House
D Fn	Drinking Fountain	Pp	Pump
El P	Electricity Pillar or Post	SB, S Br	Signal Box or Bridge
FAP	Fire Alarm Pillar	SP, SL	Signal Post or Light
FB	Foot Bridge	Spr	Spring
GP	Guide Post	Tk	Tank or Track
H	Hydrant or Hydraulic	TCB	Telephone Call Box
LC	Level Crossing	TCP	Telephone Call Post
MH	Manhole	Tr	Trough
MP	Mile Post or Mooring Post	Wr Pt, Wr T	Water Point, Water Tap
MS	Mile Stone	W	Well
NTL	Normal Tidal Limit	Wd Pp	Wind Pump

Large-Scale National Grid Data 1:2,500 and 1:1,250

Cliff
Slopes
Top
Rock
Rock (scattered)
Boulders
Boulders (scattered)
Positioned Boulder
Scree
Non-Coniferous Tree (surveyed)
Coniferous Tree (surveyed)
Non-Coniferous Trees (not surveyed)
Coniferous Trees (not surveyed)
Orchard Tree
Scrub
Bracken
Coppice, Osier
Reeds
Marsh, Saltings
Rough Grassland
Heath
Culvert
Direction of water flow
Triangulation Station
Antiquity (site of)
Electricity Transmission Line
Electricity Pylon
BM 231.50m Bench Mark
Buildings with Building Seed
Roofed Building
Glazed Roof Building

Civil parish/community boundary
District boundary
County boundary
Boundary post/stone
Boundary mereing symbol (note: these always appear in opposed pairs or groups of three)

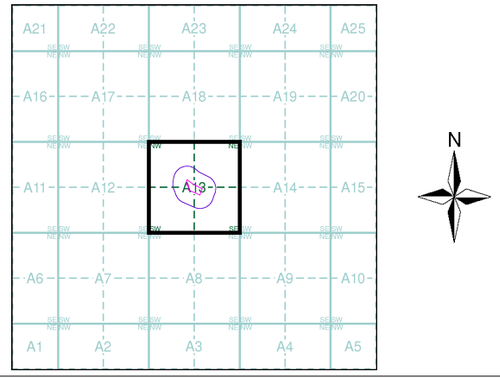
Bks	Barracks	P	Pillar, Pole or Post
Bty	Battery	PO	Post Office
Cemy	Cemetery	PC	Public Convenience
Chy	Chimney	Pp	Pump
Cis	Cistern	Ppg Sta	Pumping Station
Dismtd Rly	Dismantled Railway	PW	Place of Worship
El Gen Sta	Electricity Generating Station	Sewage Ppg Sta	Sewage Pumping Station
El P	Electricity Pole, Pillar	SB, S Br	Signal Box or Bridge
El Sub Sta	Electricity Sub Station	SP, SL	Signal Post or Light
FB	Filter Bed	Spr	Spring
Fn / D Fn	Fountain / Drinking Ftn.	Tk	Tank or Track
Gas Gov	Gas Valve Compound	Tr	Trough
GVC	Gas Governer	Wd Pp	Wind Pump
GP	Guide Post	Wr Pt, Wr T	Water Point, Water Tap
MH	Manhole	Wks	Works (building or area)
MP, MS	Mile Post or Mile Stone	W	Well

Geotechnical & Environmental Associates

Historical Mapping & Photography included:

Mapping Type	Scale	Date	Pg
Middlesex	1:2,500	1866	2
London	1:2,500	1870	3
Middlesex	1:2,500	1894	4
Middlesex	1:2,500	1894	5
London	1:2,500	1896	6
London	1:2,500	1915	7
London	1:2,500	1935 - 1936	8
Historical Aerial Photography	1:1,250	1946 - 1949	9
Ordnance Survey Plan	1:1,250	1951 - 1952	10
Ordnance Survey Plan	1:2,500	1952 - 1953	11
Additional SIMs	1:1,250	1952 - 1967	12
Additional SIMs	1:2,500	1953	13
Ordnance Survey Plan	1:1,250	1959 - 1975	14
Ordnance Survey Plan	1:1,250	1967	15
Ordnance Survey Plan	1:2,500	1970	16
Supply of Unpublished Survey Information	1:1,250	1974	17
Supply of Unpublished Survey Information	1:1,250	1976	18
Additional SIMs	1:1,250	1985 - 1986	19
Large-Scale National Grid Data	1:1,250	1991	20
Large-Scale National Grid Data	1:1,250	1995	21

Historical Map - Segment A13



Order Details

Order Number: 35380198_1_1
Customer Ref: J11150
National Grid Reference: 527180, 187840
Slice: A
Site Area (Ha): 0.61
Search Buffer (m): 100

Site Details

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