Expansion of Kingsgate Primary School and Redevelopment of Liddell Road

Geotechnical Study

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Application 02 for Phase 02
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Camden

London Borough of Camden
Kingsgate Primary School

GROUND INVESTIGATION REPORT

Proposed Kingsgate School
Liddell Road
London
NW6 2EW

Client: London Borough of Camden

Engineer: Price & Myers

J14212

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GEA Geotechnical & Environmental Associates

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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 describes the findings of a site investigation carried out by Geotechnical and Environmental Associates Limited (GEA) on behalf of the London Borough of Camden, with respect to the demolition of the existing single storey commercial units and subsequent construction of a new two-storey school, an 11-storey residential block, a five-storey residential building and a five-storey commercial building. The purpose of the investigation has been to research the history of the site with respect to previous contaminative uses, to determine the ground conditions, to assess the extent of any contamination and to provide information to assist with the design of suitable foundations.

DESK STUDY FINDINGS

The earliest map studied, dated 1871, shows the site to be largely undeveloped, with an embankment in the south and a footpath crossing the site in the east. The Midland Railway is shown to follow the northern boundary and crossed the northwestern corner of site and, whilst the area in general was occupied by fields, a small residential area labelled 'West End' was present to the northeast with Kilburn located to the south. By the time of the next map, dated 1896, the area in general was notably developed with housing and the site formed part of the 'West End' railway sidings, with Maygrove Road located to the south. On the map dated 1954, the centre of site is labelled as a coal depot and the 1974 map shows the site to have been cleared of sidings and in use as a scrap metal yard. By 1985, the existing buildings had been constructed and Liddell Road was constructed in the centre of the site, connecting with Maygrove Road in the southeast. The site and surrounding area have since remained essentially unchanged.

GROUND CONDITIONS

Below a significant thickness of made ground the London Clay was encountered to the full depth of the investigation. The made ground generally comprised silty sandy clay with gravel, frequent brick, glass, coal and concrete fragments, ash and roots becoming dark brown and blackish very silty clay with organic material, and extended to depths of between 3.30 m (47.85 m OD) and 4.90 m (46.70 m OD). The London Clay was initially found to be gravelly, indicating that it is naturally reworked, to a maximum depth of 5.30 m. Below this reworked layer, the London Clay generally comprised soft becoming stiff brown, orange-brown and grey mottled low to high strength fissured silty clay with pockets of orange-brown silt, occasional fine shell fragments and fine to coarse selenite crystals and extended to depths of between 10.60 m (40.50 m OD) and 12.20 m (39.13 m OD). Roots were found to extend to a maximum depth of 6.45 m, although these were likely to be as a result of trees and vegetation present prior to the embankment expansion. The London Clay then comprised firm becoming very stiff dark brown and greyish brown high to very high strength fissured silty clay with occasional shell fragments, fine selenite crystals, occasional pockets of pale brown, white and grey silt and was encountered to the full depth investigated, of 25.00 m (26.60 m OD). Claystones were encountered at various depths, ranging from 10.60 m (40.55 m OD) to 22.90 m (28.70 m OD). Groundwater was encountered during drilling within Borehole No 6 only at a depth of 4.75 m (46.94 m OD) and was measured in a standpipe installed in Borehole No 5 at depths of 1.04 m (50.11 m OD) and 1.09 m (50.06 m OD).

RECOMMENDATIONS

Loads are anticipated to be moderate to high and the presence of a significant thickness of made ground means that piled foundations are likely to be the most appropriate foundation solution; alternatively ground improvement methods may be considered, such as the use of stone columns..

The contamination testing has indicated elevated concentrations of arsenic, lead, TPH, total PAH, benzo(a)pyrene and total organic carbon within samples of soil tested and elevated concentrations of dissolved arsenic, chromium and nickel within a single sample of groundwater. No elevated concentrations of VOCs, SVOCs, BTEX or PCBs were recorded within the soil samples tested and asbestos was not identified within the samples examined. The majority of the made ground is likely to be left undisturbed below the development and users will also be effectively isolated from direct contact with the identified contaminants. It would be prudent to carry out further soil contamination testing in the region of Borehole No 10 in order to determine the extent of elevated TPH levels in this area. Further groundwater contamination testing should be undertaken to determine if the source of contamination is within the groundwater or silt sediment. If the groundwater is found to contain elevated levels of heavy metals; a programme of contamination monitoring should be carried out to determine the potential source.

Part 1: INVESTIGATION REPORT

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

1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Price & Myers, on behalf of London Borough of Camden, to carry out a ground investigation at Liddell Road, London NW6 2EW. A preliminary desk study was previously carried out by Soiltechnics in April 2013 and is referred to in this report where relevant.

1.1 Proposed Development

Consideration is being given to the demolition of the existing single storey commercial units and subsequent construction of a new two-storey school along the northern boundary, an 11-storey residential block in the northwest of the site, a five-storey residential building on the southern boundary and a five-storey commercial space in the southwest.

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

1.2 Purpose of Work

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

- to research the history of the site with respect to previous contaminative uses;
- to determine the ground conditions and their engineering properties;
- to provide advice with respect to the design of suitable foundations;
- to provide an indication of the degree of soil and groundwater 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 review of the previous desk study by Soiltechnics was carried out, followed by a ground investigation. The intrusive investigation comprised, in summary, the following activities:

- five boreholes advanced by means of a standard cable percussion rig to depths of between 15.00 m and 25.00 m;
- a series of six open-drive percussive sampler (Terrier rig) boreholes advanced to depths of between 2.00 m and 6.00 m;
- five in-situ California Bearing Ratio (CBR) tests;

- standard penetration tests (SPTs), carried out at regular intervals in the boreholes, to provide additional quantitative data on the strength of the soils;
- a single rising head test within one of the cable percussion boreholes;
- laboratory testing of selected soil samples for geotechnical purposes and for the presence of contamination;
- installation of groundwater monitoring standpipes in one of the boreholes and two subsequent monitoring visits; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

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

1.4 Limitations

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

2.0 THE SITE

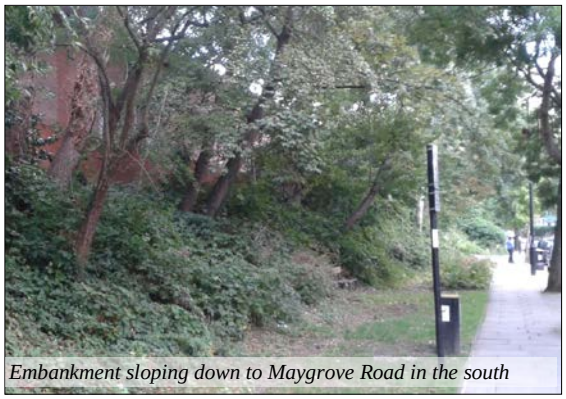
2.1 Site Description

The site is located in the London Borough of Camden, approximately 260 m west of West Hampstead railway station and 330 m northwest of West Hampstead London Underground station. It may be additionally located by National Grid Reference 525167, 184848 and is shown on the map overleaf.

The site forms a roughly rectangular area which measures approximately 65 m north-south by 175 m east-west, and is bounded by a railway line to the north at the same level as the site, a slope on the southern boundary adjacent to Maygrove Road in the south, Maygrove Peace Park in the west and commercial businesses to the east. The site is occupied by two blocks of eight single storey commercial units in the north, each measuring roughly 8 m square, and 17 single storey commercial units in the south, each measuring 8 m by either 18 m or 23 m.

1 *Model Procedures for the Management of Land Contamination* issued jointly by the Environment Agency and the Department for Environment, Food and Rural Affairs (DEFRA) Sept 2004

Liddell Road runs centrally through the site from east to west, and joins with Maygrove Road in the southeast. On either side of Liddell Road are paths surfaced in tarmac and immediately in front of each building is a parking area, which is surfaced with concrete in the north of the site and block paving in the south. In general, the condition of the road and pavements is poor with cracks and pot holes, while the buildings in the south show signs of structural distress with large cracks across the upper elevations of the buildings. There is wooded slope on the southern boundary of Liddell Road which slopes down at an angle of about 35° on which there are a number of trees. There are also two overgrown soft landscaped areas either side of Liddell Road in the east. At the time of the walkover the site was in use by a number of businesses, predominantly car mechanics and a steel fixing business in the northeast.



Embankment sloping down to Maygrove Road in the south

Access to Liddell Road sloping down to Maygrove Road in the southeast

Looking towards the northeast: steel fixing and garage businesses

Liddell Road looking towards the east

Liddell Road looking towards the north

Liddell Road looking towards the western corner of site

2.2 Site History

The history of the site has been determined on the basis of a review of the previous Soiltechnics report.

The earliest map studied, dated 1871, shows that the site was undeveloped with slopes falling towards the south, railway lines in the northwest and a track crossing the southeastern corner of the site. The map dated 1896, shows the site had been developed with the West End railway sidings and the slopes in the south of the site were altered to accommodate the sidings. By 1954 the site is annotated as a coal depot, while the surrounding area had been developed with a number of businesses, including an iron and steel warehouse, a builder's

yard, a joinery works, a concrete flooring works, a wood turning works and a crane repair works. By 1974, the site was annotated as a scrap metal yard, while the railway lines were no longer present and a track was shown to traverse the site from east to west. By 1985, the site has been developed into the present day arrangement.

2.3 Other Information

The Soiltechnics report indicates that there are no historical landfills, local authority recorded landfill sites, registered waste treatment or disposal sites, or licensed waste management facilities located within 250 m of the site.

There was a single waste transfer and disposal site located in the east of the site. This licence was held at Unit 3 Liddell Road, and was described as a scrapyard, with a maximum input rate recorded as very small, less than 10,000 tonnes per year. The type of waste accepted included metals, electrical cables, tyres and batteries, and the licence for the facility is recorded to have lapsed in November 1991.

The Soiltechnics report also indicates that the Contemporary trade directories list the following potentially contaminative businesses at the site.

- Printers (active) at No 25 Liddell Road, copying and duplicating machines and supplies (inactive) at No 29 Liddell Road;
- distribution services (active) at No 24 Liddell Road;
- car body repairs: inactive at No 14 Liddell Road, active at Nos 1 to 2 Liddell Road;
- garage services (active) at No 11 and Nos 15 to 16 Liddell Road, (inactive) at Nos 1 to 2 Liddell Road; and
- car dealers (inactive) at Nos 15 to 16 Liddell Road.

In addition to the contemporary trade directory entries, a number of businesses were noted to be active during the site walkover that were not listed and an internet search has identified the following businesses to be present on site.

- Cleaning contracting commercial at Nos 15 to 16 Liddell Road;
- a private recycling company at Nos 1 to 2 Liddell Road;
- a steel fabricators at No 6 Liddell Road;
- printers at No 30 Liddell Road;
- car body repairers at Nos 9 to 10 Liddell Road; and
- curtains manufacture and retail at No 13 Liddell Road.

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.

The previous report highlights that there is a medium possibility of a UXO encounter.

2.4 Geology and Hydrogeology

The British Geological Survey map of the area (sheet 256 and digital map) indicates that the site is directly underlain by the London Clay Formation. An area immediately to the south of the site is shown as having a "Head Propensity".

The London Clay Formation is homogenous, slightly calcareous silty clay to very silty clay, with some beds of clayey silt grading to silty fine grained sand. According to the BGS map, dated 2006, the Head Propensity is based on the geotechnical properties of the London Clay and head may occur close to the Claygate Member / London Clay boundary. Head Propensity is shown on the BGS map as areas denoted as most likely to be covered by Quaternary Head Deposits as interpreted from digital slope analysis and confirmed by borehole data. These are not mapped and have not been verified by fieldwork.

A site investigation carried out by GEA at West Hampstead railway station, approximately 250 m to the east of the site, revealed a moderate thickness of made ground over London Clay, which was encountered to the full depth investigated, of 15.0 m. The London Clay initially comprised firm becoming stiff brown mottled orange-brown silty clay with occasional selenite crystals and occasional roots, and extended to a depth of between 8.0 m (58.5 m OD) and 9.5 m (57.0 m OD), below which the London Clay comprised stiff fissured dark grey silty clay with occasional mica and locally sandy, and extended to the full depth investigated, of 15.0 m (51.5 m OD).

The London Clay Formation is classified by the EA as an Unproductive Stratum, referring to rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.

There are no surface water features listed within 1000 m of the site and the site is not indicated as being at risk from extreme flooding from rivers or the sea.

The site is not located within a Groundwater Source Protection Zone as defined by the Environment Agency (EA). The site is not indicated as being within a Nitrate Vulnerable Zone.

2.5 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.

2.5.1 Source

The historical usage of the site that has been established by the desk study indicates that the site has had a potentially contaminative history by virtue of its previous use as railway sidings, a coal depot, a scrap metal yard, a printers, distribution services, car body repairs, garage services, car dealers, a steel fabrication workshop and a curtain manufacturer.

With reference to the relevant DoE Industry Profile[2] the potential contaminants considered to

[2] Department of the Environment Industry Profile (1995) *Profile of Railway Engineering Works* HMSO
Department of the Environment Industry Profile (1995) *Engineering Land* HMSO
Department of the Environment Industry Profile (1995) *Waste Recycling, Treatment and Disposal Sites; Metal Recycling Sites* HMSO

be associated with the above former use of the site include the following.

- Asbestos
- Heavy metals
- Acids and bases, alkalis
- Organic compounds such as fuels, oils and greases
- Inorganic compounds such as cyanide, sulphates and sulphides.

2.5.2 Receptor

The site is to be used for mixed residential and commercial purposes, and as such, end users are considered to be sensitive receptors. The site is underlain by an Unproductive Aquifer and groundwater is therefore not considered to be a sensitive receptor. With the potential for shallow groundwater to be present, adjacent sites and surface water would be considered to be potential receptors in addition to ground workers and new buried services laid within the ground.

2.5.3 Pathway

As the site is proposed to be covered for the majority by the footprint of the new buildings and areas of hardstanding, there will be limited potential for contaminant exposure pathways as these will effectively form a barrier between any contaminants within the near-surface soils and end-users and will prevent infiltration of surface water. The site is underlain by an Unproductive Aquifer and therefore groundwater is not considered to be a sensitive receptor. End users could conceivably come into contact with soils within landscaped garden areas. There will be a potential for contaminants to move onto or off the site, horizontally within the made ground, although these pathways are already in existence. Buried services will be exposed to any contaminants present within the soil through direct contact, and site workers will come into contact with the soils during construction works.

2.5.4 Preliminary Risk Appraisal

On the basis of the above it is considered that there is a MODERATE RISK of there being a significant contaminant linkage at this site between the soil and sensitive receptors, which could result in a requirement for 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.

Department of the Environment Industry Profile (1996) *Road vehicle fuelling, service and repair - garages and filling stations* HMSO
Department of the Environment Industry Profile (1995) *Chemical works - coatings, paints and printing inks* HMSO
Department of the Environment Industry Profile (1995) *Metal Manufacturing - iron and steel works* HMSO
Department of the Environment Industry Profile (1996) *Textile works and dye works* HMSO

3.0 EXPLORATORY WORK

In order to meet the objectives described in Section 1.2, five boreholes were advanced to depths of between 15.00 m and 25.00 m using a standard cable percussion drilling rig. Standard Penetration Tests (SPTs) were carried out at regular intervals within the boreholes to provide quantitative data on the strength of the soil and disturbed and undisturbed samples were recovered for subsequent laboratory testing and inspection.

A single groundwater monitoring standpipe was installed in one of the boreholes, to a depth of 3.50 m and has been monitored on two occasions, approximately two weeks and three weeks following the fieldwork. A rising head test was performed during the second visit to provide an indication of inflow rate.

In addition, a series of six open-drive sampler boreholes was advanced to depths of between 2.00 m and 5.00 m to provide additional coverage of the site. California Bearing Ratio (CBR) tests were carried out at five locations to provide information on pavement design parameters.

All of the fieldwork was carried out under the supervision of a geotechnical engineer from GEA. A selection of the soil samples recovered from the boreholes was submitted to a soil mechanics laboratory to undergo a programme of geotechnical testing, and a number of soil and groundwater samples to an analytical laboratory for a programme of contamination testing.

The borehole 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 records have been determined from spot heights shown on a site survey drawing (ref 914153-2 dated May 2014, by apr Services) provided by the consulting engineers.

3.1 Sampling Strategy

The borehole locations were specified by the consulting engineers, and positioned on site by an engineer from GEA in accessible areas, whilst avoiding the areas of known services.

Twelve samples of the shallow soil were subjected to analysis for a range of common industrial contaminants and contamination indicative parameters related to previous uses identified by the desk study. 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, monohydric phenols. Additionally four samples of the shallow soils were analysed for semi-volatile and volatile organic compounds (SVOCs and VOCs) including benzene, toluene, ethylbenzene and xylene (BTEX), polychlorinated biphenyl (PCB) and asbestos identification. Four samples were submitted for testing to determine the Waste Acceptance Criteria (WAC) of the shallow soils.

Samples of groundwater from Borehole No 1 were subjected to analysis for contaminants including metals, TPH, PAH, monohydric phenols, SVOCs and VOCs including BTEX and PCBs.

The soil samples were selected to provide a general view of the chemical conditions of the soils that are likely to be involved in a human exposure or groundwater pathway and to provide advice in respect of re-use or for waste disposal classification. The contamination analyses were carried out at an MCERTs accredited laboratory with the majority of the testing suite accredited to MCERTS standards.

4.0 GROUND CONDITIONS

The investigation has generally encountered made ground overlying a significant thickness of reworked ground, which is in turn underlain by the London Clay and was encountered to the full depth investigated, of 25.00 m (26.60 m OD).

4.1 Made Ground

Below a surface covering of paving and concrete slabs, the made ground generally comprised brown, pale reddish brown and pale brownish grey silty clayey gravelly sand and very silty sandy gravel with brick, concrete, ash and pockets of pale brown clay and was encountered in Borehole Nos 2 to 6, 8 and 10 to depths of between 0.40 m (50.75 m OD) and 1.20 m (50.49 m OD).

Below this upper layer and in the remaining boreholes, the made ground comprised greyish brown, blackish brown and pale orange-brown silty sandy clay with gravel, occasional partings of pale brown silt, occasional pockets of brown sand, selenite crystals, frequent brick, glass, coal and concrete fragments, occasional fine chalk gravel, ash, occasional wood and roots and extended to depths of between 2.90 m (48.25 m OD) and 4.60 m (47.00 m OD). In Borehole Nos 1 to 3 and 5, the made ground then comprised dark brown and blackish very silty clay with organic material, occasional fine gravel, ash, occasional fine brick fragments, fine selenite and rootlets and extended to depths of between 3.30 m (47.85 m OD) and 4.90 m (46.70 m OD).

The made ground was noted to be malodourous within Borehole Nos 6 and 9 at depths of 1.40 m and 1.20 m respectively. No other visual or olfactory evidence of significant contamination was observed within these soils during the fieldwork, although 12 samples of the made ground have been sent to an analytical laboratory for confirmatory analysis and the results are discussed in Section 4.3.

4.2 London Clay

The London Clay was found to be gravelly to a maximum depth of 5.30 m indicating that it has been naturally reworked. Below this reworked zone, the London Clay generally comprised soft becoming stiff brown, orange-brown and grey mottled low to high strength fissured silty clay with pockets of orange-brown silt, occasional fine shell fragments and occasional fine to coarse selenite and extended to depths of between 10.60 m (40.50 m OD) and 12.20 m (39.13 m OD); roots were found to extend to a maximum depth of 6.45 m. Below these depths the London Clay comprised firm becoming very stiff dark brown and greyish brown high to very high strength fissured silty clay with occasional shell fragments, fine selenite crystals, occasional pockets of pale brown, white and grey silt, occasional partings of dark red and blackish silt and was encountered to the full depth investigated, of 25.00 m (26.60 m OD).

Claystones were encountered at depths of 22.90 m (28.70 m OD) in Borehole No 1, 13.20 m (38.13 m OD) and 13.90 m (37.43 m OD) in Borehole No 3, 11.60 m (39.30 m OD) and 11.80 m (39.10 m OD) in Borehole No 4 and at 10.60 m (40.55 m OD) in Borehole No 5.

The results of laboratory testing indicate the clay to initially be of low volume change potential in Borehole Nos 3 and 5 at depths of 4.80 m and 4.90 m respectively and of high volume change potential below this depth.

The natural soils were found to be free from any evidence of contamination.

4.3 Groundwater

Groundwater was encountered during drilling within Borehole No 6 only at a depth of 4.75 m (46.94 m OD).

Groundwater was measured in Borehole No 5 at depths of 1.04 m (50.11 m OD) and 1.09 m (50.06 m OD) approximately two and three weeks following the fieldwork.

The results of the rising head test are summarised in the appendices.

4.4 Soil Contamination

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US_{95}
Arsenic	**48**	16	None	28.2
Cadmium	1.7	0.1	2	0.7
Chromium	55	21	None	39
Copper	450	33	None	193
Lead	**370**	52	None	**211**
Mercury	3.9	0.14	None	1.3
Nickel	49	20	None	37
Selenium	1.7	0.2	6	0.6
Zinc	450	66	None	215
Total Cyanide	0.5	0.5	None	0.5
Phenols	0.3	0.3	All	0.3
TPH	**2400**	10	7	603
Total PAH	**150**	2	5	56
Benzo(a)pyrene	**9.7**	0.1	8	3.9
Naphthalene	6.3	0.1	5	2.0
Total organic carbon %	**29**	0.91	None	**10**
Sulphide	45	0.5	2	22
pH	10.4	7.3	-	-

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

The use of a risk-based approach, which is presented in Part 2 of this report, means that it is not appropriate to determine the significance of contamination test results by simply comparing individual contaminant concentrations to a single "trigger" or "target" concentration. The significance of the results is therefore considered in more detail in Part 2, whilst the table below sets out the range of values measured within 12 samples and indicates the statistically weighted average concentrations.

The results of the contamination testing indicate elevated concentrations of arsenic, lead, TPH, total PAH including benzo(a)pyrene and total organic carbon that exceed the generic screening values.

The chemical analyses have not indicated any elevated concentrations of BTEX, SVOCs or VOCs; similarly, no elevated concentrations of PCBs were measured.

No asbestos was identified within the five samples of made ground analysed.

4.4.1 Generic Quantitative Risk Assessment

The use of a risk-based approach has been adopted to provide an initial screening of the test results to assess the need for subsequent site-specific risk assessments. To this end the table below indicates those contaminants of concern that have values in excess of a generic human health risk based guideline values which are either that of the CLEA[3] Soil Guideline Value where available, or is a Generic Screening Value calculated using the CLEA UK Version 1.06[4] software assuming a residential end use, or is based on the DEFRA Category 4 Screening values[5].

The key generic assumptions for this end use are as follows:

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

It is considered that these assumptions are acceptable for this generic first assessment of this site, as the proposed development will not create any new pathways. The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix. The risk to groundwater is considered later in the report.

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

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

3 *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.
4 Contaminated Land Exposure Assessment (CL|EA) Software Version 1.06 Environment Agency 2009
5 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

- 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 elevated concentrations of arsenic, lead, TPH, total PAH including Benzo(a)pyrene and total organic carbon within the samples of made ground tested. The concentrations of the contaminants of concern highlighted by a comparison of the measured concentrations against the generic screening values are tabulated below. This assessment is based upon the potential for risk to human health.

Contaminant of Concern	Maximum concentration (mg/kg)	Location(s) of elevated concentration(s) [depth (m)]	Generic Risk-Based Screening Value (mg/kg)
Arsenic	48	BH6 [0.8]	37
Lead	370	BH2 [1.2], BH2 [4.5], BH11 [0.8], BH8 [0.5]	200
TPH	2400	BH10 [0.9]	1000
Total PAH	150	BH10 [0.9], BH7 [0.7], BH8 [0.5]	71.4
Benzo (a) Anthracene	12	BH8 [0.5]	8.7
Benzo (b) Fluoranthene	15	BH8 [0.5]	10.5
Benzo (a) pyrene	11	BH7 [0.7], BH10 [0.9] BH8 [0.5]	5.00
Indeno (1 2 3 cd) Pyrene	6.7	BH10 [0.9], BH8 [0.5]	6.2
Dibenzo (a h) Anthracene	1.9	BH10 [0.9], BH8 [0.5]	1.35
Total Organic Carbon	29	BH6 [0.8], CBR3[0.45], BH10 [0.9], BH8 [0.5]	6

In Borehole No 10 at a depth of 0.90 m, TPH exceeded the 1000 mg/kg criteria and automatically triggered speciated testing for the TPH aromatic / aliphatic split. The results have not measured any elevated concentrations of speciated hydrocarbons above the generic risk based screening values for a residential end use with plant uptake.

The significance of these results is considered further in Part 2 of the report.

4.5 Groundwater Contamination

A single sample of groundwater was obtained from Borehole No 1 approximately three weeks following the fieldwork and this was analysed for a range of metal and organic contaminants. The results have been compared to the Environmental Quality Standards for surface water (EQS) and the Drinking Water Standards. The results of the contamination testing of a single sample of groundwater indicate elevated concentrations of dissolved arsenic, chromium and nickel that exceed the generic screening values for water samples. No elevated concentrations of other contaminants were detected.

The tables of screening values derived by GEA and an explanation of how each value has been derived are included in 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 foundation options and contamination issues.

5.0 INTRODUCTION

Consideration is being given to the demolition of the existing single storey commercial units and subsequent construction of a new two-storey school along the northern boundary, an 11-storey residential block to the northwest, a 5-storey residential block in the southern boundary and a 5-storey commercial space to the southwest.

In view of the relatively high loads it is understood that a decision has been made to use piled foundations to carry individual loads between 200 kN and 700 kN. A small number of tension piles are proposed although the individual tension pile loading is not known and is assumed to be in the region of 200 kN tension.

6.0 GROUND MODEL

The desk study has revealed that the site has had a contaminative history by virtue of its previous use as railway sidings, a coal depot, and more recently as a scrap metal yard. On the basis of the fieldwork, the ground conditions at this site can be characterised as follows.

- Below a moderate depth of made ground a significant thickness of reworked ground is present, which is in turn underlain by the London Clay;
- the made ground generally comprises silty clayey gravelly sand and very silty sandy gravel with brick, concrete, ash and pockets of pale brown clay to depths of between 0.40 m (50.75 m OD) and 1.20 m (50.49 m OD) over silty sandy clay with gravel, frequent brick, glass, coal and concrete fragments, ash and roots and extended to depths of between 2.90 m (48.25 m OD) and 4.60 m (47.00 m OD);
- the made ground then comprised dark brown and blackish very silty clay with organic material, occasional fine gravel, ash, occasional fine brick fragments, fine selenite and rootlets and extends to depths of between 3.30 m (47.85 m OD) and 4.90 m (46.70 m OD);
- the London Clay initially comprises soft becoming stiff brown, orange-brown and greenish grey mottled low to high strength fissured silty clay with partings of pale grey silty clay, pockets of orange-brown silt, occasional fine shell fragments, partings of pale grey clay, occasional fine to coarse selenite and roots, initially gravelly, and extends in Borehole Nos 1 to 5 to depths of between 10.60 m (40.50 m OD) and 12.20 m (39.13 m OD);
- the London Clay then comprises firm becoming very stiff dark brown and greyish brown high to very high strength fissured silty clay with occasional shell fragments, fine selenite crystals, occasional pockets of pale brown, white and grey silt, occasional partings of dark red and blackish silt and was encountered to the full depth

investigated, of 25.00 m (26.60 m OD);

- claystones were encountered at various depths, ranging from 10.60 m (40.55 m OD) to 22.90 m (28.70 m OD);
- the results of laboratory testing indicate the clay to be of high volume change potential and initially low in Borehole Nos 3 and 5;
- groundwater was encountered during drilling within Borehole No 6 only at a depth of 4.75 m (46.94 m OD). Groundwater was measured in Borehole No 5 at depths of 1.04 m (50.11 m OD) and 1.09 m (50.06 m OD) approximately two weeks and three weeks following the fieldwork;
- the results of the contamination testing indicate elevated concentrations of arsenic, lead, TPH, total PAH including benzo(a)pyrene and total organic carbon that exceed the generic screening values; and
- the chemical analyses have indicate that within the sample of groundwater tested elevated concentrations of dissolved arsenic, chromium and nickel were encountered;

7.0 ADVICE AND RECOMMENDATIONS

Loads are anticipated to be moderate to high and the presence of a significant depth of made ground is likely to make shallow foundations uneconomical and impractical to construct, and piled foundations are likely to be a more appropriate solution.

7.1 Piled Foundations

For the ground conditions at this site a driven or bored pile could be adopted. A driven pile would have the advantage of minimising the spoil that is generated, but consideration would need to be given to the effects of noise and vibrations on neighbouring sites. Some form of bored pile may therefore be the most appropriate type. A conventional rotary augered or continuous flight auger (cfa) piling technique is likely to be the most appropriate method.

The following table of ultimate coefficients may be used for the preliminary design of bored piles and is based on the measured SPT and Cohesion / depth graph in the appendix.

Ultimate Skin Friction		**kN/m^2**
Made ground	GL to 6.0 m	Ignore
London Clay	6.0 to 25.0 m	Increasing linearly from 35 to 125

Ultimate End Bearing		**kN/m^2**
London Clay	15.0 m to 25.0 m	Increasing linearly from 1350 to 2250

In the absence of pile tests, guidance from the London District Surveyors Association[6] (LDSA) suggests that a factor of safety of 2.6 should be applied to the above coefficients in the

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

computation of safe theoretical working loads.

On the basis of the above coefficients, applying a factor of safety of 2.6, it has been estimated that a 300 mm diameter pile extending to depths of 14.5 m and 25.0 m, should provide safe working loads of about 200 kN and 610 kN respectively. Increasing the diameter of the pile to 450 mm, would provide safe working loads of about 200 kN and 700 kN, when constructed to depths of 11.5 m and 21.5 m respectively.

The above examples are not intended to constitute any form of recommendation with regard to pile size or type, but merely serve to illustrate the use of the above coefficients. Specialist piling contractors should be consulted with regard to the design of an appropriate piling scheme. The piling specialist should also be advised of the silt layers and claystones within the London Clay Formation.

7.2 Shallow Excavations

On the basis of the borehole findings shallow excavations for foundations and services that extend into the made ground should remain generally stable in the short term, although some instability 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.

Inflows of groundwater into shallow excavations are unlikely to be encountered and seepages may be encountered from perched water tables within the made ground, although such inflows should be suitably controlled by sump pumping.

7.3 Pavement Design

Formation level for proposed pavements is likely to be within the made ground 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%. Prior to construction it would be prudent to proof roll the formation level and replace any soft spots with suitably compacted granular material or lean mix concrete.

7.4 Effect of Sulphates

Chemical analyses of selected samples of the London Clay have revealed generally high concentrations of soluble sulphate, corresponding to Class DS-4 and ACEC AC-4 of Table C2 of BRE Special Digest 1 Part C (2005), assuming mobile groundwater conditions. The guidelines contained in the above digest should be followed in the design of foundation concrete.

7.5 Site Specific Risk Assessment

The desk study has indicated that the site and the immediately surrounding area have had a potentially contaminative history. The contamination testing has indicated elevated concentrations of arsenic, lead, TPH, total PAH, benzo(a)pyrene and total organic carbon. No elevated concentrations of the other contaminants tested were identified within the soil samples tested. No elevated concentrations of VOCs, SVOCs, BTEX or PCBs were recorded within the soil samples tested. Asbestos was not identified within the samples of made ground examined. Additionally, elevated concentrations of dissolved arsenic, chromium and nickel were detected within a single sample of groundwater.

The contaminants are likely to be non-volatile or of a low volatility and of a low solubility and they do not thus present a significant vapour risk or a significant risk of leaching and migration within groundwater. These contaminants could, however, pose an unacceptable risk to human health through direct contact, accidental ingestion or inhalation of soil or soil derived dust. However, the majority of this material is likely to be left undisturbed below the development. End users will also be effectively isolated from direct contact with the identified contaminants by the building and areas of external hardstanding. The contamination may pose a risk to site workers during the construction phase and will need to be considered when specifying buried pipe materials.

TOC is used as an indicator of methanogenic potential and an elevated concentration is not in itself a hazard. The elevated concentration is probably as a result of humic material or ash within the sample and is not considered to be of concern.

The contamination testing has indicated elevated concentrations of dissolved heavy metals within a single groundwater sample and it is recommended that further contamination is undertaken to determine if the source of contamination is within the groundwater or silt sediment within the sample. Should the groundwater be found to contain elevated levels of heavy metals, a programme of contamination monitoring should be carried out to determine the potential source. If the source of the contamination is found to be off-site, tracing and remediating the source is unlikely to be practical, so it is considered that there is no benefit in attempting to remediate the contamination in the groundwater.

7.5.1 Site Workers

Site workers should be made aware of the contamination, including the potential presence of asbestos, and a programme of working should be identified to protect workers handling any soil. The method of site working should be in accordance with guidelines set out by HSE and CIRIA and the requirements of the Local Authority Environmental Health Officer. A watching brief should also be maintained during the groundwork, and if suspicious soils are encountered then a suitably qualified engineer should inspect the soils and further testing carried out if required.

7.6 Waste Disposal

Any spoil arising from excavations or landscaping works, which is not to be re-used in accordance with the CL:AIRE guidance[7], will need to be disposed of to a licensed tip. Under the European Waste 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 going to landfill is subject to landfill tax at either the standard rate of £64 per tonne (about £120 per m^3) or at the lower rate of £2.50 per tonne (roughly £5 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 rocks and soils, which are accurately described as such in terms of the 2011 Order[8], would qualify for the 'lower rate' of landfill tax.

Based upon on the technical guidance provided by the Environment Agency[9] it is considered likely that the made ground from this site, as represented by the 12 chemical analyses carried out, would be classified as NON-HAZARDOUS waste under the waste code 17 05 04 (soils and stones not containing dangerous substances) and would be taxable at the standard rate,

7 CL:AIRE (2011) *The Definition of Waste: Development Industry Code of Practice* Version 2, March 2011
8 *Landfill Tax (Qualifying Material) Order 2011*
9 Environment Agency (2008) *Hazardous Waste: Interpretation of the definition and classification of hazardous waste. Technical Guidance* WM2 Second Edition Version 2.2, May 2008

with the exception of the soil represented by Borehole No 10 at 0.90 m depth which would be classified as HAZARDOUS waste under the waste code 17 05 03 (soils and stones containing dangerous substances). The classification of hazardous is as a result of an elevated concentration of TPH at this location. It may be possible to zone this area of elevated contamination which would allow the remaining site to be designated as non-hazardous, although it is likely that the extent of the contamination in the region of Borehole No 10 will need to be determined through additional testing. It is likely that the natural soils, if separated out, could be classified as an INERT waste also under the waste code 17 05 04. This material would be taxable at the lower rate, if accurately described as naturally occurring clay in terms of the 2011 Order on the waste transfer note. As the site has never been used for the storage of potentially hazardous materials, it is likely that WAC leaching tests would not be required for such inert waste going to landfill. This would however need to be confirmed by the receiving landfill site.

Under the requirements of the European Waste Directive all waste needs to be pre-treated prior to disposal. The pre-treatment process must be physical, thermal, chemical or biological, including sorting. It must change the characteristics of the waste in order to reduce its volume, hazardous nature, facilitate handling or enhance recovery. The waste producer can carry out the treatment but they will need to provide documentation to prove that this has been carried out. Alternatively, the treatment can be carried out by an approved contractor. The Environment Agency has issued a position paper[10] 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" on site by sufficiently characterising the soils insitu prior to excavation.

The above opinion with regard to the classification of the excavated soils and its likely landfill taxable rate 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.

If consideration were to be given to the re-use of the soil as a structural fill on this or another site, in accordance with the Code of Practice for the definition of waste, it would be necessary to confirm its suitability for use, its certainty of use and to confirm that only as much material is to be used as is required for the specific purpose for which it was being used. A materials management plan could then be formulated and a tracking system put in place such that once placed the material would no longer be regarded as being a waste and thus waste management licensing and landfill tax would not apply.

8.0 OUTSTANDING RISKS AND ISSUES

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

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

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. 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.

It would be prudent to carry out further soil contamination testing in the region of Borehole No 10 in order to determine the extent of elevated TPH levels in this area.

Further groundwater contamination testing has been recommended to confirm if the groundwater is contaminated and to determine the potential source of any contamination.

These areas of doubt should be drawn to the attention of prospective contractors and further investigation will be required or sufficient contingency should be provided to cover the outstanding risk.

APPENDIX

Borehole Records

SPT results

Laboratory Test Results

SPT & Cohesion / Depth Graph

Contamination Results

Risk-based Generic Screening Values (Soil)

Envirocheck summary

Historical Maps

Site Plan

Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.60	London Borough of Camden	J14212
	Location	**Dates** 21/08/2014	**Engineer** Price & Myers	**Sheet** 1/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(0.40)	CONCRETE (50 mm tarmac over concrete slab)		
					51.20	0.40	MADE GROUND (greyish brown, blackish and brown silty sandy clay with gravel, frequent brick, glass, coal fragments and ash)		
0.70	D1								
1.20-1.65 1.20	CPT N=1 B1	1.20	DRY	1,0/0,1,0,0					
1.80	D2								
2.00-2.45 2.00	CPT N=2 B2	1.50	DRY	1,1/0,1,1,0					
						(4.20)			
2.80	D3								
3.00-3.45 3.00	CPT N=2 B3	1.50	DRY	1,0/0,1,0,1					
3.70	D4								
4.00-4.45 4.00	SPT N=3 S1	1.50	DRY	1,0/0,1,1,1					
					47.00	4.60			
4.60	B4						MADE GROUND (bluish grey, brown and pale brown mottled fissured silty clay with occasional fine brick fragments and occasional roots)		
4.80	D5					(0.30)			
					46.70	4.90			
5.00-5.45 5.00	SPT N=7 S2	1.50	DRY	1,2/1,2,2,2			Firm becoming stiff brown high strength fissured silty CLAY with partings of pale grey silty clay and occasional fine selenite		
6.00-6.45	U1								
6.50	D6								
7.50-7.95 7.50	SPT N=16 S3	1.50	DRY	3,3/3,4,4,5					
						(6.30)			
9.00-9.45	U2								
9.50	D7								

Remarks
Groundwater not encountered during drilling
2 hr 30 mins dayworks due to chiselling between ground level and 1.20 m depth, and between 22.90 m and 23.40 m depth
2 hr 15 mins dayworks to gain access to borehole location

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

Figure No.
J14212.BH1

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.60	London Borough of Camden	J14212
	Location	**Dates** 21/08/2014	**Engineer** Price & Myers	**Sheet** 2/3

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95 10.50	SPT N=26 S4	1.50	DRY	4,5/6,7,6,7		(6.30)			
					40.40	11.20			
11.30	D8						Firm becoming very stiff dark brown high to very high strength fissured silty CLAY with occasional shell fragments, fine selenite crystals, occasional pockets of pale brown silt, occasional partings of dark red and blackish silt and a claystone at 22.90 m		
12.00-12.45	U3								
12.50	D9								
13.50-13.95 13.50	SPT N=26 S5	1.50	DRY	5,5/6,6,7,7					
15.00-15.45	U4								
15.50	D10								
16.50-16.95 16.50	SPT N=28 S6	1.50	DRY	5,6/6,7,7,8					
18.00-18.45	U5					(13.80)			
18.50	D11								
19.50-19.95 19.50	SPT N=34 S7	1.50	DRY	6,7/8,8,9,9					

Remarks

Scale (approx)	**Logged By**
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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH1**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.60	London Borough of Camden	J14212
	Location	**Dates** 21/08/2014	**Engineer** Price & Myers	**Sheet** 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	U6								
21.50	D12								
22.50-22.95 22.50	SPT N=64 S8	1.50	DRY	7,8/10,10,12,32		(13.80)			
23.40	D13								
24.50-24.95	U7								
25.00	D14				26.60	25.00			
							Complete at 25.00m		

Remarks

Scale (approx)	**Logged By**
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Figure No.
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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH2**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.14	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					50.99	(0.15) 0.15	MADE GROUND (block paving over brown sand)		
					50.84	(0.15) 0.30	CONCRETE		
0.40	D1								
0.70	D2				50.44	(0.40) 0.70	MADE GROUND (pale greyish brown very silty sandy gravel with fragments of brick and concrete)		
1.20-1.65 1.20	CPT N=7 B1	1.20	DRY	1,1/2,1,1,3			MADE GROUND (pale greyish brown and pale brown silty very sandy gravelly clay with pale grey partings of clay, fragments of brick, concrete and coal and roots)		
2.00-2.45 2.00	CPT N=2 B2	1.50	DRY	1,1/0,1,0,1					
2.80	D3					(3.70)			
3.00-3.45 3.00	CPT N=3 S1	1.50	DRY	1,0/0,1,1,1					
3.80	D4								
4.00-4.45 4.00	CPT N=5 S2	1.50	DRY	1,0/1,1,1,2					
4.50	B3				46.74	4.40 (0.40)	MADE GROUND (brown organic clay)		
4.90 5.00-5.45	D5 U1				46.34	4.80	Soft becoming stiff orange-brown and brown mottled medium to high strength fissured silty CLAY with pockets of orange-brown silt, occasional fine shell fragments, fine selenite crystals, partings of pale grey clay and pale orange-brown and pale grey silt and gravel between 4.80 m and 5.30 m depth		
5.50	D6								
6.00-6.45 6.00	SPT N=12 S3	1.50	DRY	2,1/2,3,3,4					
7.50-7.95	U2					(5.90)			
8.00	D7								
9.00-9.45 9.00	SPT N=19 S4	1.50	DRY	3,3/4,5,5,5					

Remarks
Groundwater not encountered during drilling
1 hr 30 mins dayworks chiselling through concrete surface
30 mins dayworks clearing location

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

Figure No.
J14212.BH2

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH2**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.14	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(5.90)			
10.50-10.95	U3				40.44	10.70			
11.00	D8						Firm becoming stiff greyish brown high to very high strength fissured very silty CLAY with occasional shell fragments, fine selenite crystals, occasional pale grey and pale brown silt partings		
12.00-12.45 12.00	SPT N=26 S5	1.50	DRY	4,5/5,6,7,8					
13.50-13.95	U4								
14.00	D9								
15.00-15.45 15.00	SPT N=31 S6	1.50	DRY	5,6/7,8,8,8		(9.30)			
16.50-16.95	U5								
17.00	D10								
18.00-18.45 18.00	SPT N=39 S7	1.50	DRY	7,7/8,9,10,12					
19.50-19.95	U6								
20.00	D11				31.14	20.00			

Remarks

Scale (approx)	**Logged By**
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Figure No.
J14212.BH2

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.33	London Borough of Camden	J14212
	Location	**Dates** 18/08/2014	**Engineer** Price & Myers	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					51.18	(0.15) 0.15	CONCRETE with reinforcement		
0.40	D1					(0.75)	MADE GROUND (pale reddish brown and pale brownish grey silty clayey gravelly sand with brick, concrete , ash and pockets of pale brown clay)		
0.80	D2				50.43	0.90			
1.20-1.65 1.20	CPT N=2 B1	1.20	DRY	1,0/0,1,0,1			MADE GROUND (pale orange-brown, pale brown and dark grey silty clay with partings of pale brown silt, selenite crystals, coal and brick fragments, becoming blackish with gravel)		
1.80	D3								
2.00-2.45 2.00	SPT N=3 S1	1.50	DRY	1,0/1,0,1,1		(2.60)			
2.70	D4								
3.00	U1								
3.50	D5				47.83	3.50	MADE GROUND (brown organic clay)		
3.80	D6				47.53	(0.30) 3.80			
4.00-4.45 4.00	SPT N=7 S2	1.50	DRY	1,1/2,1,2,2			Firm becoming stiff pale greenish grey, pale brown and dark grey medium to high strength fissured silty CLAY with fine to coarse selenite crystals, partings of pale brown, dark brown and pale grey silt, pockets of pale brown silt and roots		
4.80	D7								
5.00	U2								
5.50	D8								
6.00-6.45 6.00	SPT N=11 S3	1.50	DRY	2,3/3,2,3,3					
7.50	U3								
8.00	D9					(8.40)			
9.00-9.45 9.00	SPT N=21 S4	1.50	DRY	4,5/5,5,5,6					

Remarks
2 hrs 30 mins dayworks due to chiselling to depths of 1.20 m and between 13.20 m and 13.90 m
30 mins dayworks clearing borehole location
Groundwater not encountered during drilling

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

Figure No.
J14212.BH3

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH3**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.33	London Borough of Camden	J14212
	Location	**Dates** 18/08/2014	**Engineer** Price & Myers	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
10.50	U4								
11.00	D10					(8.40)			
12.00-12.45 12.00	SPT N=26 S5	1.50	DRY	5,5/6,6,7,7	39.13	12.20	Stiff greyish brown high strength fissured silty CLAY with fine selenite crystals, fine shell fragments, occasional white silt partings; claystone at 13.20 m depth		
13.90 14.00	D11 U5					(2.80)			
14.50-14.95 14.50 14.50	SPT N=32 D12 S6	1.50	DRY	6,7/7,8,8,9	36.33	15.00	Complete at 15.00m		

Remarks	**Scale (approx)**	**Logged By**
	1:50	CA
	Figure No.	J14212.BH3

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH4**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	50.90	London Borough of Camden	J14212
	Location	**Dates** 22/08/2014	**Engineer** Price & Myers	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					50.75	(0.15) 0.15	MADE GROUND (block paving over brown sand)		
					50.55	(0.20) 0.35	CONCRETE		
0.70	D1				50.20	(0.35) 0.70	MADE GROUND (brown silty clayey sand with gravel, frequent brick fragments, concrete fragments and coal fragments)		
1.20-1.65 1.20	CPT N=3 B1	1.50	DRY	1,0/1,1,0,1			MADE GROUND (brown, greyish brown and blackish mottled silty sandy clay with occasional gravel, fine selenite crystals, occasional orange-brown silt pockets, occasional fine brick fragments)		
1.80	D2								
2.00-2.45 2.00	CPT N=2 B2	1.50	DRY	1,0/0,0,1,1		(3.20)			
2.80	D3								
3.00-3.45 3.00	SPT N=4 S1	1.50	DRY	1,0/1,1,1,1					
3.60	D3								
4.00-4.45	U1				47.00	3.90	Soft becoming firm bluish grey, greenish grey and orange-brown mottled low to high strength fissured silty CLAY with occasional fine gravel, frequent fine to coarse selenite at 6.50 m depth, pockets of orange-brown silt, frequent roots, initially sandy and with gravel between 3.90 m and 4.40 m depth and a decomposed root at 4.00 m depth		
4.50	D4								
4.80	D5								
5.00-5.45 5.00	SPT N=13 S2	1.50	DRY	2,3/3,3,3,4					
6.00-6.45	U2								
6.50	D6								
7.50-7.95 7.50	SPT N=17 S3	1.50	DRY	2,3/4,4,4,5		(7.50)			
9.00-9.45	U3								
9.50	D7								

Remarks
Groundwater not encountered during drilling
2 hrs dayworks due to chiselling to 1.2 m depth, and between 11.60 m and 11.80 m depth
30 mins dayworks clearing borehole location

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

Figure No.
J14212.BH4

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

Site
Proposed Kingsgate School, Liddell Road, London NW6 2EW

Borehole Number
BH4

Boring Method	Casing Diameter	Ground Level (mOD)	Client	Job Number
Cable Percussion	150mm cased to 1.50m	50.90	London Borough of Camden	J14212

Location	Dates	Engineer	Sheet
	22/08/2014	Price & Myers	2/2

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=22 S4	1.50	DRY	3,4/5,5,6,6		(7.50)			
11.40	D8				39.50	11.40			
11.80	D9						Firm becoming very stiff greyish brown high and very high strength fissured silty CLAY with shell fragments, fine selenite and occasional pale grey and dark greyish brown partings of silt; claystone at 11.60 m		
12.00-12.45	U4								
12.50	D10								
13.50-13.95 13.50	SPT N=27 S5	1.50	DRY	5,5/6,6,7,8					
15.00-15.45	U5								
15.50	D11					(8.60)			
16.50-16.95 16.50	SPT N=31 S6	1.50	DRY	6,6/7,7,8,9					
18.00-18.45	U6								
18.50	D12								
19.50-19.95 19.50	SPT N=36 S7	1.50	DRY	7,8/8,9,9,10					
					30.90	20.00			

Remarks

Scale (approx)	Logged By
1:50	CA

Figure No.
J14212.BH4

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH5**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.15	London Borough of Camden	J14212
	Location	**Dates** 15/08/2014	**Engineer** Price & Myers	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					50.95	(0.20) 0.20	CONCRETE (reinforced)		
0.40	D1				50.75	(0.20) 0.40	MADE GROUND (pale brownish grey very silty gravelly sand with concrete fragments)		
0.80	D2					(1.20)	MADE GROUND (greyish brown, dark grey and blackish silty sandy clay withfrequent, chalk fragments, coal fragments and tarmac fragments)		
1.20-1.65 1.20	CPT N=3 B1	1.20	DRY	1,0/1,0,1,1	49.55	1.60			
1.80	D3						MADE GROUND (pale brown and pale greyish brown very silty clay with pockets of pale brown silt, partings of pale grey clay and occasional pockets of ash)		
2.00-2.45	U1								
2.30	D4					(1.30)			
2.80	D5				48.25	2.90			
3.00-3.45 3.00	CPT N=4 B2	1.50	DRY	1,1/1,1,1,1	47.85	(0.40) 3.30	MADE GROUND (dark brown and blackish very silty clay with occasional fine gravel, ash, occasional fine brick fragments, fine selenite and rootlets)		
3.70	D6						Soft becoming stiff pale grey, pale brown and greenish grey medium to high strength silty CLAY with occasional gravel, occasional shell fragments, pockets of orange-brown silt, occasional fine to coarse selenite and gravel between 3.30 m and 5.40 m depth		
4.00-4.45	U2								
4.50	D7						Orange-brown very gravelly silty sandy CLAY with partings of dark orange-brown silt, gravel is fine to coarse and rounded		
4.90	D8								
5.00-5.45 5.00	CPT N=9 B3	1.50	DRY	1,2/2,2,2,3					
6.00-6.45	U3								
6.50	D9					(7.30)			
7.50-7.95 7.50	SPT N=18 S1	1.50	DRY	3,3/4,4,5,5					
9.00-9.45	U4								
9.50	D10								

Remarks
Groundwater not encountered during drilling
2 hrs 30 mins dayworks due to chiselling to 1.20 m depth, and between 10.60 m and 11.20 m depth
30 mins dayworks clearing borehole location

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

Figure No.
J14212.BH5

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Borehole Number** **BH5**

Boring Method	**Casing Diameter**	**Ground Level (mOD)**	**Client**	**Job Number**
Cable Percussion	150mm cased to 1.50m	51.15	London Borough of Camden	J14212
	Location	**Dates** 15/08/2014	**Engineer** Price & Myers	**Sheet** 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
						(7.30)			
10.50-10.95	SPT N=0	1.50	DRY	32/	40.55	10.60	Firm becoming stiff greyish brown high to very high strength fissured silty CLAY with occasional shell fragments, fine selenite crystals, partings of pale grey silt, pockets of pale brown silt and a claystone at 10.60 m depth		
11.20	D11								
11.80	D12								
12.00-12.45	U5								
12.50	D13					(4.40)			
13.50-13.95 13.50	SPT N=30 S3	1.50	DRY	5,6/7,7,8,8					
14.50-14.95	U6								
15.00	D14				36.15	15.00	Complete at 15.00m		

Remarks	**Scale (approx)**	**Logged By**
	1:50	CA
	Figure No.	
	J14212.BH5	

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH6**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		51.69	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				51.51	(0.18)	CONCRETE		
					0.18 (0.30)	CONCRETE (crushed concrete and brick)		
				51.21	0.48	MADE GROUND (very dark grey and blackish silty very gravelly sand with brick and concrete fragments, frequent coal, ash and rare pockets of clay)		
					(0.72)			
				50.49	1.20	MADE GROUND (dark and pale brown, greyish brown and grey mottled silty sandy clay with brick fragments, coal, ash, selenite crystals and pyritised wood and gravel from 3.60 m depth; an odour was noted at a depth of 1.40 m depth)		
			PP (0.75)					
			PP (1.25) PP (1.25)					
			PP (1.30) PP (1.25)					
2.50	D1		PP (0.75)					
			PP (0.75) PP (1.00)		(3.10)			
			PP (1.10) PP (1.75)					
			PP (1.75)					
			PP (1.75) PP (0.75)					
			PP (2.00) PP(-)	47.39	4.30			
4.50	D2		PP(-)			Stiff dark brown CLAY		
			PP (2.00) PP (1.50)		(0.70)			
				46.69	5.00			
						Complete at 5.00m		

Remarks
Groundwater encountered at 4.75 m depth during drilling
Groundwater measured at 4.44 m depth 1 hr following drilling
PID reading at 1.40 m = 0.5 ppm

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

Figure No.
J14212.BH6

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH7**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		51.25	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				51.09	(0.16) 0.16	CONCRETE (with 6 mm reinforcement)		
					(0.69)	MADE GROUND (brown, orange-brown and black mottled silty sandy very gravelly clay with frequent crushed brick, coal and concrete, and pockets of yellow brown-sand)		
				50.40	0.85			
			PP(0.50) PP(0.40) PP(0.60) PP(0.75) PP(0.60)		(1.15)	MADE GROUND (brown silty fissured CLAY with occasional gravel, pale grey silt, partings of dark grey silty clay and occasional brick and concrete from 1.70 m)		
				49.25	2.00			
						Complete at 2.00m		

Remarks
Borehole collapsed to 1.90 m
Groundwater not encountered

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

Figure No.
J14212.BH7

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH8**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		51.13	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.60)	MADE GROUND (brownish grey and brown silty gravelly sand with brick fragments and roots)		
				50.53	0.60			
					(0.40)	MADE GROUND (dark brown and dark greyish brown silty gravelly sand with occasional coal, brick fragments, rare clay pockets and occasional roots)		
				50.13	1.00			
			PP(0.75) PP(0.50)		(1.00)	MADE GROUND (brownish grey and brown mottled silty clay with rare brick and coal fragments, ash and partings of orange-brown silt)		
			PP(0.75) PP(0.50)					
			PP(1.00)	49.13	2.00			
						Complete at 2.00m		

Remarks
Borehole collapsed to a depth of 1.65 m
Groundwater not encountered

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

Figure No.
J14212.BH8

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH9**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		50.90	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	MADE GROUND (80 mm block paving over pale brown silty medium to coarse sand)		
				50.55	0.35	CONCRETE		
					(0.40)			
				50.15	0.75	MADE GROUND (brown, white and dark orange-brown mottled silty very sandy clay with frequent brick and concrete fragments)		
					(0.25)			
				49.90	1.00	MADE GROUND (greyish brown silty sandy gravelly clay with brick, concrete, pockets of orange-brown sand and a parting of soft organic silty sandy clay between 1.20 m and 1.30 m depth; odour noted between 1.20 m to 1.30 m depth)		
			PP(0.50) PP(0.10) PP(0.40) PP(0.40) PP(0.50)		(1.00)			
				48.90	2.00	Complete at 2.00m		

Remarks
Groundwater not encountered during drilling

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

Figure No.
J14212.BH9

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GEA Geotechnical & Environmental Associates Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH10**	
Excavation Method Drive-in Window Sampler	**Dimensions**	**Ground Level (mOD)** 50.75	**Client** London Borough of Camden	**Job Number** J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
					(0.35)	MADE GROUND (80 mm block paving over pale brown sand with crushed concrete)		
				50.40	0.35			
					(0.85)	MADE GROUND (reddish brown silty gravelly sand with crushed and large pieces of brick, concrete and occasional roots)		
			PP(-)	49.55	1.20			
			PP(>4.50) PP(>4.50)			MADE GROUND (brownish grey and orange-brown mottled silty sandy gravelly clay with brick fragments, coal, ash, medium to very coarse gravel and roots, becoming dark greyish brown and gravelly between 3.30 m and 3.40 m depth)		
			PP(>4.50) PP(3.50)					
			PP(2.50)					
			PP(1.00) PP(-)					
			PP(-) PP(0.50)		(2.80)			
			PP(1.00)					
			PP(1.00) PP(0.60)					
			PP(0.90) PP(1.25)					
			PP(1.50)	46.75	4.00			
						Complete at 4.00m		

Remarks
Groundwater not encountered

Scale (approx)	Logged By
1:50	CA

Figure No.
J14212.BH10

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Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans AL4 0PG	**Site** Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Number** **BH11**

Excavation Method	**Dimensions**	**Ground Level (mOD)**	**Client**	**Job Number**
Drive-in Window Sampler		50.76	London Borough of Camden	J14212
	Location	**Dates** 20/08/2014	**Engineer** Price & Myers	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
				50.67	(0.09)	CONCRETE		
				50.57	0.09			
					(0.10)	MADE GROUND (sandy fill)		
					0.19			
				50.16	(0.41)	CONCRETE		
					0.60			
					(0.40)	MADE GROUND (brown and greyish brown silty slightly sandy very gravelly clay with brick fragments, occasional coal, fragments of concrete and roots)		
			PP (3.50)	49.76	1.00			
			PP (4.50) PP (4.50)		(1.00)	MADE GROUND (Grey and brown silty sandy very gravelly clay with large pieces of coal and brick, coarse gravel, pockets of yellow sand and frequent roots)		
			PP (>4.50) PP (>4.50)					
			PP(>4.50)	48.76	2.00			
						Complete at 2.00m		

Remarks
Groundwater not encountered

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

Figure No.
J14212.BH11

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Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Standard Penetration Test Results

Site : Proposed Kingsgate School, Liddell Road, London NW6 2EW

Client : London Borough of Camden

Engineer : Price & Myers

Job Number J14212

Sheet 1 / 1

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	CPT	1	0	0	1	0	0	N=1	
BH1	2.00	2.15	2.45	CPT	1	1	0	1	1	0	N=2	
BH1	3.00	3.15	3.45	CPT	1	0	0	1	0	1	N=2	
BH1	4.00	4.15	4.45	SPT	1	0	0	1	1	1	N=3	
BH1	5.00	5.15	5.45	SPT	1	2	1	2	2	2	N=7	
BH1	7.50	7.65	7.95	SPT	3	3	3	4	4	5	N=16	
BH1	10.50	10.65	10.95	SPT	4	5	6	7	6	7	N=26	
BH1	13.50	13.65	13.95	SPT	5	5	6	6	7	7	N=26	
BH1	16.50	16.65	16.95	SPT	5	6	6	7	7	8	N=28	
BH1	19.50	19.65	19.95	SPT	6	7	8	8	9	9	N=34	
BH1	22.50	22.65	22.95	SPT	7	8	10	10	12	32	N=64	
BH2	1.20	1.35	1.65	CPT	1	1	2	1	1	3	N=7	
BH2	2.00	2.15	2.45	CPT	1	1	0	1	0	1	N=2	
BH2	3.00	3.15	3.45	CPT	1	0	0	1	1	1	N=3	
BH2	4.00	4.15	4.45	CPT	1	0	1	1	1	2	N=5	
BH2	6.00	6.15	6.45	SPT	2	1	2	3	3	4	N=12	
BH2	9.00	9.15	9.45	SPT	3	3	4	5	5	5	N=19	
BH2	12.00	12.15	12.45	SPT	4	5	5	6	7	8	N=26	
BH2	15.00	15.15	15.45	SPT	5	6	7	8	8	8	N=31	
BH2	18.00	18.15	18.45	SPT	7	7	8	9	10	12	N=39	
BH3	1.20	1.35	1.65	CPT	1	0	0	1	0	1	N=2	
BH3	2.00	2.15	2.45	SPT	1	0	1	0	1	1	N=3	
BH3	4.00	4.15	4.45	SPT	1	1	2	1	2	2	N=7	
BH3	6.00	6.15	6.45	SPT	2	3	3	2	3	3	N=11	
BH3	9.00	9.15	9.45	SPT	4	5	5	5	5	6	N=21	
BH3	12.00	12.15	12.45	SPT	5	5	6	6	7	7	N=26	
BH3	14.50	14.65	14.95	SPT	6	7	7	8	8	9	N=32	
BH4	1.20	1.35	1.65	CPT	1	0	1	1	0	1	N=3	
BH4	2.00	2.15	2.45	CPT	1	0	0	0	1	1	N=2	
BH4	3.00	3.15	3.45	SPT	1	0	1	1	1	1	N=4	
BH4	5.00	5.15	5.45	SPT	2	3	3	3	3	4	N=13	
BH4	7.50	7.65	7.95	SPT	2	3	4	4	4	5	N=17	
BH4	10.50	10.65	10.95	SPT	3	4	5	5	6	6	N=22	
BH4	13.50	13.65	13.95	SPT	5	5	6	6	7	8	N=27	
BH4	16.50	16.65	16.95	SPT	6	6	7	7	8	9	N=31	
BH4	19.50	19.65	19.95	SPT	7	8	8	9	9	10	N=36	
BH5	1.20	1.35	1.65	CPT	1	0	1	0	1	1	N=3	
BH5	3.00	3.15	3.45	CPT	1	1	1	1	1	1	N=4	
BH5	5.00	5.15	5.45	CPT	1	2	2	2	2	3	N=9	
BH5	7.50	7.65	7.95	SPT	3	3	4	4	5	5	N=18	
BH5	10.50	10.65	10.95	SPT	32						N=0	bouncing
BH5	13.50	13.65	13.95	SPT	5	6	7	7	8	8	N=30	

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GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

Borehole Permeability Test
Rev 1

Site Proposed Kingsgate School, Liddell Road, London NW6 2EW

Client London Borough of Camden

Engineer Price & Myers

Job Number J14212

Sheet 1 / 1

BOREHOLE No	BH5
TEST NO	1
DATE	12/09/2014

AT START OF TEST	
BH Depth	3.50
Casing Depth	-
Water Level	1.2

TIME	*WATER LEVEL*
1 min	1.19
2 min	1.19
3 min	1.19
4 min	1.19
5 min	1.19
10 min	1.19
15 min	1.18
20 min	1.18
25 min	1.18
30 min	1.18
45 min	1.18
1 hr	1.17

REMARKS

Project Name:	Liddell Road		**Project Started:**	20/08/2014	**K4 SOILS**
			Testing Started:	20/08/2014	
Client Name:	GEA		**Date reported:**	27/08/2014	
Project No:	J14212	**Our Job / report no:** 17261	**Sample no/ type:**	-	
Sample description:	Grey FMC crushed concrete and tarmac		**TP No:**	CBR1	
			Depth (m):	0.40	
			Test No:	-	

Note: Test applicable only when maximum particle size beneath plunger does not exceed 20mm

Note: Penetration and force readings after seating load zeroed.

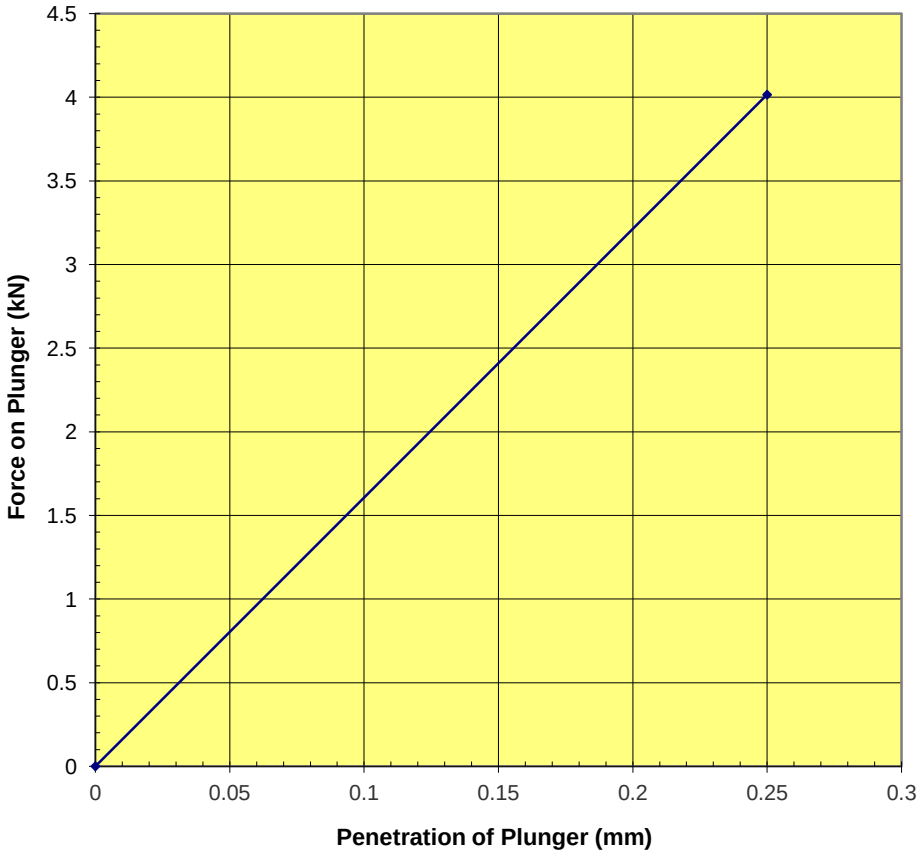
Rate of Strain :1.00mm/min

Mass of Surcharge **8.5** **kg**

Proving Ring factor: **7.3**

RECORDINGS

Penetration of Plunger	Force on Plunger	
	Dial Reading	Load
mm		kN
0	0	0
0.25	550	4.02



RESULTS:

Moisture content (%) 0.29

In-situ CBR value % **>30**

Penetration mm	Force kN	Standard Force kN	**CBR %**
2.5	-	13.2	-
5	-	20	-

In-situ CBR Test

BS1377 Part 9 : 1990 : 4.3

Determination of In-situ CBR values

Approved by

Initials : kp

Date : 27/08/2014

UKAS TESTING 2519

Remarks: **Maximum kentledge reached**

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford WD18 9RU

Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

All samples connected with this report ,incl any on 'hold' will be stored and disposed off according to Company policy.Acopy of this policy is available on request. MSF-11/ R10/1

Project Name:	Liddell Road	**Project Started:**	20/08/2014
		Testing Started:	20/08/2014
Client Name:	GEA	**Date reported:**	27/08/2014
Project No:	J14212 **Our Job / report no:** 17261	**Sample no/ type:**	-
Sample description:	MADE GROUND (Fmc crushed concrete, brick fragments, lumps of brown clay with sandy fines)	**TP No:**	CBR2
		Depth (m):	0.40
		Test No:	-

K4 SOILS

Note: Test applicable only when maximum particle size beneath plunger does not exceed 20mm

Note: Penetration and force readings after seating load zeroed.

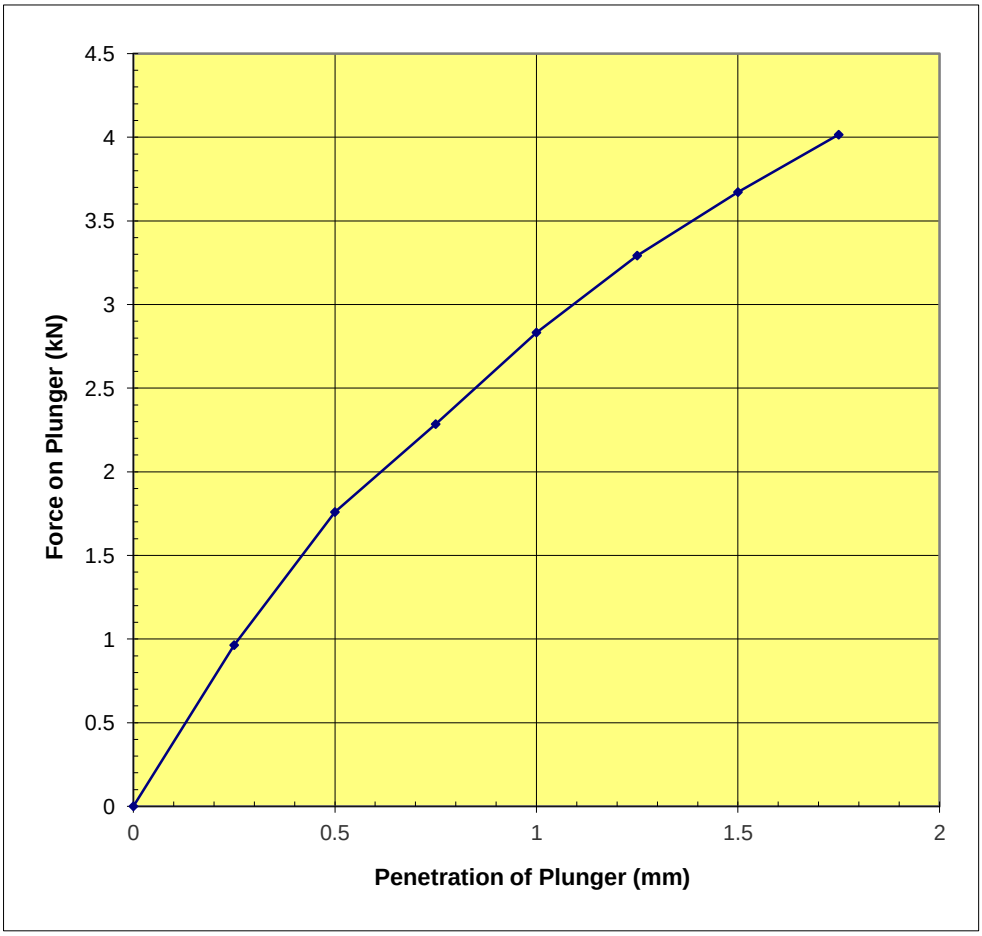
Rate of Strain :1.00mm/min

Mass of Surcharge **8.5** **kg**

Proving Ring factor: **7.3**

RECORDINGS

Penetration of Plunger	Force on Plunger	
	Dial Reading	Load
mm		kN
0	0	0
0.25	132	0.96
0.50	241	1.76
0.75	313	2.28
1.00	388	2.83
1.25	451	3.29
1.50	503	3.67
1.75	550	4.02



RESULTS:

Moisture content (%) 11

In-situ CBR value % **>30**

Penetration mm	Force kN	Standard Force kN	**CBR %**
2.5	-	13.2	-
5	-	20	-

In-situ CBR Test

BS1377 Part 9 : 1990 : 4.3

Determination of In-situ CBR values

Approved by

Initials : kp

Date : 27/08/2014

UKAS TESTING 2519

Remarks: **Maximum kentledge reached**

Project Name:	Liddell Road	**Project Started:**	20/08/2014
		Testing Started:	20/08/2014
Client Name:	GEA	**Date reported:**	27/08/2014
Project No:	J14212 **Our Job / report no:** 17261	**Sample no/ type:**	-
Sample description:	Dark grey brown clayey sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)	**TP No:**	CBR3
		Depth (m):	0.40
		Test No:	-

K4 SOILS

Note: Test applicable only when maximum particle size beneath plunger does not exceed 20mm

Note: Penetration and force readings after seating load zeroed.

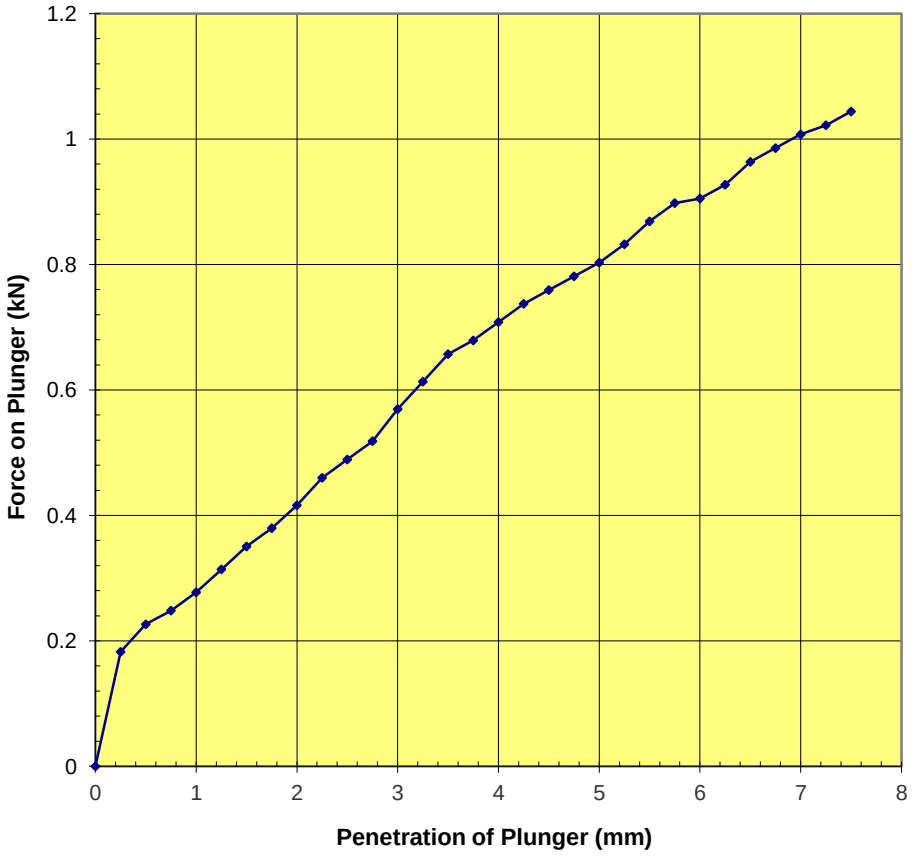
Rate of Strain :1.00mm/min

Mass of Surcharge **8.5** **kg**

Proving Ring factor: **7.3**

RECORDINGS

Penetration of Plunger	Force on Plunger	
	Dial Reading	Load
mm		kN
0	0	0
0.25	25	0.18
0.50	31	0.23
0.75	34	0.25
1.00	38	0.28
1.25	43	0.31
1.50	48	0.35
1.75	52	0.38
2.00	57	0.42
2.25	63	0.46
2.50	67	0.49
2.75	71	0.52
3.00	78	0.57
3.25	84	0.61
3.50	90	0.66
3.75	93	0.68
4.00	97	0.71
4.25	101	0.74
4.50	104	0.76
4.75	107	0.78
5.00	110	0.80
5.25	114	0.83
5.50	119	0.87
5.75	123	0.90
6.00	124	0.91
6.25	127	0.93
6.50	132	0.96
6.75	135	0.99
7.00	138	1.01
7.25	140	1.02
7.50	143	1.04



RESULTS:

Moisture content (%) 20

Penetration mm	Force kN	Standard Force kN	**CBR %**
2.5	0.49	13.2	3.71
5	0.80	20	4.02

In-situ CBR value % **4.0**

In-situ CBR Test

BS1377 Part 9 : 1990 : 4.3

Determination of In-situ CBR values

Approved by

Initials : kp

Date : 27/08/2014

UKAS TESTING 2519

Remarks:

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford WD18 9RU

Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

All samples connected with this report ,incl any on 'hold' will be stored and disposed off according to Company policy.Acopy of this policy is available on request.

Project Name:	Liddell Road		**Project Started:**	20/08/2014	**K4 SOILS**
			Testing Started:	20/08/2014	
Client Name:	GEA		**Date reported:**	27/08/2014	
Project No:	J14212	**Our Job / report no:** 17261	**Sample no/ type:**	-	
Sample description:	Dark grey brown slightly clayey sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)				**TP No:** CBR4
					Depth (m): 0.40
					Test No: -

Note: Test applicable only when maximum particle size beneath plunger does not exceed 20mm

Note: Penetration and force readings after seating load zeroed.

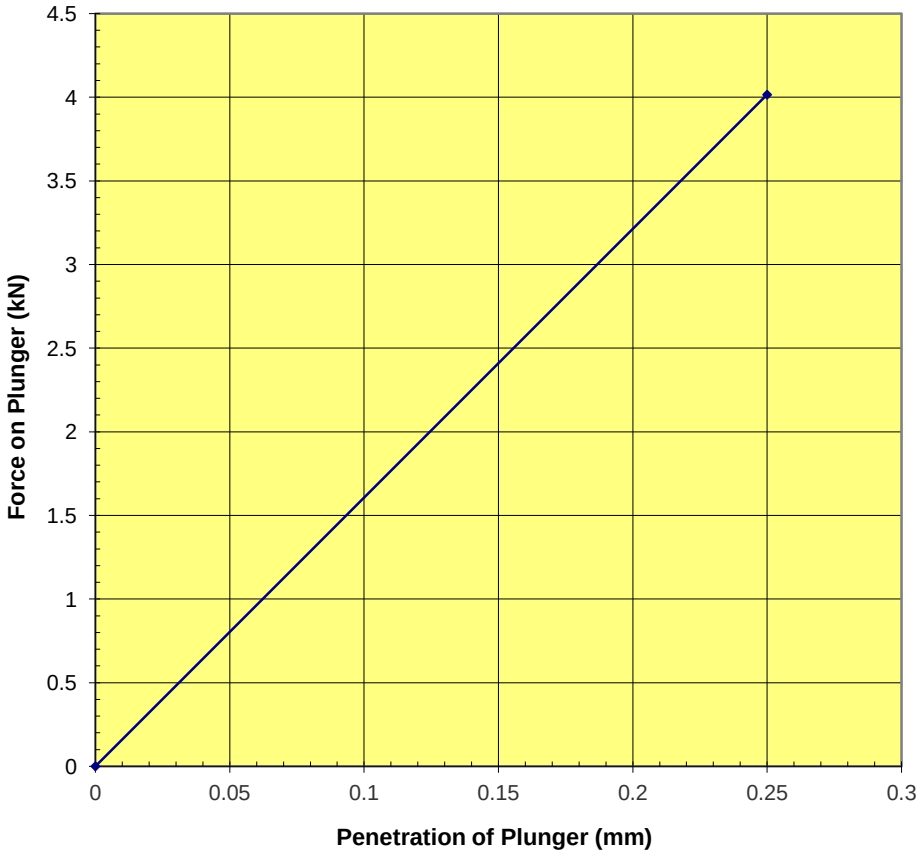
Rate of Strain :1.00mm/min

Mass of Surcharge **8.5** **kg**

Proving Ring factor: **7.3**

RECORDINGS

Penetration of Plunger	Force on Plunger	
	Dial Reading	Load
mm		kN
0	0	0
0.25	550	4.02



RESULTS:

Moisture content (%) 15

In-situ CBR value % **>30**

Penetration mm	Force kN	Standard Force kN	**CBR %**
2.5	-	13.2	-
5	-	20	-

In-situ CBR Test

BS1377 Part 9 : 1990 : 4.3

Determination of In-situ CBR values

Approved by

Initials : kp

Date : 27/08/2014

UKAS TESTING 2519

Remarks: **Maximum kentledge reached**

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford WD18 9RU

Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

All samples connected with this report ,incl any on 'hold' will be stored and disposed off according to Company policy.Acopy of this policy is available on request.

Project Name:	Liddell Road		**Project Started:**	20/08/2014	**K4 SOILS**
			Testing Started:	20/08/2014	
Client Name:	GEA		**Date reported:**	27/08/2014	
Project No:	J14212	**Our Job / report no:** 17261	**Sample no/ type:**	-	
Sample description:	Dark grey brown slightly clayey sandy GRAVEL (gravel is fmc and sub-angular to sub-rounded)				**TP No:** CBR5
					Depth (m): 0.40
					Test No: -

Note: Test applicable only when maximum particle size beneath plunger does not exceed 20mm

Note: Penetration and force readings after seating load zeroed.

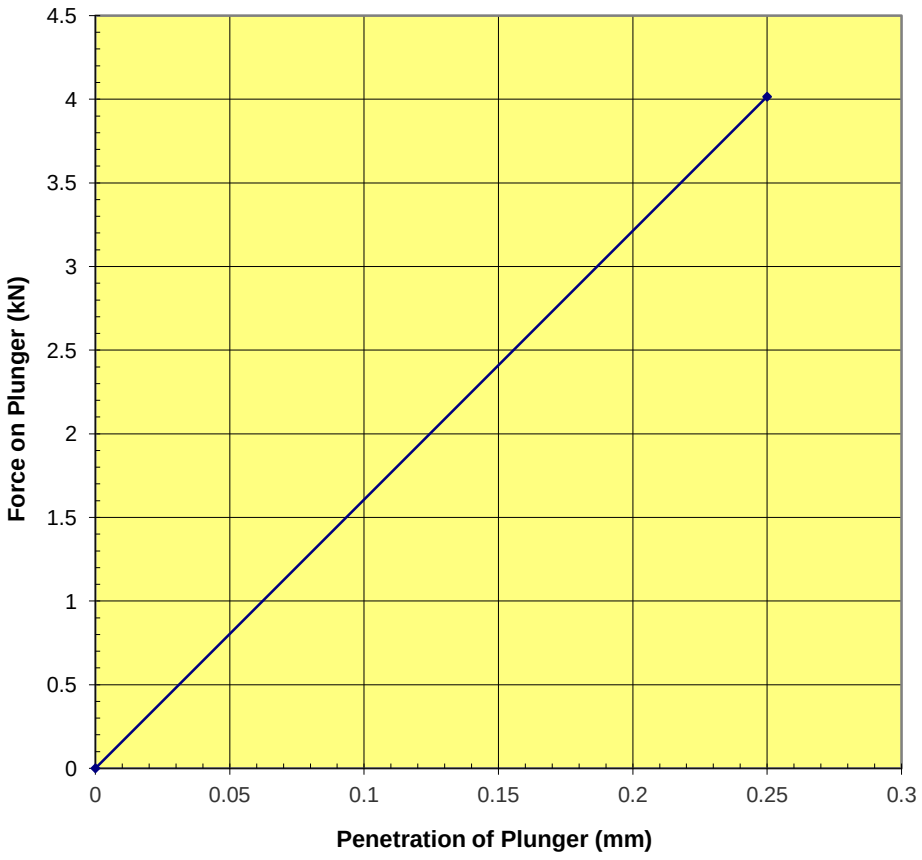
Rate of Strain :1.00mm/min

Mass of Surcharge **8.5** **kg**

Proving Ring factor: **7.3**

RECORDINGS

Penetration of Plunger	Force on Plunger	
	Dial Reading	Load
mm		kN
0	0	0
0.25	550	4.02



RESULTS:

Moisture content (%) 12

In-situ CBR value % **>30**

Penetration mm	Force kN	Standard Force kN	**CBR %**
2.5	-	13.2	-
5	-	20	-

In-situ CBR Test

BS1377 Part 9 : 1990 : 4.3

Determination of In-situ CBR values

Approved by

Initials : kp

Date : 27/08/2014

UKAS TESTING 2519

Remarks: **Maximum kentledge reached**

Test Report by K4 SOILS LABORATORY Unit 8 Olds Close Olds Approach Watford WD18 9RU

Test Results relate only to the sample numbers shown above. Approved Signatories: K.Phaure (Tech.Mgr) J.Phaure (Lab.Mgr)

All samples connected with this report ,incl any on 'hold' will be stored and disposed off according to Company policy.Acopy of this policy is available on request. MSF-11/ R10/1

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole No	Sample No	Depth (m)	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 µm (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Failure Sketch	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH1	U1	6.00	U	Stiff fissured brown mottled grey silty clay with pockets of gypsum	27					1.95	1.53	120	126	63					
BH1	D6	6.50	D	Brown silty CLAY with rare gypsum	31	70	29	41	99							7.7	4.6	550	
BH1	U2	9.00	U	Stiff fissured brown silty CLAY	30					1.94	1.49	180	194	97					
BH1	D7	9.50	D	Brown silty CLAY with rare orange silt partings and gypsum	31	79	32	47	100							8.0	5.5	630	
BH1	U3	12.00	U	Stiff fissured dark grey silty CLAY	29					1.93	1.50	240	175	87					
BH1	D9	12.50	D	Dark grey brown silty CLAY	30	76	29	47	100										
BH1	U4	15.00	U	Stiff fissured brownish grey silty CLAY	25					1.95	1.56	300	299	150					
BH1	U5	18.00	U	Stiff fissured dark brown silty CLAY	26					1.98	1.56	360	410	205					
BH1	U6	21.00	U	Stiff fissured dark brownish grey silty CLAY	26					2.00	1.59	420	345	173					
BH1	U7	24.50	U	Stiff fissured brownish grey silty CLAY	24					2.02	1.62	450	325	163					
BH2	U1	5.00	U	Stiff fissured brown fine sandy silty CLAY with rare gravel	28					1.92	1.49	100	89	45					
BH2	D6	5.50	D	Mottled brown, dark grey and orange silty CLAY with rare fine to medium gravel.	39	90	33	57	98										

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole No	Sample No	Depth (m)	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 µm (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	Failure Sketch	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH2	U2	7.50	U	Stiff fissured brown mottled grey silty CLAY with rare gypsum	29					1.90	1.48	150	206	103					
BH2	D7	8.00	D	Brown silty CLAY with rare gypsum	34	79	30	49	100										
BH2	U3	10.50	U	Stiff fissured dark greyish brown silty CLAY with rare gypsum	28					1.96	1.53	210	272	136					
BH2	D8	11.00	D	Dark grey brown silty CLAY	27	74	30	44	100										
BH2	U4	13.50	U	Stiff fissured brownish grey silty CLAY	29					1.95	1.51	270	187	93					
BH2	U5	16.50	U	Stiff fissured dark grey silty CLAY	28					1.98	1.55	330	294	147					
BH2	U6	19.50	U	Stiff fissured dark brownish grey silty CLAY	26					1.87	1.48	390	338	169					
BH3	U1	3.00	U	Firm to stiff fissured brown silty CLAY	36					1.93	1.42	60	70	35					
BH3	D7	4.80	D	Mottled brown, orange and grey sandy very gravelly CLAY	11	72	33	39	30										
BH3	U2	5.00	U	Stiff fissured brown mottled grey silty CLAY	30					1.99	1.53	100	123	61					
BH3	D8	5.50	D													8.2	1.0		
BH3	U3	7.50	U	Stiff fissured brown mottled grey silty CLAY	30					1.91	1.47	150	180	90					

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole No	Sample No	Depth (m)	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 µm (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Mean Shear Stress (kPa)	Failure Sketch	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH3	D9	8.00	D	Brown silty CLAY with rare grey silt partings and gypsum	31	79	32	47	100										
BH3	U4	10.50	U	Stiff fissured brown silty CLAY with rare gypsum	28					1.90	1.49	210	257	129					
BH3	D10	11.00	D	Brown silty CLAY with rare orange silt and gypsum	30	76	33	43	100										
BH3	U5	14.00	U	Stiff fissured brownish grey silty CLAY	27					1.96	1.54	280	252	126					
BH4	U1	4.00	U	Firm to stiff grey silty CLAY	42					1.76	1.24	80	80	40					
BH4	S2	5.00	D	Mottled brown, orange and rare grey CLAY with rare fine to medium flint gravel.	25	75	22	53	99							8.2	0.33		
BH4	U2	6.00	U	firm to stiff fissured brown mottled grey silty CLAY with rare gypsum	29					1.94	1.50	120	141	70					
BH4	U3	9.00	U	Stiff fissured greyish brown silty CLAY with rare gypsum	28					1.93	1.51	180	189	94					
BH4	D7	9.50	D	Brown silty CLAY with rare orange and grey silt partings and gypsum	29	73	28	45	100										
BH4	U4	12.00	U	Stiff fissured greyish brown silty CLAY	27					1.97	1.54	240	199	99					
BH4	D10	12.50	D	Dark grey brown CLAY	28	77	31	46	100										
BH4	U5	15.00	U	Stiff fissured brownish grey silty CLAY	24					2.09	1.69	300	336	168					

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

SUMMARY OF GEOTECHNICAL TESTING

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression				Chemical Tests			Other tests and comments
Borehole No	Sample No	Depth (m)	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 µm (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Mean Shear Stress (kPa)	Failure Sketch	pH	2:1 W/S SO4 (g/L)	W/S Mg (mg/L)	
BH4	U6	18.00	U	Stiff fissured brownish grey silty CLAY	25					1.98	1.58	360	509	255					
BH5	U1	2.00	U	Firm to stiff brown silty CLAY	36					1.76	1.30	40	61	31					
BH5	U2	4.00	U	Stiff fissured grey brown silty CLAY	31					1.89	1.45	80	95	47					
BH5	D8	4.90	D	Mottled brown and orange slightly sandy very gravelly CLAY. Gravel is flint.	13	73	30	43	37							8.1	0.23		
BH5	U3	6.00	U	Stiff fissured brown mottled grey silty CLAY with rare gypsum	32					1.93	1.47	120	157	79					
BH5	S1	7.50	D	Brown mottled orange and grey silty CLAY with rare gypsum	29	79	29	50	100										
BH5	U4	9.00	U	Stiff fissured greyish brown silty CLAY with rare gypsum	24					1.95	1.57	180	220	110					
BH5	D10	9.50	D	Brown silty CLAY with rare orange silt partings and gypsum	28	71	29	42	100										
BH5	U5	12.00	U	Stiff fissured brownish grey silty CLAY	28					1.96	1.53	240	240	120					
BH5	U6	14.50	U	Stiff fissured brownish grey silty CLAY	25					1.97	1.57	290	343	171					

Sample type: B (Bulk disturb.) BLK (Block) C (Core) D (Disturbed) LB (Large Bulk dist.) U (Undisturbed)

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

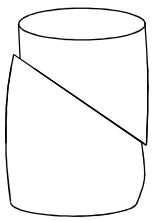
Borehole No:	BH1
Sample No:	U1
Depth (m):	6.00

Description:
Stiff fissured brown mottled grey silty clay with pockets of gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.2
Diameter	(mm)	102.7
Moisture Content	(%)	27
Bulk Density	(Mg/m³)	1.95
Dry Density	(Mg/m³)	1.53
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.0
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	120
Strain at failure	(%)	16.7
Maximum Deviator Stress	(kPa)	126
Shear Stress Cu	(kPa)	63

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

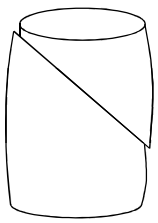
Borehole No:	BH1
Sample No:	U2
Depth (m):	9.00

Description:
Stiff fissured brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	204.7
Diameter	(mm)	102.7
Moisture Content	(%)	30
Bulk Density	(Mg/m³)	1.94
Dry Density	(Mg/m³)	1.49
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.4
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	180
Strain at failure	(%)	5.9
Maximum Deviator Stress	(kPa)	194
Shear Stress Cu	(kPa)	97

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	55 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

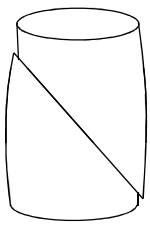
Borehole No:	BH1
Sample No:	U3
Depth (m):	12.00

Description:
Stiff fissured dark grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	204.2
Diameter	(mm)	102.9
Moisture Content	(%)	29
Bulk Density	(Mg/m³)	1.93
Dry Density	(Mg/m³)	1.50
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	240
Strain at failure	(%)	4.2
Maximum Deviator Stress	(kPa)	175
Shear Stress Cu	(kPa)	87

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

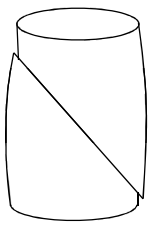
Borehole No:	BH1
Sample No:	U4
Depth (m):	15.00

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.3
Diameter	(mm)	103.2
Moisture Content	(%)	25
Bulk Density	(Mg/m³)	1.95
Dry Density	(Mg/m³)	1.56
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	300
Strain at failure	(%)	6.5
Maximum Deviator Stress	(kPa)	299
Shear Stress Cu	(kPa)	150

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	20 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

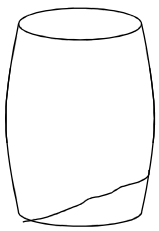
Borehole No:	BH1
Sample No:	U5
Depth (m):	18.00

Description:
Stiff fissured dark brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.7
Diameter	(mm)	103.1
Moisture Content	(%)	26
Bulk Density	(Mg/m³)	1.98
Dry Density	(Mg/m³)	1.56
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	360
Strain at failure	(%)	3.7
Maximum Deviator Stress	(kPa)	410
Shear Stress Cu	(kPa)	205

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	80 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

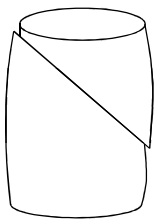
Borehole No:	BH1
Sample No:	U6
Depth (m):	21.00

Description:
Stiff fissured dark brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.3
Diameter	(mm)	102.5
Moisture Content	(%)	26
Bulk Density	(Mg/m³)	2.00
Dry Density	(Mg/m³)	1.59
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	420
Strain at failure	(%)	3.0
Maximum Deviator Stress	(kPa)	345
Shear Stress Cu	(kPa)	173

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

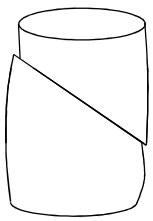
Borehole No:	BH1
Sample No:	U7
Depth (m):	24.50

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.3
Diameter	(mm)	102.5
Moisture Content	(%)	24
Bulk Density	(Mg/m³)	2.02
Dry Density	(Mg/m³)	1.62
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	450
Strain at failure	(%)	1.5
Maximum Deviator Stress	(kPa)	325
Shear Stress Cu	(kPa)	163

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	80 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

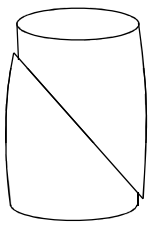
Borehole No:	BH2
Sample No:	U1
Depth (m):	5.00

Description:
Stiff fissured brown fine sandy silty CLAY with rare gravel

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	202.6
Diameter	(mm)	102.7
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.92
Dry Density	(Mg/m³)	1.49
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	100
Strain at failure	(%)	3.7
Maximum Deviator Stress	(kPa)	89
Shear Stress Cu	(kPa)	45

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

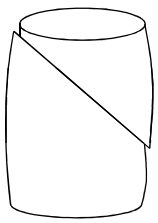
Borehole No:	BH2
Sample No:	U2
Depth (m):	7.50

Description:
Stiff fissured brown mottled grey silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	200.9
Diameter	(mm)	103.3
Moisture Content	(%)	29
Bulk Density	(Mg/m³)	1.90
Dry Density	(Mg/m³)	1.48
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	150
Strain at failure	(%)	7.0
Maximum Deviator Stress	(kPa)	206
Shear Stress Cu	(kPa)	103

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

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S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

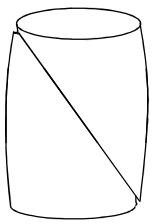
Borehole No:	BH2
Sample No:	U3
Depth (m):	10.50

Description:
Stiff fissured dark greyish brown silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	202.5
Diameter	(mm)	103.1
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.96
Dry Density	(Mg/m³)	1.53
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	210
Strain at failure	(%)	4.0
Maximum Deviator Stress	(kPa)	272
Shear Stress Cu	(kPa)	136

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

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S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

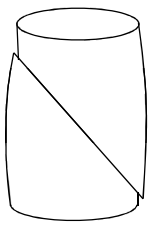
Borehole No:	BH2
Sample No:	U4
Depth (m):	13.50

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.1
Diameter	(mm)	103.2
Moisture Content	(%)	29
Bulk Density	(Mg/m³)	1.95
Dry Density	(Mg/m³)	1.51
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	270
Strain at failure	(%)	4.2
Maximum Deviator Stress	(kPa)	187
Shear Stress Cu	(kPa)	93

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	20 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

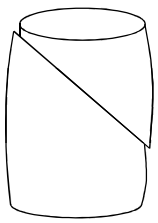
Borehole No:	BH2
Sample No:	U5
Depth (m):	16.50

Description:
Stiff fissured dark grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.9
Diameter	(mm)	102.7
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.98
Dry Density	(Mg/m³)	1.55
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	330
Strain at failure	(%)	2.7
Maximum Deviator Stress	(kPa)	294
Shear Stress Cu	(kPa)	147

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

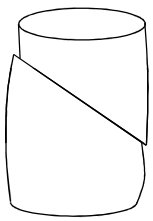
Borehole No:	BH2
Sample No:	U6
Depth (m):	19.50

Description:
Stiff fissured dark brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	204.7
Diameter	(mm)	103.5
Moisture Content	(%)	26
Bulk Density	(Mg/m³)	1.87
Dry Density	(Mg/m³)	1.48
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.6
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	390
Strain at failure	(%)	9.3
Maximum Deviator Stress	(kPa)	338
Shear Stress Cu	(kPa)	169

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

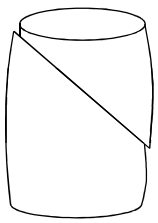
Borehole No:	BH3
Sample No:	U1
Depth (m):	3.00

Description:
Firm to stiff fissured brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.4
Diameter	(mm)	100.6
Moisture Content	(%)	36
Bulk Density	(Mg/m³)	1.93
Dry Density	(Mg/m³)	1.42
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	60
Strain at failure	(%)	19.7
Maximum Deviator Stress	(kPa)	70
Shear Stress Cu	(kPa)	35

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	75 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

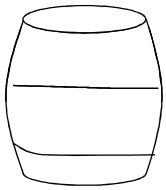
Borehole No:	BH3
Sample No:	U2
Depth (m):	5.00

Description:
Stiff fissured brown mottled grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.0
Diameter	(mm)	102.4
Moisture Content	(%)	30
Bulk Density	(Mg/m³)	1.99
Dry Density	(Mg/m³)	1.53
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	100
Strain at failure	(%)	19.7
Maximum Deviator Stress	(kPa)	123
Shear Stress Cu	(kPa)	61

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	65 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

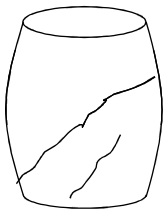
Borehole No:	BH3
Sample No:	U3
Depth (m):	7.50

Description:
Stiff fissured brown mottled grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.8
Diameter	(mm)	102.9
Moisture Content	(%)	30
Bulk Density	(Mg/m³)	1.91
Dry Density	(Mg/m³)	1.47
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	150
Strain at failure	(%)	6.4
Maximum Deviator Stress	(kPa)	180
Shear Stress Cu	(kPa)	90

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	80 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

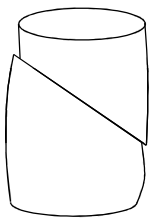
Borehole No:	BH3
Sample No:	U4
Depth (m):	10.50

Description:
Stiff fissured brown silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.4
Diameter	(mm)	103.7
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.90
Dry Density	(Mg/m³)	1.49
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	210
Strain at failure	(%)	4.0
Maximum Deviator Stress	(kPa)	257
Shear Stress Cu	(kPa)	129

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	20 mm
Sample type	U

Checked and Approved by

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S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

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KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

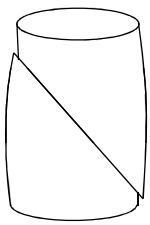
Borehole No:	BH3
Sample No:	U5
Depth (m):	14.00

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.4
Diameter	(mm)	102.8
Moisture Content	(%)	27
Bulk Density	(Mg/m³)	1.96
Dry Density	(Mg/m³)	1.54
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	280
Strain at failure	(%)	7.0
Maximum Deviator Stress	(kPa)	252
Shear Stress Cu	(kPa)	126

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	30 mm
Sample type	U

Checked and Approved by

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S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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Quick Undrained Triaxial Compression Test

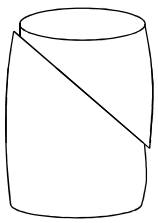
Borehole No:	BH4
Sample No:	U1
Depth (m):	4.00

Description:
Firm to stiff grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.6
Diameter	(mm)	102.6
Moisture Content	(%)	42
Bulk Density	(Mg/m³)	1.76
Dry Density	(Mg/m³)	1.24
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.7
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	80
Strain at failure	(%)	10.9
Maximum Deviator Stress	(kPa)	80
Shear Stress Cu	(kPa)	40

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	80 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

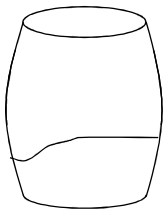
Borehole No:	BH4
Sample No:	U2
Depth (m):	6.00

Description:
firm to stiff fissured brown mottled grey silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.4
Diameter	(mm)	102.8
Moisture Content	(%)	29
Bulk Density	(Mg/m³)	1.94
Dry Density	(Mg/m³)	1.50
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.9
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	120
Strain at failure	(%)	14.4
Maximum Deviator Stress	(kPa)	141
Shear Stress Cu	(kPa)	70

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	70 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

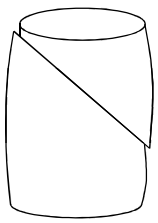
Borehole No:	BH4
Sample No:	U3
Depth (m):	9.00

Description:
Stiff fissured greyish brown silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.5
Diameter	(mm)	103.3
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.93
Dry Density	(Mg/m³)	1.51
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	180
Strain at failure	(%)	4.0
Maximum Deviator Stress	(kPa)	189
Shear Stress Cu	(kPa)	94

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	35 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

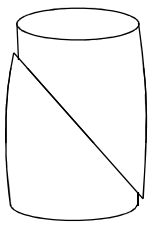
Borehole No:	BH4
Sample No:	U4
Depth (m):	12.00

Description:
Stiff fissured greyish brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.1
Diameter	(mm)	103.2
Moisture Content	(%)	27
Bulk Density	(Mg/m³)	1.97
Dry Density	(Mg/m³)	1.54
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	240
Strain at failure	(%)	2.0
Maximum Deviator Stress	(kPa)	199
Shear Stress Cu	(kPa)	99

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	20 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

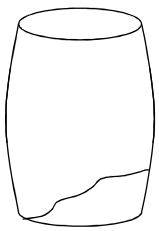
Borehole No:	BH4
Sample No:	U5
Depth (m):	15.00

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.1
Diameter	(mm)	102.7
Moisture Content	(%)	24
Bulk Density	(Mg/m³)	2.09
Dry Density	(Mg/m³)	1.69
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	300
Strain at failure	(%)	7.5
Maximum Deviator Stress	(kPa)	336
Shear Stress Cu	(kPa)	168

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	120 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

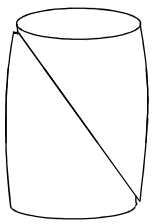
Borehole No:	BH4
Sample No:	U6
Depth (m):	18.00

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.5
Diameter	(mm)	102.8
Moisture Content	(%)	25
Bulk Density	(Mg/m³)	1.98
Dry Density	(Mg/m³)	1.58
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	360
Strain at failure	(%)	2.7
Maximum Deviator Stress	(kPa)	509
Shear Stress Cu	(kPa)	255

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	30 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

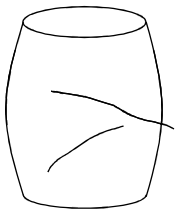
Borehole No:	BH5
Sample No:	U1
Depth (m):	2.00

Description:
Firm to stiff brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	202.8
Diameter	(mm)	102.9
Moisture Content	(%)	36
Bulk Density	(Mg/m³)	1.76
Dry Density	(Mg/m³)	1.30
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	40
Strain at failure	(%)	3.9
Maximum Deviator Stress	(kPa)	61
Shear Stress Cu	(kPa)	31

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	65 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

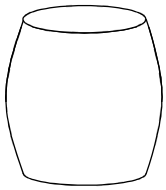
Borehole No:	BH5
Sample No:	U2
Depth (m):	4.00

Description:
Stiff fissured grey brown silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	203.1
Diameter	(mm)	102.3
Moisture Content	(%)	31
Bulk Density	(Mg/m³)	1.89
Dry Density	(Mg/m³)	1.45
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	1.1
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	80
Strain at failure	(%)	19.7
Maximum Deviator Stress	(kPa)	95
Shear Stress Cu	(kPa)	47

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	60 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

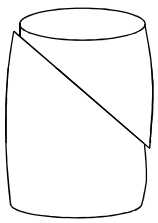
Borehole No:	BH5
Sample No:	U3
Depth (m):	6.00

Description:
Stiff fissured brown mottled grey silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.0
Diameter	(mm)	102.8
Moisture Content	(%)	32
Bulk Density	(Mg/m³)	1.93
Dry Density	(Mg/m³)	1.47
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.5
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	120
Strain at failure	(%)	7.5
Maximum Deviator Stress	(kPa)	157
Shear Stress Cu	(kPa)	79

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	60 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

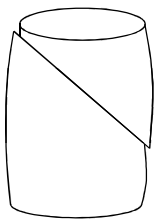
Borehole No:	BH5
Sample No:	U4
Depth (m):	9.00

Description:
Stiff fissured greyish brown silty CLAY with rare gypsum

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.3
Diameter	(mm)	103.0
Moisture Content	(%)	24
Bulk Density	(Mg/m³)	1.95
Dry Density	(Mg/m³)	1.57
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.2
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	180
Strain at failure	(%)	2.5
Maximum Deviator Stress	(kPa)	220
Shear Stress Cu	(kPa)	110

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	75 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

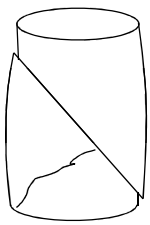
Borehole No:	BH5
Sample No:	U5
Depth (m):	12.00

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.2
Diameter	(mm)	102.7
Moisture Content	(%)	28
Bulk Density	(Mg/m³)	1.96
Dry Density	(Mg/m³)	1.53
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.4
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	240
Strain at failure	(%)	6.0
Maximum Deviator Stress	(kPa)	240
Shear Stress Cu	(kPa)	120

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	20 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

GEOLABS®

UKAS TESTING 1982

BS1377 : Part 7 : Clause 8 : 1990

Quick Undrained Triaxial Compression Test

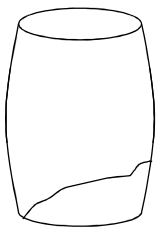
Borehole No:	BH5
Sample No:	U6
Depth (m):	14.50

Description:
Stiff fissured brownish grey silty CLAY

Single Stage Specimen

Specimen Details		**Single specimen**
Specimen conditions		Undisturbed
Length	(mm)	201.0
Diameter	(mm)	102.9
Moisture Content	(%)	25
Bulk Density	(Mg/m³)	1.97
Dry Density	(Mg/m³)	1.57
Test Details		**Single specimen**
Latex membrane thickness	(mm)	0.3
Membrane correction	(kPa)	0.3
Axial displacement rate	(%/min)	2.0
Cell pressure	(kPa)	290
Strain at failure	(%)	4.2
Maximum Deviator Stress	(kPa)	343
Shear Stress Cu	(kPa)	171

Mode of failure



Orientation of the sample	Vertical
Distance from top of the tube	30 mm
Sample type	U

Checked and Approved by

SB

S Burke (Snr Tech)

Date: 02/10/2014

Project Number:

GEO / 21662

Project Name:

KINGSGATE SCHOOL, LIDDELL ROAD, LONDON NW6 2EW

Job Number: J14212

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UKAS TESTING 1982

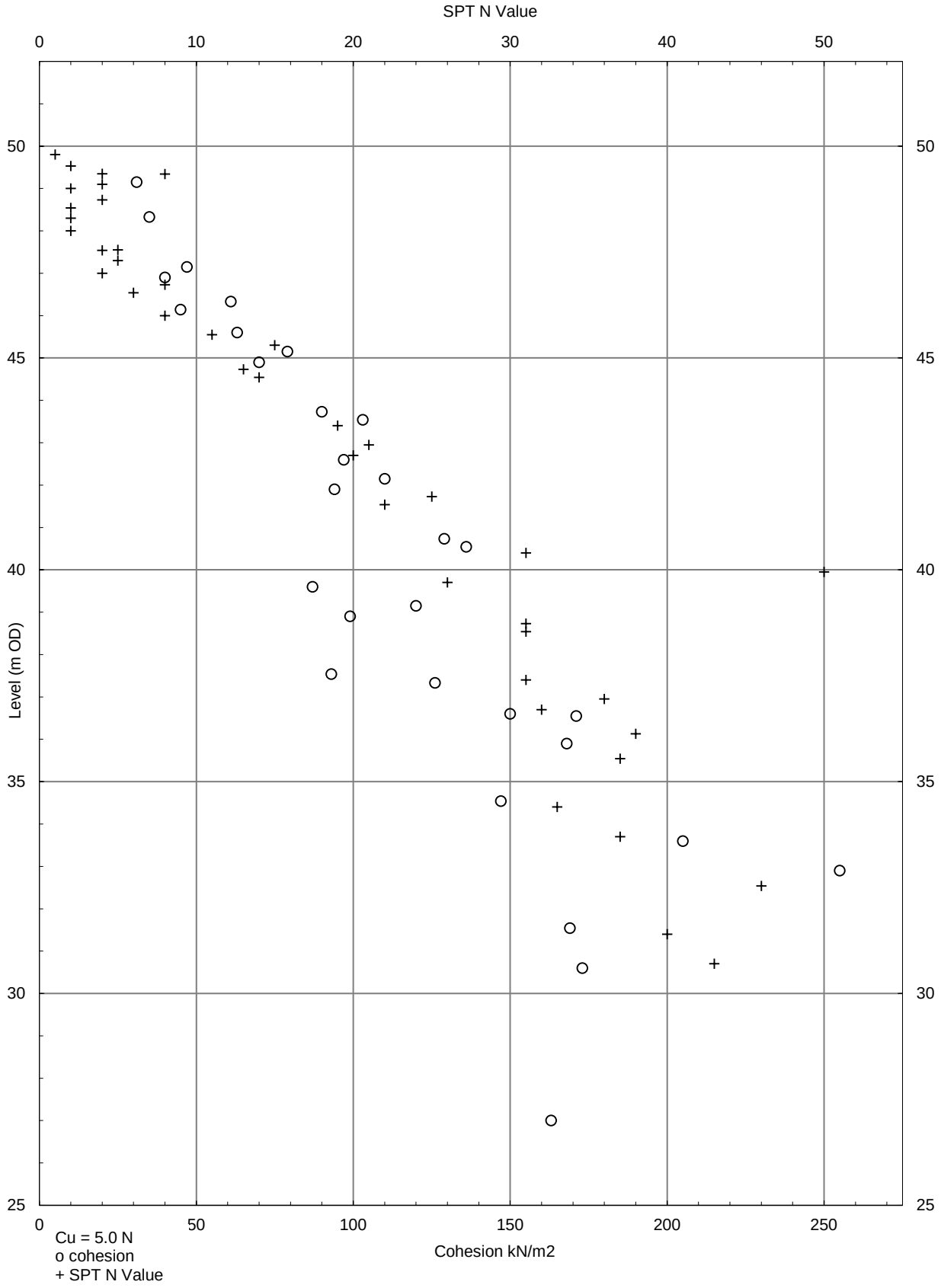
GEA Geotechnical & Environmental Associates
Tyttenhanger House
Coursers Road
St Albans
Herts AL4 0PG

SPT & Cohesion / Depth Graph

Site	Proposed Kingsgate School, Liddell Road, London NW6 2EW
Client	London Borough of Camden
Engineer	Price & Myers

Job Number J14212

Sheet 1 / 1



Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	14-08521 Issue-1
Initial Date of Issue:	01-Sep-14
Client:	GEA
Client Address:	Tyttenhanger House Coursers Road Saint Albans Hertfordshire AL4 0PG
Contact(s):	Caroline Anderson
Project:	J14212- Kingsgate School, Liddell Road, London NW6 2EW

Quotation No.:		**Date Received:**	22-Aug-14
Order No.:		**Date Instructed:**	22-Aug-14
No. of Samples:	29	**Results Due:**	29-Aug-14
Turnaround: (Weekdays)	5		
Date Approved:	01-Sep-14		

Approved By:

Details: Darrell Hall, Laboratory Director

The results reported herein relate only to the material supplied to the laboratory.
This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Chemtest Sample ID.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
Order No.:			Client Sample Ref.:		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Client Sample ID.:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Sample Type:		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Top Depth (m):										
			Bottom Depth(m):		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
			Date Sampled:										
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192						-					-
Asbestos Identification	U	2192	%	0.001				No Asbestos Detected					No Asbestos Detected
Moisture	N	2030	%	0.02	16	29	9.1		9.3	14	17	21	
Stones	N	2030	%	0.02	< 0.020	< 0.020	< 0.020					< 0.020	
Soil Colour	N				brown	brown	brown					brown	
Other Material	N				stones	stones	stones					clinker, stones	
Soil Texture	N				loam	loam	loam					loam	
pH	M	2010			8.8	7.7	9.7					7.5	
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/L	0.01									
Chloride (Extractable)	U	2220	g/l	0.01	0.085	0.082	0.022					0.012	
Cyanide (Total)	M	2300	mg/kg	0.5	< 0.50	< 0.50	< 0.50					< 0.50	
Sulphide (Easily Liberatable)	M	2325	mg/kg	0.5	< 0.50	9.5	19					< 0.50	
Sulphate (Total)	M	2430	mg/kg	100	1800	2300	1600					3200	
Arsenic	M	2450	mg/kg	2	26	18	25					48	
Cadmium	M	2450	mg/kg	0.1	1.1	0.10	0.75					0.21	
Chromium	M	2450	mg/kg	5	55	41	39					21	
Copper	M	2450	mg/kg	5	76	45	81					320	
Mercury	M	2450	mg/kg	0.1	0.60	0.93	0.35					0.45	
Nickel	M	2450	mg/kg	5	49	24	42					39	
Lead	M	2450	mg/kg	5	210	200	270					140	
Selenium	M	2450	mg/kg	0.2	< 0.20	0.31	< 0.20					1.7	
Zinc	M	2450	mg/kg	5	300	74	220					140	
Total Organic Carbon	M	2625	%	0.2	0.91	5.1	2.3					29	
TPH >C5-C6	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C6-C7	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C7-C8	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C8-C10	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C10-C12	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C12-C16	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C16-C21	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	
TPH >C21-C35	N	2670	mg/kg	1	< 1.0	< 1.0	< 1.0					< 1.0	

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Client Sample Ref.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
Order No.:			**Client Sample ID.:**		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total TPH >C5-C35	N	2670	mg/kg	10	< 10	< 10	< 10					< 10	
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1									
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1									
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1									
Aliphatic TPH >C10-C12	M	2675	mg/kg	1									
Aliphatic TPH >C12-C16	M	2675	mg/kg	1									
Aliphatic TPH >C16-C21	M	2675	mg/kg	1									
Aliphatic TPH >C21-C35	M	2675	mg/kg	1									
Aliphatic TPH >C35-C44	M	2675	mg/kg	1									
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5									
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1									
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1									
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1									
Aromatic TPH >C10-C12	M	2675	mg/kg	1									
Aromatic TPH >C12-C16	M	2675	mg/kg	1									
Aromatic TPH >C16-C21	M	2675	mg/kg	1									
Aromatic TPH >C21-C35	M	2675	mg/kg	1									
Aromatic TPH >C35-C44	N	2675	mg/kg	1									
Total Aromatic Hydrocarbons	M	2675	mg/kg	5									
Total Petroleum Hydrocarbons	M	2675	mg/kg	10									
Naphthalene	M	2700	mg/kg	0.1	0.40	< 0.10	0.54					6.3	
Acenaphthylene	M	2700	mg/kg	0.1	0.37	< 0.10	1.1					1.2	
Acenaphthene	M	2700	mg/kg	0.1	0.19	< 0.10	1.0					1.2	
Fluorene	M	2700	mg/kg	0.1	0.12	< 0.10	0.27					2.3	
Phenanthrene	M	2700	mg/kg	0.1	1.1	< 0.10	0.60					2.9	
Anthracene	M	2700	mg/kg	0.1	0.31	< 0.10	0.19					0.17	
Fluoranthene	M	2700	mg/kg	0.1	0.88	0.43	0.77					0.99	
Pyrene	M	2700	mg/kg	0.1	1.1	0.31	1.0					0.98	
Benzo[a]anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					0.24	
Chrysene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					0.49	
Benzo[b]fluoranthene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	
Benzo[k]fluoranthene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	
Benzo[a]pyrene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Client Sample Ref.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
Order No.:			**Client Sample ID.:**		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1	< 0.10	< 0.10	< 0.10					< 0.10	
Total Of 16 PAH's	M	2700	mg/kg	2	4.5	< 2.0	5.5					17	
Dichlorodifluoromethane	U	2760	µg/kg	1						< 1.0			
Chloromethane	M	2760	µg/kg	1						< 1.0			
Vinyl Chloride	M	2760	µg/kg	1						< 1.0			
Bromomethane	M	2760	µg/kg	20						< 20			
Chloroethane	U	2760	µg/kg	2						< 2.0			
Trichlorofluoromethane	M	2760	µg/kg	1						< 1.0			
1,1-Dichloroethene	M	2760	µg/kg	1						< 1.0			
Trans 1,2-Dichloroethene	M	2760	µg/kg	1						< 1.0			
1,1-Dichloroethane	M	2760	µg/kg	1						< 1.0			
cis 1,2-Dichloroethene	M	2760	µg/kg	1						< 1.0			
Bromochloromethane	U	2760	µg/kg	1						< 1.0			
Trichloromethane	M	2760	µg/kg	1						< 1.0			
1,1,1-Trichloroethane	M	2760	µg/kg	1						< 1.0			
Tetrachloromethane	M	2760	µg/kg	1						< 1.0			
1,1-Dichloropropene	U	2760	µg/kg	1						< 1.0			
Benzene	M	2760	µg/kg	1						< 1.0	< 1.0		
1,2-Dichloroethane	M	2760	µg/kg	2						< 2.0			
Trichloroethene	M	2760	µg/kg	1						< 1.0			
1,2-Dichloropropane	M	2760	µg/kg	1						< 1.0			
Dibromomethane	M	2760	µg/kg	1						< 1.0			
Bromodichloromethane	M	2760	µg/kg	5						< 5.0			
cis-1,3-Dichloropropene	N	2760	µg/kg	10						< 10			
Toluene	M	2760	µg/kg	1						< 1.0	< 1.0		
Trans-1,3-Dichloropropene	N	2760	µg/kg	10						< 10			
1,1,2-Trichloroethane	M	2760	µg/kg	10						< 10			
Tetrachloroethene	M	2760	µg/kg	1						< 1.0			
1,3-Dichloropropane	U	2760	µg/kg	2						< 2.0			
Dibromochloromethane	U	2760	µg/kg	10						< 10			
1,2-Dibromoethane	M	2760	µg/kg	5						< 5.0			

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Chemtest Sample ID.:		42482	42483	42484	42485	42486	42487	42488	42489	42490
Order No.:			Client Sample Ref.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
			Client Sample ID.:		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Chlorobenzene	M	2760	µg/kg	1						< 1.0			
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2						< 2.0			
Ethylbenzene	M	2760	µg/kg	1						< 1.0	< 1.0		
m & p-Xylene	M	2760	µg/kg	1						< 1.0	< 1.0		
o-Xylene	M	2760	µg/kg	1						< 1.0	< 1.0		
Styrene	M	2760	µg/kg	1						< 1.0			
Tribromomethane	U	2760	µg/kg	1						< 1.0			
Isopropylbenzene	M	2760	µg/kg	1						< 1.0			
Bromobenzene	M	2760	µg/kg	1						< 1.0			
1,2,3-Trichloropropane	N	2760	µg/kg	50						< 50			
N-Propylbenzene	U	2760	µg/kg	1						< 1.0			
2-Chlorotoluene	M	2760	µg/kg	1						< 1.0			
1,3,5-Trimethylbenzene	M	2760	µg/kg	1						< 1.0			
4-Chlorotoluene	U	2760	µg/kg	1						< 1.0			
Tert-Butylbenzene	U	2760	µg/kg	1						< 1.0			
1,2,4-Trimethylbenzene	M	2760	µg/kg	1						< 1.0			
Sec-Butylbenzene	U	2760	µg/kg	1						< 1.0			
1,3-Dichlorobenzene	M	2760	µg/kg	1						< 1.0			
4-Isopropyltoluene	U	2760	µg/kg	1						< 1.0			
1,4-Dichlorobenzene	M	2760	µg/kg	1						< 1.0			
N-Butylbenzene	U	2760	µg/kg	1						< 1.0			
1,2-Dichlorobenzene	M	2760	µg/kg	1						< 1.0			
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50						< 50			
1,2,4-Trichlorobenzene	M	2760	µg/kg	1						< 1.0			
Hexachlorobutadiene	U	2760	µg/kg	1						< 1.0			
1,2,3-Trichlorobenzene	U	2760	µg/kg	2						< 2.0			
Methyl Tert-Butyl Ether	M	2760	µg/kg	1						< 1.0	< 1.0		
N-Nitrosodimethylamine	N	2790	mg/kg	0.5						< 0.50			
Phenol	N	2790	mg/kg	0.5						< 0.50			
2-Chlorophenol	N	2790	mg/kg	0.5						< 0.50			
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.5						< 0.50			
1,3-Dichlorobenzene	N	2790	mg/kg	0.5						< 0.50			
1,4-Dichlorobenzene	N	2790	mg/kg	0.5						< 0.50			

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Client Sample Ref.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
Order No.:			**Client Sample ID.:**		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,2-Dichlorobenzene	N	2790	mg/kg	0.5						< 0.50			
2-Methylphenol	N	2790	mg/kg	0.5						< 0.50			
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.5						< 0.50			
Hexachloroethane	N	2790	mg/kg	0.5						< 0.50			
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.5						< 0.50			
4-Methylphenol	N	2790	mg/kg	0.5						< 0.50			
Nitrobenzene	N	2790	mg/kg	0.5						< 0.50			
Isophorone	N	2790	mg/kg	0.5						< 0.50			
2-Nitrophenol	N	2790	mg/kg	0.5						< 0.50			
2,4-Dimethylphenol	N	2790	mg/kg	0.5						< 0.50			
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.5						< 0.50			
2,4-Dichlorophenol	N	2790	mg/kg	0.5						< 0.50			
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.5						< 0.50			
Naphthalene	N	2790	mg/kg	0.5						< 0.50			
4-Chloroaniline	N	2790	mg/kg	0.5						< 0.50			
Hexachlorobutadiene	N	2790	mg/kg	0.5						< 0.50			
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.5						< 0.50			
2-Methylnaphthalene	N	2790	mg/kg	0.5						< 0.50			
4-Nitrophenol	N	2790	mg/kg	0.05						< 0.050			
Hexachlorocyclopentadiene	N	2790	mg/kg	0.5						< 0.50			
2,4,6-Trichlorophenol	N	2790	mg/kg	0.5						< 0.50			
2,4,5-Trichlorophenol	N	2790	mg/kg	0.5						< 0.50			
2-Chloronaphthalene	N	2790	mg/kg	0.5						< 0.50			
2-Nitroaniline	N	2790	mg/kg	0.5						< 0.50			
Acenaphthylene	N	2790	mg/kg	0.5						< 0.50			
Dimethylphthalate	N	2790	mg/kg	0.5						< 0.50			
2,6-Dinitrotoluene	N	2790	mg/kg	0.5						< 0.50			
Acenaphthene	N	2790	mg/kg	0.5						< 0.50			
3-Nitroaniline	N	2790	mg/kg	0.5						< 0.50			
Dibenzofuran	N	2790	mg/kg	0.5						< 0.50			
4-Chlorophenylphenylether	N	2790	mg/kg	0.5						< 0.50			
2,4-Dinitrotoluene	N	2790	mg/kg	0.5						< 0.50			
Fluorene	N	2790	mg/kg	0.5						< 0.50			

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42482	42483	42484	42485	42486	42487	42488	42489	42490
Quotation No.:			Chemtest Sample ID.:		42482	42483	42484	42485	42486	42487	42488	42489	42490
Order No.:			Client Sample Ref.:		Suite 1A	Suite 1A	Suite 1A	Asbestos	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Asbestos
			Client Sample ID.:		BH2	BH2	BH11	BH11	BH11	BH11	BH11	BH6	BH6
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	4.5	0.8	0.8	0.8	0.8	0.8	0.8	0.8
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Diethyl Phthalate	N	2790	mg/kg	0.5						< 0.50			
4-Nitroaniline	N	2790	mg/kg	0.5						< 0.50			
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.5						< 0.50			
Azobenzene	N	2790	mg/kg	0.5						< 0.50			
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.5						< 0.50			
Hexachlorobenzene	N	2790	mg/kg	0.5						< 0.50			
Pentachlorophenol	N	2790	mg/kg	0.5						< 0.50			
Phenanthrene	N	2790	mg/kg	0.5						< 0.50			
Anthracene	N	2790	mg/kg	0.5						< 0.50			
Carbazole	N	2790	mg/kg	0.5						< 0.50			
Di-N-Butyl Phthalate	N	2790	mg/kg	0.5						< 0.50			
Fluoranthene	N	2790	mg/kg	0.5						< 0.50			
Pyrene	N	2790	mg/kg	0.5						< 0.50			
Butylbenzyl Phthalate	N	2790	mg/kg	0.5						< 0.50			
Benzo[a]anthracene	N	2790	mg/kg	0.5						< 0.50			
Chrysene	N	2790	mg/kg	0.5						< 0.50			
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.5						< 0.50			
Di-N-Octyl Phthalate	N	2790	mg/kg	0.5						< 0.50			
Benzo[b]fluoranthene	N	2790	mg/kg	0.5						< 0.50			
Benzo[k]fluoranthene	N	2790	mg/kg	0.5						< 0.50			
Benzo[a]pyrene	N	2790	mg/kg	0.5						< 0.50			
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.5						< 0.50			
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.5						< 0.50			
Benzo[g,h,i]perylene	N	2790	mg/kg	0.5						< 0.50			
PCB 28	M	2810	mg/kg	0.01					< 0.010				
PCB 52	M	2815	mg/kg	0.01					< 0.010				
PCB 101	M	2815	mg/kg	0.01					< 0.010				
PCB 118	M	2815	mg/kg	0.01					< 0.010				
PCB 153	M	2815	mg/kg	0.01					< 0.010				
PCB 138	M	2815	mg/kg	0.01					< 0.010				
PCB 180	M	2810	mg/kg	0.01					< 0.010				
Total PCBs (7 Congeners)	N	2815	mg/kg	0.1					< 0.10				
Total Phenols	M	2920	mg/kg	0.3	< 0.30	< 0.30	< 0.30					< 0.30	

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:			Client Sample Ref.:		PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:			**Client Sample ID.:**		BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192								-			
Asbestos Identification	U	2192	%	0.001						No Asbestos Detected			
Moisture	N	2030	%	0.02	25	24	24	29	15		24	11	20
Stones	N	2030	%	0.02				< 0.020	< 0.020		< 0.020	< 0.020	< 0.020
Soil Colour	N							brown	brown		brown	brown	brown
Other Material	N							stones	brick		brick, stones	brick, stones	brick, stones
Soil Texture	N							clay	loam		loam	loam	clay
pH	M	2010						7.6	10.4		7.7	9.4	8.5
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/L	0.01				1.2					
Chloride (Extractable)	U	2220	g/l	0.01				0.20	0.059		0.13	0.027	0.16
Cyanide (Total)	M	2300	mg/kg	0.5				< 0.50	< 0.50		< 0.50	< 0.50	< 0.50
Sulphide (Easily Liberatable)	M	2325	mg/kg	0.5				45	9.8		16	20	12
Sulphate (Total)	M	2430	mg/kg	100				18000	2600		13000	2100	2100
Arsenic	M	2450	mg/kg	2				20	19		19	27	16
Cadmium	M	2450	mg/kg	0.1				0.15	0.27		< 0.10	1.7	0.17
Chromium	M	2450	mg/kg	5				40	21		32	34	33
Copper	M	2450	mg/kg	5				41	110		450	95	62
Mercury	M	2450	mg/kg	0.1				3.9	0.90		0.38	0.23	0.62
Nickel	M	2450	mg/kg	5				32	20		34	40	31
Lead	M	2450	mg/kg	5				140	170		80	120	120
Selenium	M	2450	mg/kg	0.2				0.41	< 0.20		0.38	< 0.20	0.47
Zinc	M	2450	mg/kg	5				91	140		67	160	78
Total Organic Carbon	M	2625	%	0.2				3.6	8.4		2.8	6.5	1.3
TPH >C5-C6	N	2670	mg/kg	1				< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C6-C7	N	2670	mg/kg	1				< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C7-C8	N	2670	mg/kg	1				< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C8-C10	N	2670	mg/kg	1				< 1.0	< 1.0		< 1.0	< 1.0	< 1.0
TPH >C10-C12	N	2670	mg/kg	1				< 1.0	2.9		< 1.0	2.4	< 1.0
TPH >C12-C16	N	2670	mg/kg	1				< 1.0	4.2		< 1.0	80	< 1.0
TPH >C16-C21	N	2670	mg/kg	1				< 1.0	37		< 1.0	690	2.2
TPH >C21-C35	N	2670	mg/kg	1				< 1.0	39		< 1.0	1600	42

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:			Client Sample Ref.:		PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:			**Client Sample ID.:**		BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total TPH >C5-C35	N	2670	mg/kg	10				< 10	83		< 10	2400	44
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1								< 0.10	
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1								< 0.10	
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1								< 0.10	
Aliphatic TPH >C10-C12	M	2675	mg/kg	1								< 1.0	
Aliphatic TPH >C12-C16	M	2675	mg/kg	1								4.2	
Aliphatic TPH >C16-C21	M	2675	mg/kg	1								25	
Aliphatic TPH >C21-C35	M	2675	mg/kg	1								110	
Aliphatic TPH >C35-C44	M	2675	mg/kg	1								< 1.0	
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5								140	
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1								< 0.10	
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1								< 0.10	
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1								< 0.10	
Aromatic TPH >C10-C12	M	2675	mg/kg	1								8.8	
Aromatic TPH >C12-C16	M	2675	mg/kg	1								72	
Aromatic TPH >C16-C21	M	2675	mg/kg	1								350	
Aromatic TPH >C21-C35	M	2675	mg/kg	1								450	
Aromatic TPH >C35-C44	N	2675	mg/kg	1								15	
Total Aromatic Hydrocarbons	M	2675	mg/kg	5								900	
Total Petroleum Hydrocarbons	M	2675	mg/kg	10								1000	
Naphthalene	M	2700	mg/kg	0.1				< 0.10	1.4		< 0.10	1.4	0.39
Acenaphthylene	M	2700	mg/kg	0.1				< 0.10	0.26		< 0.10	2.3	0.60
Acenaphthene	M	2700	mg/kg	0.1				< 0.10	0.78		< 0.10	0.34	0.22
Fluorene	M	2700	mg/kg	0.1				< 0.10	0.55		< 0.10	0.81	0.73
Phenanthrene	M	2700	mg/kg	0.1				< 0.10	3.6		< 0.10	9.2	7.5
Anthracene	M	2700	mg/kg	0.1				< 0.10	0.30		< 0.10	2.1	2.8
Fluoranthene	M	2700	mg/kg	0.1				0.42	5.1		0.25	11	14
Pyrene	M	2700	mg/kg	0.1				0.31	4.2		0.35	10	13
Benzo[a]anthracene	M	2700	mg/kg	0.1				< 0.10	2.2		< 0.10	6.1	6.9
Chrysene	M	2700	mg/kg	0.1				< 0.10	2.8		< 0.10	7.3	6.9
Benzo[b]fluoranthene	M	2700	mg/kg	0.1				< 0.10	1.4		< 0.10	9.1	6.5
Benzo[k]fluoranthene	M	2700	mg/kg	0.1				< 0.10	3.8		< 0.10	4.0	2.8
Benzo[a]pyrene	M	2700	mg/kg	0.1				< 0.10	2.7		< 0.10	7.6	5.3

Results Summary - Soil

Report Number: 14-08521 Issue-1

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:			Client Sample Ref.:		PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:			**Client Sample ID.:**		BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1				< 0.10	2.2		< 0.10	6.7	2.6
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1				< 0.10	0.61		< 0.10	2.0	0.52
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1				< 0.10	2.0		< 0.10	5.4	2.6
Total Of 16 PAH's	M	2700	mg/kg	2				< 2.0	34		< 2.0	85	73
Dichlorodifluoromethane	U	2760	µg/kg	1		< 1.0							
Chloromethane	M	2760	µg/kg	1		< 1.0							
Vinyl Chloride	M	2760	µg/kg	1		< 1.0							
Bromomethane	M	2760	µg/kg	20		< 20							
Chloroethane	U	2760	µg/kg	2		< 2.0							
Trichlorofluoromethane	M	2760	µg/kg	1		< 1.0							
1,1-Dichloroethene	M	2760	µg/kg	1		< 1.0							
Trans 1,2-Dichloroethene	M	2760	µg/kg	1		< 1.0							
1,1-Dichloroethane	M	2760	µg/kg	1		< 1.0							
cis 1,2-Dichloroethene	M	2760	µg/kg	1		< 1.0							
Bromochloromethane	U	2760	µg/kg	1		< 1.0							
Trichloromethane	M	2760	µg/kg	1		< 1.0							
1,1,1-Trichloroethane	M	2760	µg/kg	1		< 1.0							
Tetrachloromethane	M	2760	µg/kg	1		< 1.0							
1,1-Dichloropropene	U	2760	µg/kg	1		< 1.0							
Benzene	M	2760	µg/kg	1		< 1.0	< 1.0						
1,2-Dichloroethane	M	2760	µg/kg	2		< 2.0							
Trichloroethene	M	2760	µg/kg	1		< 1.0							
1,2-Dichloropropane	M	2760	µg/kg	1		< 1.0							
Dibromomethane	M	2760	µg/kg	1		< 1.0							
Bromodichloromethane	M	2760	µg/kg	5		< 5.0							
cis-1,3-Dichloropropene	N	2760	µg/kg	10		< 10							
Toluene	M	2760	µg/kg	1		< 1.0	< 1.0						
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		< 10							
1,1,2-Trichloroethane	M	2760	µg/kg	10		< 10							
Tetrachloroethene	M	2760	µg/kg	1		< 1.0							
1,3-Dichloropropane	U	2760	µg/kg	2		< 2.0							
Dibromochloromethane	U	2760	µg/kg	10		< 10							
1,2-Dibromoethane	M	2760	µg/kg	5		< 5.0							

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					Chemtest Sample ID.:	42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:					Client Sample Ref.:	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:					Client Sample ID.:	BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
					Bottom Depth(m):									
					Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Chlorobenzene	M	2760	µg/kg	1		< 1.0								
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2		< 2.0								
Ethylbenzene	M	2760	µg/kg	1		< 1.0	< 1.0							
m & p-Xylene	M	2760	µg/kg	1		< 1.0	< 1.0							
o-Xylene	M	2760	µg/kg	1		< 1.0	< 1.0							
Styrene	M	2760	µg/kg	1		< 1.0								
Tribromomethane	U	2760	µg/kg	1		< 1.0								
Isopropylbenzene	M	2760	µg/kg	1		< 1.0								
Bromobenzene	M	2760	µg/kg	1		< 1.0								
1,2,3-Trichloropropane	N	2760	µg/kg	50		< 50								
N-Propylbenzene	U	2760	µg/kg	1		< 1.0								
2-Chlorotoluene	M	2760	µg/kg	1		< 1.0								
1,3,5-Trimethylbenzene	M	2760	µg/kg	1		< 1.0								
4-Chlorotoluene	U	2760	µg/kg	1		< 1.0								
Tert-Butylbenzene	U	2760	µg/kg	1		< 1.0								
1,2,4-Trimethylbenzene	M	2760	µg/kg	1		< 1.0								
Sec-Butylbenzene	U	2760	µg/kg	1		< 1.0								
1,3-Dichlorobenzene	M	2760	µg/kg	1		< 1.0								
4-Isopropyltoluene	U	2760	µg/kg	1		< 1.0								
1,4-Dichlorobenzene	M	2760	µg/kg	1		< 1.0								
N-Butylbenzene	U	2760	µg/kg	1		< 1.0								
1,2-Dichlorobenzene	M	2760	µg/kg	1		< 1.0								
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		< 50								
1,2,4-Trichlorobenzene	M	2760	µg/kg	1		< 1.0								
Hexachlorobutadiene	U	2760	µg/kg	1		< 1.0								
1,2,3-Trichlorobenzene	U	2760	µg/kg	2		< 2.0								
Methyl Tert-Butyl Ether	M	2760	µg/kg	1		< 1.0	< 1.0							
N-Nitrosodimethylamine	N	2790	mg/kg	0.5		< 0.50								
Phenol	N	2790	mg/kg	0.5		< 0.50								
2-Chlorophenol	N	2790	mg/kg	0.5		< 0.50								
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.5		< 0.50								
1,3-Dichlorobenzene	N	2790	mg/kg	0.5		< 0.50								
1,4-Dichlorobenzene	N	2790	mg/kg	0.5		< 0.50								

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:				Client Sample Ref.:	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:				**Client Sample ID.:**	BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
				Bottom Depth(m):									
				Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,2-Dichlorobenzene	N	2790	mg/kg	0.5		< 0.50							
2-Methylphenol	N	2790	mg/kg	0.5		< 0.50							
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.5		< 0.50							
Hexachloroethane	N	2790	mg/kg	0.5		< 0.50							
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.5		< 0.50							
4-Methylphenol	N	2790	mg/kg	0.5		< 0.50							
Nitrobenzene	N	2790	mg/kg	0.5		< 0.50							
Isophorone	N	2790	mg/kg	0.5		< 0.50							
2-Nitrophenol	N	2790	mg/kg	0.5		< 0.50							
2,4-Dimethylphenol	N	2790	mg/kg	0.5		< 0.50							
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.5		< 0.50							
2,4-Dichlorophenol	N	2790	mg/kg	0.5		< 0.50							
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.5		< 0.50							
Naphthalene	N	2790	mg/kg	0.5		< 0.50							
4-Chloroaniline	N	2790	mg/kg	0.5		< 0.50							
Hexachlorobutadiene	N	2790	mg/kg	0.5		< 0.50							
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.5		< 0.50							
2-Methylnaphthalene	N	2790	mg/kg	0.5		< 0.50							
4-Nitrophenol	N	2790	mg/kg	0.05		< 0.050							
Hexachlorocyclopentadiene	N	2790	mg/kg	0.5		< 0.50							
2,4,6-Trichlorophenol	N	2790	mg/kg	0.5		< 0.50							
2,4,5-Trichlorophenol	N	2790	mg/kg	0.5		< 0.50							
2-Chloronaphthalene	N	2790	mg/kg	0.5		< 0.50							
2-Nitroaniline	N	2790	mg/kg	0.5		< 0.50							
Acenaphthylene	N	2790	mg/kg	0.5		< 0.50							
Dimethylphthalate	N	2790	mg/kg	0.5		< 0.50							
2,6-Dinitrotoluene	N	2790	mg/kg	0.5		< 0.50							
Acenaphthene	N	2790	mg/kg	0.5		< 0.50							
3-Nitroaniline	N	2790	mg/kg	0.5		< 0.50							
Dibenzofuran	N	2790	mg/kg	0.5		< 0.50							
4-Chlorophenylphenylether	N	2790	mg/kg	0.5		< 0.50							
2,4-Dinitrotoluene	N	2790	mg/kg	0.5		< 0.50							
Fluorene	N	2790	mg/kg	0.5		< 0.50							

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					Chemtest Sample ID.:	42491	42492	42493	42494	42495	42496	42497	42498	42499
Quotation No.:					Client Sample Ref.:	PCB	SVOC+VOC	BTEX+MTBE	Suite 1A	Suite 1A	Asbestos	Suite 1A	Suite 1A	Suite 1A
Order No.:					Client Sample ID.:	BH6	BH6	BH6	BH6	CBR3	CBR3	BH10	BH10	BH7
					Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
					Top Depth (m):	0.8	0.8	0.8	4.5	0.45	0.45	3.3	0.9	0.7
					Bottom Depth(m):									
					Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**										
Diethyl Phthalate	N	2790	mg/kg	0.5		< 0.50								
4-Nitroaniline	N	2790	mg/kg	0.5		< 0.50								
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.5		< 0.50								
Azobenzene	N	2790	mg/kg	0.5		< 0.50								
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.5		< 0.50								
Hexachlorobenzene	N	2790	mg/kg	0.5		< 0.50								
Pentachlorophenol	N	2790	mg/kg	0.5		< 0.50								
Phenanthrene	N	2790	mg/kg	0.5		< 0.50								
Anthracene	N	2790	mg/kg	0.5		< 0.50								
Carbazole	N	2790	mg/kg	0.5		< 0.50								
Di-N-Butyl Phthalate	N	2790	mg/kg	0.5		< 0.50								
Fluoranthene	N	2790	mg/kg	0.5		< 0.50								
Pyrene	N	2790	mg/kg	0.5		< 0.50								
Butylbenzyl Phthalate	N	2790	mg/kg	0.5		< 0.50								
Benzo[a]anthracene	N	2790	mg/kg	0.5		< 0.50								
Chrysene	N	2790	mg/kg	0.5		< 0.50								
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.5		< 0.50								
Di-N-Octyl Phthalate	N	2790	mg/kg	0.5		< 0.50								
Benzo[b]fluoranthene	N	2790	mg/kg	0.5		< 0.50								
Benzo[k]fluoranthene	N	2790	mg/kg	0.5		< 0.50								
Benzo[a]pyrene	N	2790	mg/kg	0.5		< 0.50								
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.5		< 0.50								
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.5		< 0.50								
Benzo[g,h,i]perylene	N	2790	mg/kg	0.5		< 0.50								
PCB 28	M	2810	mg/kg	0.01	< 0.010									
PCB 52	M	2815	mg/kg	0.01	< 0.010									
PCB 101	M	2815	mg/kg	0.01	< 0.010									
PCB 118	M	2815	mg/kg	0.01	< 0.010									
PCB 153	M	2815	mg/kg	0.01	< 0.010									
PCB 138	M	2815	mg/kg	0.01	< 0.010									
PCB 180	M	2810	mg/kg	0.01	< 0.010									
Total PCBs (7 Congeners)	N	2815	mg/kg	0.1	< 0.10									
Total Phenols	M	2920	mg/kg	0.3					< 0.30	< 0.30		< 0.30	< 0.30	< 0.30

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA		**Chemtest Sample ID.:**			42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:		Client Sample Ref.:			Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:		**Client Sample ID.:**			BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
		Sample Type:			SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
		Top Depth (m):			1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
		Bottom Depth(m):											
		Date Sampled:			20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
ACM Type	U	2192								-			
Asbestos Identification	U	2192	%	0.001						No Asbestos Detected			
Moisture	N	2030	%	0.02	26	15	15	14	14		8.8	9.6	6.1
Stones	N	2030	%	0.02	< 0.020	< 0.020					< 0.020		
Soil Colour	N				brown	brown					brown		
Other Material	N				stones	stones, chalk					stones		
Soil Texture	N				clay	loam					loam		
pH	M	2010			7.3	10.1					8.2		
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/L	0.01									
Chloride (Extractable)	U	2220	g/l	0.01	0.23	0.074					0.041		
Cyanide (Total)	M	2300	mg/kg	0.5	< 0.50	< 0.50					0.50		
Sulphide (Easily Liberatable)	M	2325	mg/kg	0.5	25	6.8					25		
Sulphate (Total)	M	2430	mg/kg	100	7800	970					1600		
Arsenic	M	2450	mg/kg	2	17	27					23		
Cadmium	M	2450	mg/kg	0.1	< 0.10	0.24					0.93		
Chromium	M	2450	mg/kg	5	39	23					34		
Copper	M	2450	mg/kg	5	44	33					160		
Mercury	M	2450	mg/kg	0.1	0.53	0.14					0.56		
Nickel	M	2450	mg/kg	5	28	24					36		
Lead	M	2450	mg/kg	5	130	52					370		
Selenium	M	2450	mg/kg	0.2	0.27	< 0.20					< 0.20		
Zinc	M	2450	mg/kg	5	66	69					450		
Total Organic Carbon	M	2625	%	0.2	4.3	1.9					6.9		
TPH >C5-C6	N	2670	mg/kg	1	< 1.0	< 1.0					< 1.0		
TPH >C6-C7	N	2670	mg/kg	1	< 1.0	< 1.0					< 1.0		
TPH >C7-C8	N	2670	mg/kg	1	< 1.0	< 1.0					< 1.0		
TPH >C8-C10	N	2670	mg/kg	1	< 1.0	< 1.0					< 1.0		
TPH >C10-C12	N	2670	mg/kg	1	< 1.0	< 1.0					2.7		
TPH >C12-C16	N	2670	mg/kg	1	< 1.0	< 1.0					18		
TPH >C16-C21	N	2670	mg/kg	1	< 1.0	3.2					90		
TPH >C21-C35	N	2670	mg/kg	1	< 1.0	34					240		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:				Client Sample Ref.:	Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:				**Client Sample ID.:**	BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
				Bottom Depth(m):									
				Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Total TPH >C5-C35	N	2670	mg/kg	10	< 10	38					350		
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1									
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1									
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1									
Aliphatic TPH >C10-C12	M	2675	mg/kg	1									
Aliphatic TPH >C12-C16	M	2675	mg/kg	1									
Aliphatic TPH >C16-C21	M	2675	mg/kg	1									
Aliphatic TPH >C21-C35	M	2675	mg/kg	1									
Aliphatic TPH >C35-C44	M	2675	mg/kg	1									
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5									
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1									
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1									
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1									
Aromatic TPH >C10-C12	M	2675	mg/kg	1									
Aromatic TPH >C12-C16	M	2675	mg/kg	1									
Aromatic TPH >C16-C21	M	2675	mg/kg	1									
Aromatic TPH >C21-C35	M	2675	mg/kg	1									
Aromatic TPH >C35-C44	N	2675	mg/kg	1									
Total Aromatic Hydrocarbons	M	2675	mg/kg	5									
Total Petroleum Hydrocarbons	M	2675	mg/kg	10									
Naphthalene	M	2700	mg/kg	0.1	< 0.10	< 0.10					2.1		
Acenaphthylene	M	2700	mg/kg	0.1	< 0.10	< 0.10					1.0		
Acenaphthene	M	2700	mg/kg	0.1	< 0.10	< 0.10					2.4		
Fluorene	M	2700	mg/kg	0.1	< 0.10	< 0.10					1.4		
Phenanthrene	M	2700	mg/kg	0.1	< 0.10	< 0.10					21		
Anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10					3.1		
Fluoranthene	M	2700	mg/kg	0.1	< 0.10	0.42					25		
Pyrene	M	2700	mg/kg	0.1	< 0.10	0.40					23		
Benzo[a]anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10					11		
Chrysene	M	2700	mg/kg	0.1	< 0.10	< 0.10					13		
Benzo[b]fluoranthene	M	2700	mg/kg	0.1	< 0.10	< 0.10					13		
Benzo[k]fluoranthene	M	2700	mg/kg	0.1	< 0.10	< 0.10					5.3		
Benzo[a]pyrene	M	2700	mg/kg	0.1	< 0.10	< 0.10					9.7		

Chemtest
The right chemistry to deliver results

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:				Client Sample Ref.:	Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:				**Client Sample ID.:**	BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
				Bottom Depth(m):									
				Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1	< 0.10	< 0.10					6.7		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1	< 0.10	< 0.10					1.9		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1	< 0.10	< 0.10					6.2		
Total Of 16 PAH's	M	2700	mg/kg	2	< 2.0	< 2.0					150		
Dichlorodifluoromethane	U	2760	µg/kg	1				< 1.0					< 1.0
Chloromethane	M	2760	µg/kg	1				< 1.0					< 1.0
Vinyl Chloride	M	2760	µg/kg	1				< 1.0					< 1.0
Bromomethane	M	2760	µg/kg	20				< 20					< 20
Chloroethane	U	2760	µg/kg	2				< 2.0					< 2.0
Trichlorofluoromethane	M	2760	µg/kg	1				< 1.0					< 1.0
1,1-Dichloroethene	M	2760	µg/kg	1				< 1.0					< 1.0
Trans 1,2-Dichloroethene	M	2760	µg/kg	1				< 1.0					< 1.0
1,1-Dichloroethane	M	2760	µg/kg	1				< 1.0					< 1.0
cis 1,2-Dichloroethene	M	2760	µg/kg	1				< 1.0					< 1.0
Bromochloromethane	U	2760	µg/kg	1				< 1.0					< 1.0
Trichloromethane	M	2760	µg/kg	1				< 1.0					< 1.0
1,1,1-Trichloroethane	M	2760	µg/kg	1				< 1.0					< 1.0
Tetrachloromethane	M	2760	µg/kg	1				< 1.0					< 1.0
1,1-Dichloropropene	U	2760	µg/kg	1				< 1.0					< 1.0
Benzene	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
1,2-Dichloroethane	M	2760	µg/kg	2				< 2.0					< 2.0
Trichloroethene	M	2760	µg/kg	1				< 1.0					< 1.0
1,2-Dichloropropane	M	2760	µg/kg	1				< 1.0					< 1.0
Dibromomethane	M	2760	µg/kg	1				< 1.0					< 1.0
Bromodichloromethane	M	2760	µg/kg	5				< 5.0					< 5.0
cis-1,3-Dichloropropene	N	2760	µg/kg	10				< 10					< 10
Toluene	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
Trans-1,3-Dichloropropene	N	2760	µg/kg	10				< 10					< 10
1,1,2-Trichloroethane	M	2760	µg/kg	10				< 10					< 10
Tetrachloroethene	M	2760	µg/kg	1				< 1.0					< 1.0
1,3-Dichloropropane	U	2760	µg/kg	2				< 2.0					< 2.0
Dibromochloromethane	U	2760	µg/kg	10				< 10					< 10
1,2-Dibromoethane	M	2760	µg/kg	5				< 5.0					< 5.0

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:				Client Sample Ref.:	Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:				**Client Sample ID.:**	BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
				Bottom Depth(m):									
				Date Sampled:	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Chlorobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2				< 2.0					< 2.0
Ethylbenzene	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
m & p-Xylene	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
o-Xylene	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
Styrene	M	2760	µg/kg	1				< 1.0					< 1.0
Tribromomethane	U	2760	µg/kg	1				< 1.0					< 1.0
Isopropylbenzene	M	2760	µg/kg	1				< 1.0					< 1.0
Bromobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
1,2,3-Trichloropropane	N	2760	µg/kg	50				< 50					< 50
N-Propylbenzene	U	2760	µg/kg	1				< 1.0					< 1.0
2-Chlorotoluene	M	2760	µg/kg	1				< 1.0					< 1.0
1,3,5-Trimethylbenzene	M	2760	µg/kg	1				< 1.0					< 1.0
4-Chlorotoluene	U	2760	µg/kg	1				< 1.0					< 1.0
Tert-Butylbenzene	U	2760	µg/kg	1				< 1.0					< 1.0
1,2,4-Trimethylbenzene	M	2760	µg/kg	1				< 1.0					< 1.0
Sec-Butylbenzene	U	2760	µg/kg	1				< 1.0					< 1.0
1,3-Dichlorobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
4-Isopropyltoluene	U	2760	µg/kg	1				< 1.0					< 1.0
1,4-Dichlorobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
N-Butylbenzene	U	2760	µg/kg	1				< 1.0					< 1.0
1,2-Dichlorobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50				< 50					< 50
1,2,4-Trichlorobenzene	M	2760	µg/kg	1				< 1.0					< 1.0
Hexachlorobutadiene	U	2760	µg/kg	1				< 1.0					< 1.0
1,2,3-Trichlorobenzene	U	2760	µg/kg	2				< 2.0					< 2.0
Methyl Tert-Butyl Ether	M	2760	µg/kg	1				< 1.0	< 1.0				< 1.0
N-Nitrosodimethylamine	N	2790	mg/kg	0.5				< 0.50					< 0.50
Phenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Chlorophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.5				< 0.50					< 0.50
1,3-Dichlorobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
1,4-Dichlorobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:			Client Sample Ref.:		Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:			**Client Sample ID.:**		BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
1,2-Dichlorobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Methylphenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.5				< 0.50					< 0.50
Hexachloroethane	N	2790	mg/kg	0.5				< 0.50					< 0.50
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.5				< 0.50					< 0.50
4-Methylphenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Nitrobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Isophorone	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Nitrophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,4-Dimethylphenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,4-Dichlorophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Naphthalene	N	2790	mg/kg	0.5				< 0.50					1.3
4-Chloroaniline	N	2790	mg/kg	0.5				< 0.50					< 0.50
Hexachlorobutadiene	N	2790	mg/kg	0.5				< 0.50					< 0.50
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Methylnaphthalene	N	2790	mg/kg	0.5				< 0.50					< 0.50
4-Nitrophenol	N	2790	mg/kg	0.05				< 0.050					< 0.050
Hexachlorocyclopentadiene	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,4,6-Trichlorophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,4,5-Trichlorophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Chloronaphthalene	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Nitroaniline	N	2790	mg/kg	0.5				< 0.50					< 0.50
Acenaphthylene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Dimethylphthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,6-Dinitrotoluene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Acenaphthene	N	2790	mg/kg	0.5				< 0.50					3.6
3-Nitroaniline	N	2790	mg/kg	0.5				< 0.50					< 0.50
Dibenzofuran	N	2790	mg/kg	0.5				< 0.50					1.4
4-Chlorophenylphenylether	N	2790	mg/kg	0.5				< 0.50					< 0.50
2,4-Dinitrotoluene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Fluorene	N	2790	mg/kg	0.5				< 0.50					2.1

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					42500	42501	42502	42503	42504	42505	42506	42507	42508
Quotation No.:			Client Sample Ref.:		Suite 1A	Suite 1A	PCB	SVOC+VOC	BTEX+MTBE	Asbestos	Suite 1A	PCB	SVOC+VOC
Order No.:			**Client Sample ID.:**		BH9	BH9	BH9	BH9	BH9	BH9	BH8	BH8	BH8
			Sample Type:		SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		1.2	0.8	0.8	0.8	0.8	0.8	0.5	0.5	0.5
			Bottom Depth(m):										
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**									
Diethyl Phthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
4-Nitroaniline	N	2790	mg/kg	0.5				< 0.50					< 0.50
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Azobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.5				< 0.50					< 0.50
Hexachlorobenzene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Pentachlorophenol	N	2790	mg/kg	0.5				< 0.50					< 0.50
Phenanthrene	N	2790	mg/kg	0.5				< 0.50					29
Anthracene	N	2790	mg/kg	0.5				< 0.50					3.6
Carbazole	N	2790	mg/kg	0.5				< 0.50					< 0.50
Di-N-Butyl Phthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
Fluoranthene	N	2790	mg/kg	0.5				< 0.50					34
Pyrene	N	2790	mg/kg	0.5				< 0.50					28
Butylbenzyl Phthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
Benzo[a]anthracene	N	2790	mg/kg	0.5				< 0.50					12
Chrysene	N	2790	mg/kg	0.5				< 0.50					13
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
Di-N-Octyl Phthalate	N	2790	mg/kg	0.5				< 0.50					< 0.50
Benzo[b]fluoranthene	N	2790	mg/kg	0.5				< 0.50					15
Benzo[k]fluoranthene	N	2790	mg/kg	0.5				< 0.50					5.9
Benzo[a]pyrene	N	2790	mg/kg	0.5				< 0.50					11
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.5				< 0.50					5.0
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.5				< 0.50					< 0.50
Benzo[g,h,i]perylene	N	2790	mg/kg	0.5				< 0.50					5.4
PCB 28	M	2810	mg/kg	0.01			< 0.010					< 0.010	
PCB 52	M	2815	mg/kg	0.01			< 0.010					< 0.010	
PCB 101	M	2815	mg/kg	0.01			< 0.010					< 0.010	
PCB 118	M	2815	mg/kg	0.01			< 0.010					< 0.010	
PCB 153	M	2815	mg/kg	0.01			< 0.010					< 0.010	
PCB 138	M	2815	mg/kg	0.01			< 0.010					< 0.010	
PCB 180	M	2810	mg/kg	0.01			< 0.010					< 0.010	
Total PCBs (7 Congeners)	N	2815	mg/kg	0.1			< 0.10					< 0.10	
Total Phenols	M	2920	mg/kg	0.3	< 0.30	< 0.30					< 0.30		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA		**Chemtest Sample ID.:**			42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			**Client Sample ID.:**		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
ACM Type	U	2192				-
Asbestos Identification	U	2192	%	0.001		No Asbestos Detected
Moisture	N	2030	%	0.02	11	
Stones	N	2030	%	0.02		
Soil Colour	N					
Other Material	N					
Soil Texture	N					
pH	M	2010				
Sulphate (2:1 Water Soluble) as SO4	M	2120	g/L	0.01		
Chloride (Extractable)	U	2220	g/l	0.01		
Cyanide (Total)	M	2300	mg/kg	0.5		
Sulphide (Easily Liberatable)	M	2325	mg/kg	0.5		
Sulphate (Total)	M	2430	mg/kg	100		
Arsenic	M	2450	mg/kg	2		
Cadmium	M	2450	mg/kg	0.1		
Chromium	M	2450	mg/kg	5		
Copper	M	2450	mg/kg	5		
Mercury	M	2450	mg/kg	0.1		
Nickel	M	2450	mg/kg	5		
Lead	M	2450	mg/kg	5		
Selenium	M	2450	mg/kg	0.2		
Zinc	M	2450	mg/kg	5		
Total Organic Carbon	M	2625	%	0.2		
TPH >C5-C6	N	2670	mg/kg	1		
TPH >C6-C7	N	2670	mg/kg	1		
TPH >C7-C8	N	2670	mg/kg	1		
TPH >C8-C10	N	2670	mg/kg	1		
TPH >C10-C12	N	2670	mg/kg	1		
TPH >C12-C16	N	2670	mg/kg	1		
TPH >C16-C21	N	2670	mg/kg	1		
TPH >C21-C35	N	2670	mg/kg	1		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA			**Chemtest Sample ID.:**		42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			**Client Sample ID.:**		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Total TPH >C5-C35	N	2670	mg/kg	10		
Aliphatic TPH >C5-C6	N	2675	mg/kg	0.1		
Aliphatic TPH >C6-C8	N	2675	mg/kg	0.1		
Aliphatic TPH >C8-C10	M	2675	mg/kg	0.1		
Aliphatic TPH >C10-C12	M	2675	mg/kg	1		
Aliphatic TPH >C12-C16	M	2675	mg/kg	1		
Aliphatic TPH >C16-C21	M	2675	mg/kg	1		
Aliphatic TPH >C21-C35	M	2675	mg/kg	1		
Aliphatic TPH >C35-C44	M	2675	mg/kg	1		
Total Aliphatic Hydrocarbons	M	2675	mg/kg	5		
Aromatic TPH >C5-C7	N	2675	mg/kg	0.1		
Aromatic TPH >C7-C8	N	2675	mg/kg	0.1		
Aromatic TPH >C8-C10	M	2675	mg/kg	0.1		
Aromatic TPH >C10-C12	M	2675	mg/kg	1		
Aromatic TPH >C12-C16	M	2675	mg/kg	1		
Aromatic TPH >C16-C21	M	2675	mg/kg	1		
Aromatic TPH >C21-C35	M	2675	mg/kg	1		
Aromatic TPH >C35-C44	N	2675	mg/kg	1		
Total Aromatic Hydrocarbons	M	2675	mg/kg	5		
Total Petroleum Hydrocarbons	M	2675	mg/kg	10		
Naphthalene	M	2700	mg/kg	0.1		
Acenaphthylene	M	2700	mg/kg	0.1		
Acenaphthene	M	2700	mg/kg	0.1		
Fluorene	M	2700	mg/kg	0.1		
Phenanthrene	M	2700	mg/kg	0.1		
Anthracene	M	2700	mg/kg	0.1		
Fluoranthene	M	2700	mg/kg	0.1		
Pyrene	M	2700	mg/kg	0.1		
Benzo[a]anthracene	M	2700	mg/kg	0.1		
Chrysene	M	2700	mg/kg	0.1		
Benzo[b]fluoranthene	M	2700	mg/kg	0.1		
Benzo[k]fluoranthene	M	2700	mg/kg	0.1		
Benzo[a]pyrene	M	2700	mg/kg	0.1		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA			Chemtest Sample ID.:		42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			Client Sample ID.:		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Indeno(1,2,3-c,d)Pyrene	M	2700	mg/kg	0.1		
Dibenz(a,h)Anthracene	M	2700	mg/kg	0.1		
Benzo[g,h,i]perylene	M	2700	mg/kg	0.1		
Total Of 16 PAH's	M	2700	mg/kg	2		
Dichlorodifluoromethane	U	2760	µg/kg	1		
Chloromethane	M	2760	µg/kg	1		
Vinyl Chloride	M	2760	µg/kg	1		
Bromomethane	M	2760	µg/kg	20		
Chloroethane	U	2760	µg/kg	2		
Trichlorofluoromethane	M	2760	µg/kg	1		
1,1-Dichloroethene	M	2760	µg/kg	1		
Trans 1,2-Dichloroethene	M	2760	µg/kg	1		
1,1-Dichloroethane	M	2760	µg/kg	1		
cis 1,2-Dichloroethene	M	2760	µg/kg	1		
Bromochloromethane	U	2760	µg/kg	1		
Trichloromethane	M	2760	µg/kg	1		
1,1,1-Trichloroethane	M	2760	µg/kg	1		
Tetrachloromethane	M	2760	µg/kg	1		
1,1-Dichloropropene	U	2760	µg/kg	1		
Benzene	M	2760	µg/kg	1	< 1.0	
1,2-Dichloroethane	M	2760	µg/kg	2		
Trichloroethene	M	2760	µg/kg	1		
1,2-Dichloropropane	M	2760	µg/kg	1		
Dibromomethane	M	2760	µg/kg	1		
Bromodichloromethane	M	2760	µg/kg	5		
cis-1,3-Dichloropropene	N	2760	µg/kg	10		
Toluene	M	2760	µg/kg	1	< 1.0	
Trans-1,3-Dichloropropene	N	2760	µg/kg	10		
1,1,2-Trichloroethane	M	2760	µg/kg	10		
Tetrachloroethene	M	2760	µg/kg	1		
1,3-Dichloropropane	U	2760	µg/kg	2		
Dibromochloromethane	U	2760	µg/kg	10		
1,2-Dibromoethane	M	2760	µg/kg	5		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA			**Chemtest Sample ID.:**		42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			**Client Sample ID.:**		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Chlorobenzene	M	2760	µg/kg	1		
1,1,1,2-Tetrachloroethane	M	2760	µg/kg	2		
Ethylbenzene	M	2760	µg/kg	1	< 1.0	
m & p-Xylene	M	2760	µg/kg	1	< 1.0	
o-Xylene	M	2760	µg/kg	1	< 1.0	
Styrene	M	2760	µg/kg	1		
Tribromomethane	U	2760	µg/kg	1		
Isopropylbenzene	M	2760	µg/kg	1		
Bromobenzene	M	2760	µg/kg	1		
1,2,3-Trichloropropane	N	2760	µg/kg	50		
N-Propylbenzene	U	2760	µg/kg	1		
2-Chlorotoluene	M	2760	µg/kg	1		
1,3,5-Trimethylbenzene	M	2760	µg/kg	1		
4-Chlorotoluene	U	2760	µg/kg	1		
Tert-Butylbenzene	U	2760	µg/kg	1		
1,2,4-Trimethylbenzene	M	2760	µg/kg	1		
Sec-Butylbenzene	U	2760	µg/kg	1		
1,3-Dichlorobenzene	M	2760	µg/kg	1		
4-Isopropyltoluene	U	2760	µg/kg	1		
1,4-Dichlorobenzene	M	2760	µg/kg	1		
N-Butylbenzene	U	2760	µg/kg	1		
1,2-Dichlorobenzene	M	2760	µg/kg	1		
1,2-Dibromo-3-Chloropropane	U	2760	µg/kg	50		
1,2,4-Trichlorobenzene	M	2760	µg/kg	1		
Hexachlorobutadiene	U	2760	µg/kg	1		
1,2,3-Trichlorobenzene	U	2760	µg/kg	2		
Methyl Tert-Butyl Ether	M	2760	µg/kg	1	< 1.0	
N-Nitrosodimethylamine	N	2790	mg/kg	0.5		
Phenol	N	2790	mg/kg	0.5		
2-Chlorophenol	N	2790	mg/kg	0.5		
Bis-(2-Chloroethyl)Ether	N	2790	mg/kg	0.5		
1,3-Dichlorobenzene	N	2790	mg/kg	0.5		
1,4-Dichlorobenzene	N	2790	mg/kg	0.5		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA			**Chemtest Sample ID.:**		42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			**Client Sample ID.:**		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
1,2-Dichlorobenzene	N	2790	mg/kg	0.5		
2-Methylphenol	N	2790	mg/kg	0.5		
Bis(2-Chloroisopropyl)Ether	N	2790	mg/kg	0.5		
Hexachloroethane	N	2790	mg/kg	0.5		
N-Nitrosodi-n-propylamine	N	2790	mg/kg	0.5		
4-Methylphenol	N	2790	mg/kg	0.5		
Nitrobenzene	N	2790	mg/kg	0.5		
Isophorone	N	2790	mg/kg	0.5		
2-Nitrophenol	N	2790	mg/kg	0.5		
2,4-Dimethylphenol	N	2790	mg/kg	0.5		
Bis(2-Chloroethoxy)Methane	N	2790	mg/kg	0.5		
2,4-Dichlorophenol	N	2790	mg/kg	0.5		
1,2,4-Trichlorobenzene	N	2790	mg/kg	0.5		
Naphthalene	N	2790	mg/kg	0.5		
4-Chloroaniline	N	2790	mg/kg	0.5		
Hexachlorobutadiene	N	2790	mg/kg	0.5		
4-Chloro-3-Methylphenol	N	2790	mg/kg	0.5		
2-Methylnaphthalene	N	2790	mg/kg	0.5		
4-Nitrophenol	N	2790	mg/kg	0.05		
Hexachlorocyclopentadiene	N	2790	mg/kg	0.5		
2,4,6-Trichlorophenol	N	2790	mg/kg	0.5		
2,4,5-Trichlorophenol	N	2790	mg/kg	0.5		
2-Chloronaphthalene	N	2790	mg/kg	0.5		
2-Nitroaniline	N	2790	mg/kg	0.5		
Acenaphthylene	N	2790	mg/kg	0.5		
Dimethylphthalate	N	2790	mg/kg	0.5		
2,6-Dinitrotoluene	N	2790	mg/kg	0.5		
Acenaphthene	N	2790	mg/kg	0.5		
3-Nitroaniline	N	2790	mg/kg	0.5		
Dibenzofuran	N	2790	mg/kg	0.5		
4-Chlorophenylphenylether	N	2790	mg/kg	0.5		
2,4-Dinitrotoluene	N	2790	mg/kg	0.5		
Fluorene	N	2790	mg/kg	0.5		

Results Summary - Soil

Report Number: 14-08521 Issue-1
Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA			**Chemtest Sample ID.:**		42509	42510
Quotation No.:			Client Sample Ref.:		BTEX+MTBE	Asbestos
Order No.:			**Client Sample ID.:**		BH8	BH8
			Sample Type:		SOIL	SOIL
			Top Depth (m):		0.5	0.5
			Bottom Depth(m):			
			Date Sampled:		20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**		
Diethyl Phthalate	N	2790	mg/kg	0.5		
4-Nitroaniline	N	2790	mg/kg	0.5		
2-Methyl-4,6-Dinitrophenol	N	2790	mg/kg	0.5		
Azobenzene	N	2790	mg/kg	0.5		
4-Bromophenylphenyl Ether	N	2790	mg/kg	0.5		
Hexachlorobenzene	N	2790	mg/kg	0.5		
Pentachlorophenol	N	2790	mg/kg	0.5		
Phenanthrene	N	2790	mg/kg	0.5		
Anthracene	N	2790	mg/kg	0.5		
Carbazole	N	2790	mg/kg	0.5		
Di-N-Butyl Phthalate	N	2790	mg/kg	0.5		
Fluoranthene	N	2790	mg/kg	0.5		
Pyrene	N	2790	mg/kg	0.5		
Butylbenzyl Phthalate	N	2790	mg/kg	0.5		
Benzo[a]anthracene	N	2790	mg/kg	0.5		
Chrysene	N	2790	mg/kg	0.5		
Bis(2-Ethylhexyl)Phthalate	N	2790	mg/kg	0.5		
Di-N-Octyl Phthalate	N	2790	mg/kg	0.5		
Benzo[b]fluoranthene	N	2790	mg/kg	0.5		
Benzo[k]fluoranthene	N	2790	mg/kg	0.5		
Benzo[a]pyrene	N	2790	mg/kg	0.5		
Indeno(1,2,3-c,d)Pyrene	N	2790	mg/kg	0.5		
Dibenz(a,h)Anthracene	N	2790	mg/kg	0.5		
Benzo[g,h,i]perylene	N	2790	mg/kg	0.5		
PCB 28	M	2810	mg/kg	0.01		
PCB 52	M	2815	mg/kg	0.01		
PCB 101	M	2815	mg/kg	0.01		
PCB 118	M	2815	mg/kg	0.01		
PCB 153	M	2815	mg/kg	0.01		
PCB 138	M	2815	mg/kg	0.01		
PCB 180	M	2810	mg/kg	0.01		
Total PCBs (7 Congeners)	N	2815	mg/kg	0.1		
Total Phenols	M	2920	mg/kg	0.3		

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers

Sample Retention and Disposal

All soil samples will be retained for a period of 1 month following the date of the test report
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Generic Risk-Based Soil Screening Values

Site	Proposed Kingsgate School, Liddell Road, London NW6 2EW	**Job Number** J14212
Client	London Borough of Camden	**Sheet** 1 / 1
Engineer	Price & Myers	

Proposed End Use Residential with plant uptake

Soil pH 7

Soil Organic Matter content % 6.0

Contaminant	Screening Value mg/kg	Data Source
Metals		
Arsenic	37	C4SL
Cadmium	26	C4SL
Chromium (III)	3000	LQM/CIEH
Chromium (VI)	21	C4SL
Copper	2,330	LQM/CIEH
Lead	200	C4SL
Elemental Mercury	1	SGV
Inorganic Mercury	170	SGV
Nickel	130	LQM/CIEH
Selenium	350	SGV
Zinc	3,750	LQM/CIEH
Hydrocarbons		
Benzene	0.87	C4SL
Toluene	610	SGV
Ethyl Benzene	350	SGV
Xylene	230	SGV
Aliphatic C5-C6	110	LQM/CIEH
Aliphatic C6-C8	370	LQM/CIEH
Aliphatic C8-C10	110	LQM/CIEH
Aliphatic C10-C12	540	LQM/CIEH
Aliphatic C12-C16	3000	LQM/CIEH
Aliphatic C16-C35	76,000	LQM/CIEH
Aromatic C6-C7	See Benzene	LQM/CIEH
Aromatic C7-C8	See Toluene	LQM/CIEH
Aromatic C8-C10	151	LQM/CIEH
Aromatic C10-C12	346	LQM/CIEH
Aromatic C12-C16	593	LQM/CIEH
Aromatic C16-C21	770	LQM/CIEH
Aromatic C21-C35	1230	LQM/CIEH
PRO (C_5 –C_{10})	1352	Calc
DRO (C_{12} –C_{28})	80,363	Calc
Lube Oil (C_{28} –C_{44})	77,230	Calc
TPH	**1000**	Trigger for speciated testing

Contaminant	Screening Value mg/kg	Data Source
Anions		
Soluble Sulphate	0.5 g/l	Structures
Sulphide	50	Structures
Chloride	400	Structures
Others		
Organic Carbon (%)	6	Methanogenic potential
Total Cyanide	140	WRAS
Total Mono Phenols	420	SGV
PAH		
Naphthalene	12.40	Rev. LQM/CIEH
Acenaphthylene	850	LQM/CIEH
Acenaphthene	1,000	LQM/CIEH
Fluorene	780	LQM/CIEH
Phenanthrene	380	LQM/CIEH
Anthracene	9,200	LQM/CIEH
Fluoranthene	670	LQM/CIEH
Pyrene	1,600	LQM/CIEH
Benzo(a) Anthracene	8.7	Rev. LQM/CIEH
Chrysene	14	Rev. LQM/CIEH
Benzo(b) Fluoranthene	10.5	Rev. LQM/CIEH
Benzo(k) Fluoranthene	15.0	Rev. LQM/CIEH
Benzo(a) pyrene	5.00	C4SL
Indeno(1 2 3 cd) Pyrene	6.2	Rev. LQM/CIEH
Dibenzo(a h) Anthracene	1.35	Rev. LQM/CIEH
Benzo (g h i) Perylene	71	Rev. LQM/CIEH
Screening value for PAH	**71.4**	B(a)P / 0.15
Chlorinated Solvents		
1,1,1 trichloroethane (TCA)	28	LQM/CIEH
tetrachloroethane (PCA)	4.8	LQM/CIEH
tetrachloroethene (PCE)	4.8	LQM/CIEH
trichloroethene (TCE)	0.49	LQM/CIEH
1,2-dichloroethane (DCA)	0.014	LQM/CIEH
vinyl chloride (Chloroethene)	0.00099	LQM/CIEH
tetrachloromethane (Carbon tetra	0.089	LQM/CIEH
trichloromethane (Chloroform)	2.7	LQM/CIEH

Notes

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

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

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

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

Rev LQM/CIEH calculated using C4SL revisions to exposure assessment but LQM/CIEH health croiteria values

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

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

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	14-09397 Issue-1
Initial Date of Issue:	11-Sep-14
Client:	GEA
Client Address:	Tyttenhanger House Coursers Road Saint Albans Hertfordshire AL4 0PG
Contact(s):	Caroline Anderson
Project:	J14212 - Schedule 2 - Kingsgate School, Liddell Road

Quotation No.:		**Date Received:**	05-Sep-14
Order No.:		**Date Instructed:**	05-Sep-14
No. of Samples:	4	**Results Due:**	11-Sep-14
Turnaround: (Weekdays)	5		
Date Approved:	11-Sep-14		

Approved By:

Details: Darrell Hall, Laboratory Director

The results reported herein relate only to the material supplied to the laboratory.
This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA					14-09397	14-09397	14-09397	14-09397
Quotation No.:			**Chemtest Sample ID.:**		46229	46230	46231	46232
Order No.:			Client Sample Ref.:					
			Client Sample ID.:		BH4	BH4	BH4	BH4
			Sample Type:		WATER	WATER	WATER	WATER
			Top Depth (m):		1.5	1.5	1.5	1.5
			Bottom Depth(m):					
			Date Sampled:		03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
pH	U	1010						7.0
Electrical Conductivity	U	1020	µS/cm	1				73
Chloride	U	1220	mg/l	1				31000
Ammonia (Free)	U	1220	mg/l	0.01				0.16
Nitrate	U	1220	mg/l	0.5				< 0.50
Sulphate	U	1220	mg/l	1				1100
Sulphide	U	1325	mg/l	0.05				< 0.050
Arsenic (Dissolved)	U	1450	µg/l	1				470
Cadmium (Dissolved)	U	1450	µg/l	0.08				0.19
Chromium (Dissolved)	U	1450	µg/l	1				280
Mercury (Dissolved)	U	1450	µg/l	0.5				< 0.50
Nickel (Dissolved)	U	1450	µg/l	1				120
Lead (Dissolved)	U	1450	µg/l	1				< 1.0
Total Organic Carbon	N	1610	mg/l	1				< 1.0
Total TPH >C6-C40	N	1670	µg/l	10				< 10
Aliphatic TPH >C5-C6	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.1				< 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.1				< 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5				< 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.1				< 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.1				< 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5				< 5.0

Chemtest
The right chemistry to deliver results

Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA					Chemtest Job No.:	14-09397	14-09397	14-09397	14-09397
Quotation No.:					Chemtest Sample ID.:	46229	46230	46231	46232
Order No.:					Client Sample Ref.:				
					Client Sample ID.:	BH4	BH4	BH4	BH4
					Sample Type:	WATER	WATER	WATER	WATER
					Top Depth (m):	1.5	1.5	1.5	1.5
					Bottom Depth(m):				
					Date Sampled:	03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Total Petroleum Hydrocarbons	U	1675	µg/l	10					< 10
Naphthalene	U	1700	µg/l	0.1					< 0.10
Acenaphthylene	U	1700	µg/l	0.1					< 0.10
Acenaphthene	U	1700	µg/l	0.1					< 0.10
Fluorene	U	1700	µg/l	0.1					< 0.10
Phenanthrene	U	1700	µg/l	0.1					< 0.10
Anthracene	U	1700	µg/l	0.1					< 0.10
Fluoranthene	U	1700	µg/l	0.1					< 0.10
Pyrene	U	1700	µg/l	0.1					< 0.10
Benzo[a]anthracene	U	1700	µg/l	0.1					< 0.10
Chrysene	U	1700	µg/l	0.1					< 0.10
Benzo[b]fluoranthene	U	1700	µg/l	0.1					< 0.10
Benzo[k]fluoranthene	U	1700	µg/l	0.1					< 0.10
Benzo[a]pyrene	U	1700	µg/l	0.1					< 0.10
Indeno(1,2,3-c,d)Pyrene	U	1700	µg/l	0.1					< 0.10
Dibenz(a,h)Anthracene	U	1700	µg/l	0.1					< 0.10
Benzo[g,h,i]perylene	U	1700	µg/l	0.1					< 0.10
Total Of 16 PAH's	U	1700	µg/l	2					< 2.0
Dichlorodifluoromethane	U	1760	µg/l	1		< 1.0			
Chloromethane	U	1760	µg/l	1		< 1.0			
Vinyl Chloride	N	1760	µg/l	1		< 1.0			
Bromomethane	U	1760	µg/l	5		< 5			
Chloroethane	U	1760	µg/l	2		< 2.0			
Trichlorofluoromethane	U	1760	µg/l	1		< 1.0			
1,1-Dichloroethene	U	1760	µg/l	1		< 1.0			
Trans 1,2-Dichloroethene	U	1760	µg/l	1		< 1.0			
1,1-Dichloroethane	U	1760	µg/l	1		< 1.0			
cis 1,2-Dichloroethene	U	1760	µg/l	1		< 1.0			
Bromochloromethane	U	1760	µg/l	1		< 1.0			
Trichloromethane	U	1760	µg/l	1		< 1.0			
1,1,1-Trichloroethane	U	1760	µg/l	1		< 1.0			
Tetrachloromethane	U	1760	µg/l	1		< 1.0			
1,1-Dichloropropene	U	1760	µg/l	1		< 1.0			

Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA					Chemtest Job No.:	14-09397	14-09397	14-09397	14-09397
Quotation No.:					Chemtest Sample ID.:	46229	46230	46231	46232
Order No.:					Client Sample Ref.:				
					Client Sample ID.:	BH4	BH4	BH4	BH4
					Sample Type:	WATER	WATER	WATER	WATER
					Top Depth (m):	1.5	1.5	1.5	1.5
					Bottom Depth(m):				
					Date Sampled:	03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Benzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	
1,2-Dichloroethane	U	1760	µg/l	2		< 2.0			
Trichloroethene	N	1760	µg/l	1		< 1.0			
1,2-Dichloropropane	U	1760	µg/l	1		< 1.0			
Dibromomethane	U	1760	µg/l	10		< 10			
Bromodichloromethane	U	1760	µg/l	5		< 5.0			
cis-1,3-Dichloropropene	N	1760	µg/l	10		< 10			
Toluene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	
Trans-1,3-Dichloropropene	N	1760	µg/l	10		< 10			
1,1,2-Trichloroethane	U	1760	µg/l	10		< 10			
Tetrachloroethene	U	1760	µg/l	1		< 1.0			
1,3-Dichloropropane	U	1760	µg/l	2		< 2.0			
Dibromochloromethane	U	1760	µg/l	10		< 10			
1,2-Dibromoethane	U	1760	µg/l	5		< 5.0			
Chlorobenzene	N	1760	µg/l	1		< 1.0			
1,1,1,2-Tetrachloroethane	U	1760	µg/l	2		< 2.0			
Ethylbenzene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	
m & p-Xylene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	
o-Xylene	U	1760	µg/l	1		< 1.0	< 1.0	< 1.0	
Styrene	U	1760	µg/l	1		< 1.0			
Tribromomethane	U	1760	µg/l	1		< 1.0			
Isopropylbenzene	U	1760	µg/l	1		< 1.0			
Bromobenzene	U	1760	µg/l	1		< 1.0			
1,2,3-Trichloropropane	N	1760	µg/l	50		< 50			
N-Propylbenzene	U	1760	µg/l	1		< 1.0			
2-Chlorotoluene	U	1760	µg/l	1		< 1.0			
1,3,5-Trimethylbenzene	U	1760	µg/l	1		< 1.0			
4-Chlorotoluene	U	1760	µg/l	1		< 1.0			
Tert-Butylbenzene	U	1760	µg/l	1		< 1.0			
1,2,4-Trimethylbenzene	U	1760	µg/l	1		< 1.0			
Sec-Butylbenzene	U	1760	µg/l	1		< 1.0			
1,3-Dichlorobenzene	N	1760	µg/l	1		< 1.0			
4-Isopropyltoluene	U	1760	µg/l	1		< 1.0			

Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA								
Quotation No.:			**Chemtest Job No.:**		14-09397	14-09397	14-09397	14-09397
Order No.:			**Chemtest Sample ID.:**		46229	46230	46231	46232
			Client Sample Ref.:					
			Client Sample ID.:		BH4	BH4	BH4	BH4
			Sample Type:		WATER	WATER	WATER	WATER
			Top Depth (m):		1.5	1.5	1.5	1.5
			Bottom Depth(m):					
			Date Sampled:		03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
1,4-Dichlorobenzene	U	1760	µg/l	1		< 1.0		
N-Butylbenzene	U	1760	µg/l	1		< 1.0		
1,2-Dichlorobenzene	U	1760	µg/l	1		< 1.0		
1,2-Dibromo-3-Chloropropane	U	1760	µg/l	50		< 50		
1,2,4-Trichlorobenzene	U	1760	µg/l	1		< 1.0		
Hexachlorobutadiene	U	1760	µg/l	1		< 1.0		
1,2,3-Trichlorobenzene	U	1760	µg/l	2		< 2.0		
Methyl Tert-Butyl Ether	N	1760	µg/l	1		< 1.0	< 1.0	
N-Nitrosodimethylamine	N	1790	µg/l	0.5		< 0.50		
Phenol	N	1790	µg/l	0.5		< 0.50		
2-Chlorophenol	N	1790	µg/l	0.5		< 0.50		
Bis-(2-Chloroethyl)Ether	N	1790	µg/l	0.5		< 0.50		
1,3-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50		
1,4-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50		
1,2-Dichlorobenzene	N	1790	µg/l	0.5		< 0.50		
2-Methylphenol	N	1790	µg/l	0.5		< 0.50		
Bis(2-Chloroisopropyl)Ether	N	1790	µg/l	0.5		< 0.50		
Hexachloroethane	N	1790	µg/l	0.5		< 0.50		
N-Nitrosodi-n-propylamine	N	1790	µg/l	0.5		< 0.50		
4-Methylphenol	N	1790	µg/l	0.5		< 0.50		
Nitrobenzene	N	1790	µg/l	0.5		< 0.50		
Isophorone	N	1790	µg/l	0.5		< 0.50		
2-Nitrophenol	N	1790	µg/l	0.5		< 0.50		
2,4-Dimethylphenol	N	1790	µg/l	0.5		< 0.50		
Bis(2-Chloroethoxy)Methane	N	1790	µg/l	0.5		< 0.50		
2,4-Dichlorophenol	N	1790	µg/l	0.5		< 0.50		
1,2,4-Trichlorobenzene	N	1790	µg/l	0.5		< 0.50		
Naphthalene	N	1790	µg/l	0.5		< 0.50		
4-Chloroaniline	N	1790	µg/l	0.5		< 0.50		
Hexachlorobutadiene	N	1790	µg/l	0.5		< 0.50		
4-Chloro-3-Methylphenol	N	1790	µg/l	0.5		< 0.50		
2-Methylnaphthalene	N	1790	µg/l	0.5		< 0.50		
Hexachlorocyclopentadiene	N	1790	µg/l	0.5		< 0.50		

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Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA					Chemtest Job No.:	14-09397	14-09397	14-09397	14-09397
Quotation No.:					Chemtest Sample ID.:	46229	46230	46231	46232
Order No.:					Client Sample Ref.:				
					Client Sample ID.:	BH4	BH4	BH4	BH4
					Sample Type:	WATER	WATER	WATER	WATER
					Top Depth (m):	1.5	1.5	1.5	1.5
					Bottom Depth(m):				
					Date Sampled:	03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
2,4,6-Trichlorophenol	N	1790	µg/l	0.5		< 0.50			
2,4,5-Trichlorophenol	N	1790	µg/l	0.5		< 0.50			
2-Chloronaphthalene	N	1790	µg/l	0.5		< 0.50			
2-Nitroaniline	N	1790	µg/l	0.5		< 0.50			
Acenaphthylene	N	1790	µg/l	0.5		< 0.50			
Dimethylphthalate	N	1790	µg/l	0.5		< 0.50			
2,6-Dinitrotoluene	N	1790	µg/l	0.5		< 0.50			
Acenaphthene	N	1790	µg/l	0.5		< 0.50			
3-Nitroaniline	N	1790	µg/l	0.5		< 0.50			
Dibenzofuran	N	1790	µg/l	0.5		< 0.50			
4-Chlorophenylphenylether	N	1790	µg/l	0.5		< 0.50			
2,4-Dinitrotoluene	N	1790	µg/l	0.5		< 0.50			
Fluorene	N	1790	µg/l	0.5		< 0.50			
Diethyl Phthalate	N	1790	µg/l	0.5		< 0.50			
4-Nitroaniline	N	1790	µg/l	0.5		< 0.50			
2-Methyl-4,6-Dinitrophenol	N	1790	µg/l	0.5		< 0.50			
Azobenzene	N	1790	µg/l	0.5		< 0.50			
4-Bromophenylphenyl Ether	N	1790	µg/l	0.5		< 0.50			
Hexachlorobenzene	N	1790	µg/l	0.5		< 0.50			
Pentachlorophenol	N	1790	µg/l	0.5		< 0.50			
Phenanthrene	N	1790	µg/l	0.5		< 0.50			
Anthracene	N	1790	µg/l	0.5		< 0.50			
Carbazole	N	1790	µg/l	0.5		< 0.50			
Di-N-Butyl Phthalate	N	1790	µg/l	0.5		< 0.50			
Fluoranthene	N	1790	µg/l	0.5		< 0.50			
Pyrene	N	1790	µg/l	0.5		< 0.50			
Butylbenzyl Phthalate	N	1790	µg/l	0.5		< 0.50			
Benzo[a]anthracene	N	1790	µg/l	0.5		< 0.50			
Chrysene	N	1790	µg/l	0.5		< 0.50			
Bis(2-Ethylhexyl)Phthalate	N	1790	µg/l	0.5		< 0.50			
Di-N-Octyl Phthalate	N	1790	µg/l	0.5		< 0.50			
Benzo[b]fluoranthene	N	1790	µg/l	0.5		< 0.50			
Benzo[k]fluoranthene	N	1790	µg/l	0.5		< 0.50			

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Results Summary - Water

Project: J14212 - Schedule 2 - Kingsgate School, Liddell Road

Client: GEA					Chemtest Job No.:	14-09397	14-09397	14-09397	14-09397
Quotation No.:					Chemtest Sample ID.:	46229	46230	46231	46232
Order No.:					Client Sample Ref.:				
					Client Sample ID.:	BH4	BH4	BH4	BH4
					Sample Type:	WATER	WATER	WATER	WATER
					Top Depth (m):	1.5	1.5	1.5	1.5
					Bottom Depth(m):				
					Date Sampled:	03-Sep-14	03-Sep-14	03-Sep-14	03-Sep-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**					
Benzo[a]pyrene	N	1790	µg/l	0.5		< 0.50			
Indeno(1,2,3-c,d)Pyrene	N	1790	µg/l	0.5		< 0.50			
Dibenz(a,h)Anthracene	N	1790	µg/l	0.5		< 0.50			
Benzo[g,h,i]perylene	N	1790	µg/l	0.5		< 0.50			
4-Nitrophenol	N	1790	µg/l	0.5		< 0.50			
PCB 28	N	1815	µg/l	0.01	< 0.010				
PCB 52	N	1815	µg/l	0.01	< 0.010				
PCB 101	N	1815	µg/l	0.01	< 0.010				
PCB 118	N	1815	µg/l	0.01	< 0.010				
PCB 153	N	1815	µg/l	0.01	< 0.010				
PCB 138	N	1815	µg/l	0.01	< 0.010				
PCB 180	N	1815	µg/l	0.01	< 0.010				
Total PCBs (7 congeners)	N	1815	µg/l	0.01	< 0.010				
Total Phenols	U	1920	mg/l	0.03					< 0.030

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Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers

Sample Retention and Disposal

All soil samples will be retained for a period of 1 month following the date of the test report
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

Chemtest Ltd.
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.co.uk

Final Report

Report Number:	14-08522 Issue-1
Initial Date of Issue:	03-Sep-14
Client:	GEA
Client Address:	Tyttenhanger House Coursers Road Saint Albans Hertfordshire AL4 0PG
Contact(s):	Caroline Anderson
Project:	J14212- Kingsgate School, Liddell Road, London NW6 2EW

Quotation No.:		**Date Received:**	22-Aug-14
Order No.:		**Date Instructed:**	22-Aug-14
No. of Samples:	4	**Results Due:**	03-Sep-14
Turnaround: (Weekdays)	8		
Date Approved:	03-Sep-14		

Approved By:

Details: Keith Jones, Technical Manager

The results reported herein relate only to the material supplied to the laboratory.
This certificate shall not be reproduced except in full, without the prior written approval of the laboratory.

Results Summary - Soil

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Client: GEA					14-08522	14-08522	14-08522	14-08522
Quotation No.:			**Chemtest Sample ID.:**		42511	42512	42513	42514
Order No.:			Client Sample Ref.:		WAC	WAC	WAC	WAC
			Client Sample ID.:		BH11	BH6	BH7	BH8
			Sample Type:		SOIL	SOIL	SOIL	SOIL
			Top Depth (m):		0.8	0.8	0.7	0.5
			Bottom Depth(m):					
			Date Sampled:		20-Aug-14	20-Aug-14	20-Aug-14	20-Aug-14
Determinand	**Accred.**	**SOP**	**Units**	**LOD**				
Moisture	N	2030	%	0.02	13	21	26	10

Results Summary - 2 Stage WAC

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Chemtest Job No: 14-08522 Chemtest Sample ID: 42511 Sample Ref: WAC Sample ID: BH11 Top Depth(m): 0.8 Bottom Depth(m): Sampling Date: 20-Aug-2014							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			3.2	3	5	6
Loss on Ignition	2610	M	%			6.1	--	--	10
Total BTEX	2760	M	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			5	100	--	--
pH	2010	M				9.1	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.15	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.006	0.006	< 0.050	0.058	0.5	2	25
Barium	1450	U	0.014	0.008	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.011	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.073	0.027	0.15	0.081	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.010	< 0.010	0.01	0.2	2
Molybdenum	1450	U	0.067	0.012	0.13	0.18	0.5	10	30
Nickel	1450	U	0.003	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.005	0.005	< 0.010	0.05	0.06	0.7	5
Selenium	1450	U	0.013	0.006	0.026	0.069	0.1	0.5	7
Zinc	1450	U	0.003	< 0.001	< 0.50	< 0.50	4	50	200
Chloride	1220	U	20	3.5	40	53	800	15000	25000
Fluoride	1220	U	1.4	0.57	2.8	6.6	10	150	500
Sulphate	1220	U	110	28	220	370	1000	20000	50000
Total Dissolved Solids	1020	N	290	120	580	1400	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	25	6.4	< 50	84	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	13

Leachate Test Information	
Leachant volume 1st extract/l	0.325
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.194

Results Summary - 2 Stage WAC

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Chemtest Job No: 14-08522 Chemtest Sample ID: 42512 Sample Ref: WAC Sample ID: BH6 Top Depth(m): 0.8 Bottom Depth(m): Sampling Date: 20-Aug-2014							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			32	3	5	6
Loss on Ignition	2610	M	%			36	--	--	10
Total BTEX	2760	M	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			18	100	--	--
pH	2010	M				7.6	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.025	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.003	0.004	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.027	0.014	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	< 0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	0.002	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.004	0.004	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.010	< 0.010	0.01	0.2	2
Molybdenum	1450	U	0.017	0.011	< 0.050	0.12	0.5	10	30
Nickel	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	< 0.001	< 0.010	< 0.010	0.5	10	50
Antimony	1450	U	0.002	0.002	< 0.010	0.016	0.06	0.7	5
Selenium	1450	U	0.004	0.002	< 0.010	0.022	0.1	0.5	7
Zinc	1450	U	0.019	0.007	< 0.50	< 0.50	4	50	200
Chloride	1220	U	14	1.1	27	26	800	15000	25000
Fluoride	1220	U	0.88	0.45	1.7	5	10	150	500
Sulphate	1220	U	440	63	860	1100	1000	20000	50000
Total Dissolved Solids	1020	N	760	220	1500	2800	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	< 2.5	< 2.5	< 50	< 50	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	21

Leachate Test Information	
Leachant volume 1st extract/l	0.304
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.21

Results Summary - 2 Stage WAC

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Chemtest Job No: 14-08522 Chemtest Sample ID: 42513 Sample Ref: WAC Sample ID: BH7 Top Depth(m): 0.7 Bottom Depth(m): Sampling Date: 20-Aug-2014							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			4.9	3	5	6
Loss on Ignition	2610	M	%			10	--	--	10
Total BTEX	2760	M	mg/kg			< 0.01	6	--	--
Total PCBs (7 congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			< 10	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			30	100	--	--
pH	2010	M				8.2	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.022	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.014	0.019	< 0.050	0.19	0.5	2	25
Barium	1450	U	0.021	0.009	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.01	0.008	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.010	< 0.010	0.01	0.2	2
Molybdenum	1450	U	0.092	0.018	0.18	0.22	0.5	10	30
Nickel	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	0.007	< 0.010	0.064	0.5	10	50
Antimony	1450	U	0.003	0.002	< 0.010	0.022	0.06	0.7	5
Selenium	1450	U	0.032	0.012	0.061	0.13	0.1	0.5	7
Zinc	1450	U	0.025	0.006	< 0.50	< 0.50	4	50	200
Chloride	1220	U	110	15	210	200	800	15000	25000
Fluoride	1220	U	3.2	1.9	6.1	20	10	150	500
Sulphate	1220	U	570	88	1100	1100	1000	20000	50000
Total Dissolved Solids	1020	N	1100	280	2100	3200	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	19	5.3	< 50	60	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	26

Leachate Test Information	
Leachant volume 1st extract/l	0.288
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.1

Results Summary - 2 Stage WAC

Project: J14212- Kingsgate School, Liddell Road, London NW6 2EW

Chemtest Job No: 14-08522 Chemtest Sample ID: 42514 Sample Ref: WAC Sample ID: BH8 Top Depth(m): 0.5 Bottom Depth(m): Sampling Date: 20-Aug-2014							Landfill Waste Acceptance Criteria Limits		
							Inert Waste Landfill	Stable Non-reactive Hazardous waste in non-hazardous	Hazardous Waste Landfill
Determinand	**SOP**	**Accred.**	**Units**						
Total Organic Carbon	2625	M	%			9.7	3	5	6
Loss on Ignition	2610	M	%			10	--	--	10
Total BTEX	2760	M	mg/kg			0.01	6	--	--
Total PCBs (7 congeners)	2815	M	mg/kg			< 0.10	1	--	--
TPH Total WAC (Mineral Oil)	2670	M	mg/kg			510	500	--	--
Total (of 17) PAHs	2700	N	mg/kg			84	100	--	--
pH	2010	M				7.9	--	>6	--
Acid Neutralisation Capacity	2015	N	mol/kg			0.063	--	To evaluate	To evaluate
Eluate Analysis			**2:1 mg/l**	**8:1 mg/l**	**2:1 mg/kg**	**Cumulative 10:1 mg/kg**	**Limit values for compliance leaching test using BS EN 12457-3 at L/S 10 l/kg**		
Arsenic	1450	U	0.003	0.002	< 0.050	< 0.050	0.5	2	25
Barium	1450	U	0.063	0.039	< 0.50	< 0.50	20	100	300
Cadmium	1450	U	0.0001	< 0.0001	< 0.010	< 0.010	0.04	1	5
Chromium	1450	U	< 0.001	< 0.001	< 0.050	< 0.050	0.5	10	70
Copper	1450	U	0.01	0.007	< 0.050	< 0.050	2	50	100
Mercury	1450	U	< 0.0005	< 0.0005	< 0.010	< 0.010	0.01	0.2	2
Molybdenum	1450	U	0.083	0.022	0.17	0.28	0.5	10	30
Nickel	1450	U	0.002	< 0.001	< 0.050	< 0.050	0.4	10	40
Lead	1450	U	< 0.001	0.001	< 0.010	0.012	0.5	10	50
Antimony	1450	U	0.005	0.003	0.011	0.032	0.06	0.7	5
Selenium	1450	U	0.002	< 0.001	< 0.010	< 0.010	0.1	0.5	7
Zinc	1450	U	0.008	0.002	< 0.50	< 0.50	4	50	200
Chloride	1220	U	26	2.6	52	50	800	15000	25000
Fluoride	1220	U	2.6	2.3	5.2	23	10	150	500
Sulphate	1220	U	56	17	110	210	1000	20000	50000
Total Dissolved Solids	1020	N	310	140	620	1600	4000	60000	100000
Phenol Index	1920	U	< 0.030	< 0.030	< 0.30	< 0.50	1	-	-
Dissolved Organic Carbon	1610	N	6.7	3.1	< 50	< 50	500	800	1000

Soild Information	
Dry mass of test portion/kg	0.175
Moisture (%)	10

Leachate Test Information	
Leachant volume 1st extract/l	0.33
Leachant volume 2nd extract/l	1.4
Eluant recovered from 1st extract/l	0.182

Report Information

Key

U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable sample
N/E	not evaluated
<	"less than"
>	"greater than"

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis
The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVCOs, PCBs, Phenols
For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at our Coventry laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers

Sample Retention and Disposal

All soil samples will be retained for a period of 1 month following the date of the test report
All water samples will be retained for 7 days following the date of the test report
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.co.uk

GEA Geotechnical & Environmental Associates

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Coursers Road
St Albans
Herts AL4 0PG

Site Plan

Site Proposed Kingsgate School, Liddell Road, London NW6 2EW

Client London Borough of Camden

Engineer Price & Myers

Job Number J14212

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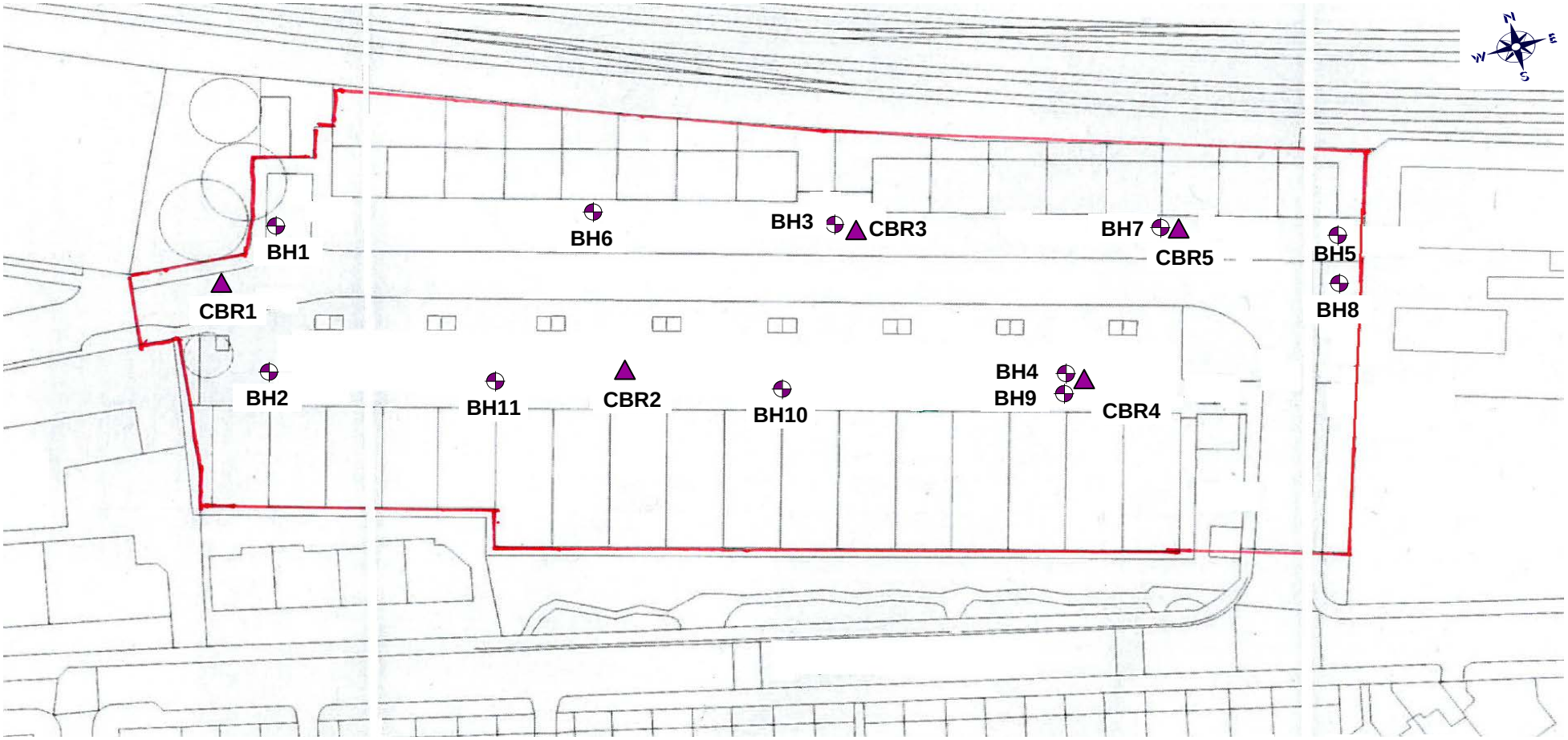

Geotechnical & Environmental Associates (GEA)
is an engineer-led and client-focused independent specialist providing a complete range of geotechnical and contaminated land investigation, analytical and consultancy services to the property and construction industries.

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