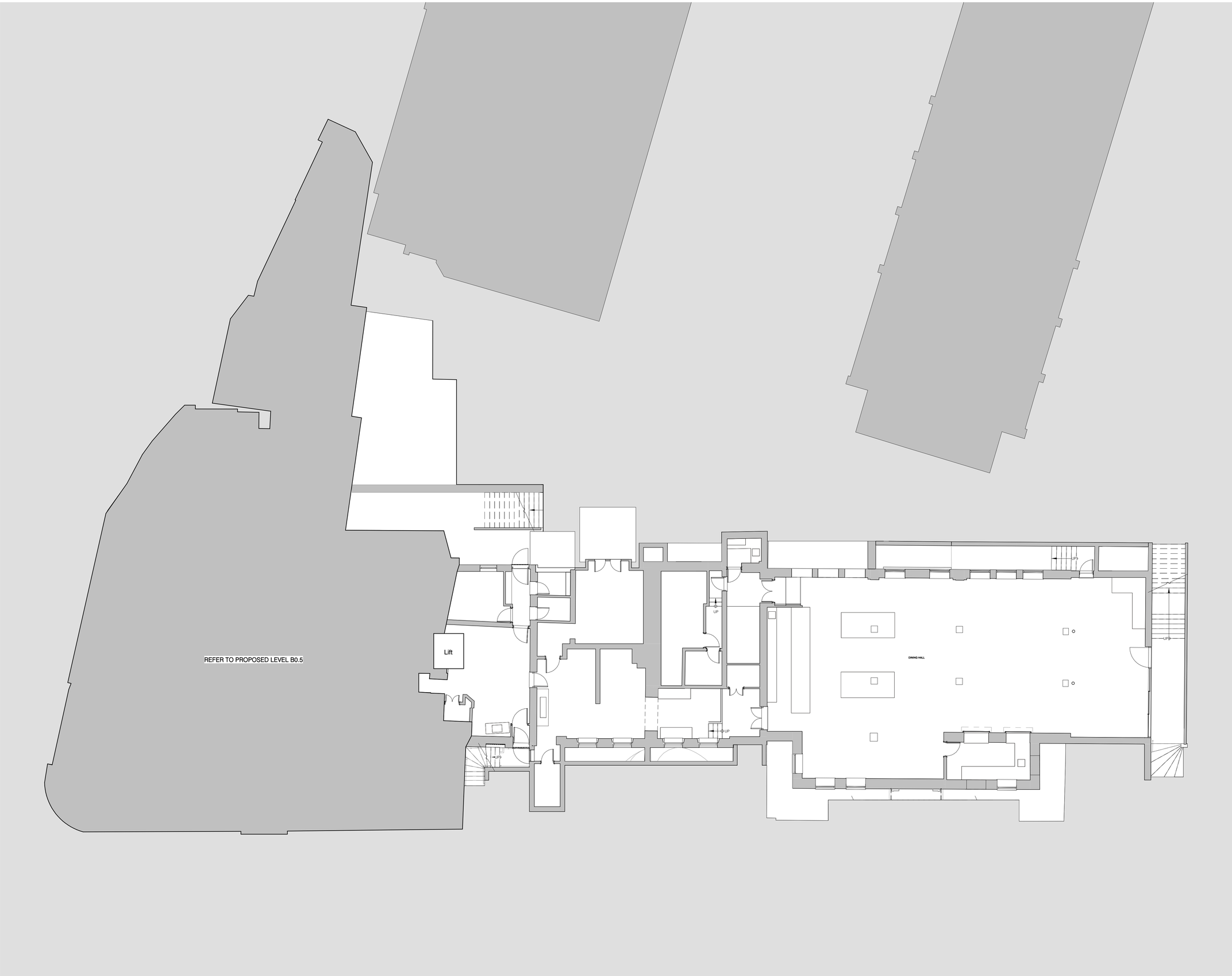

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Channing School For Girls

Document Title
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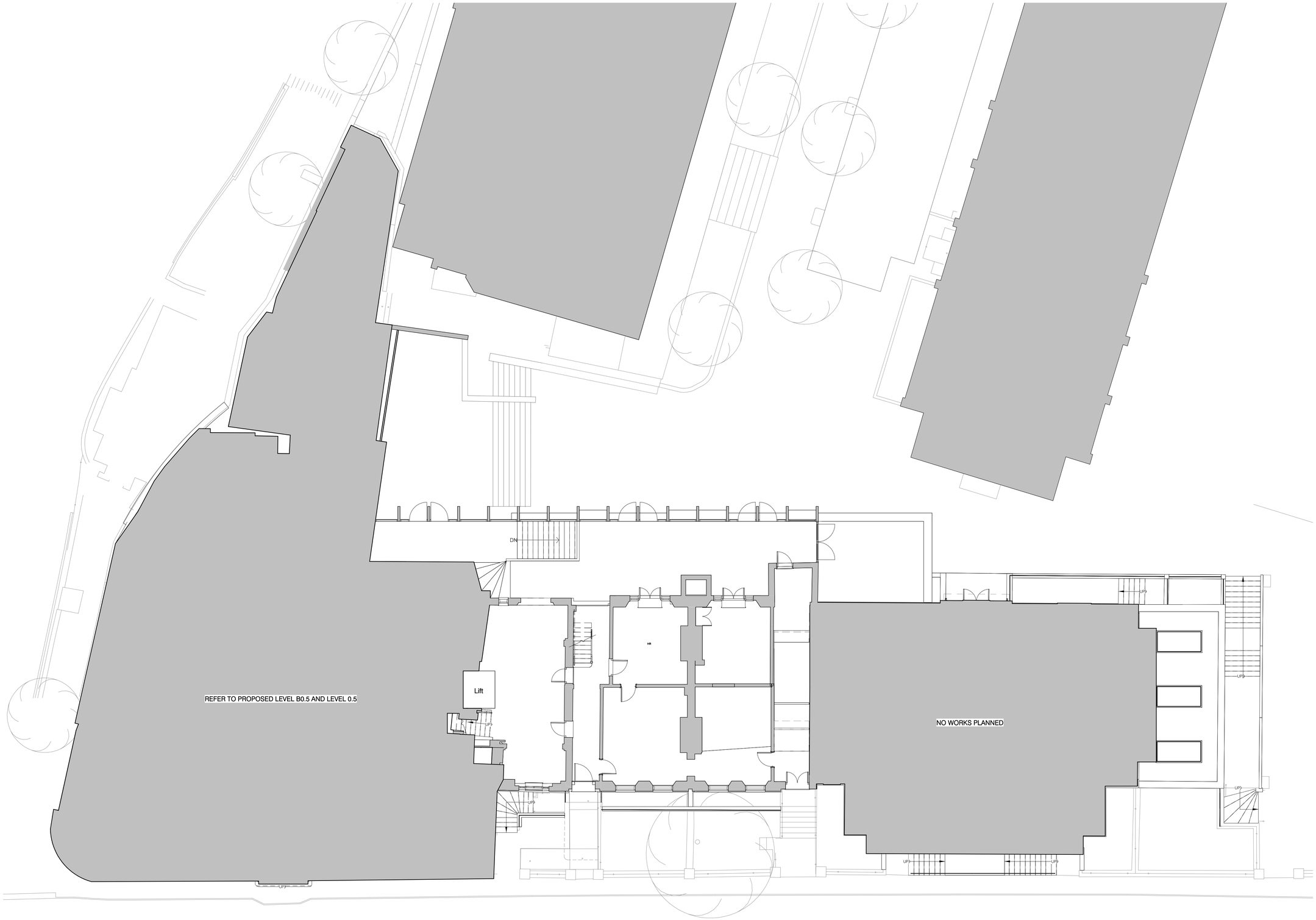

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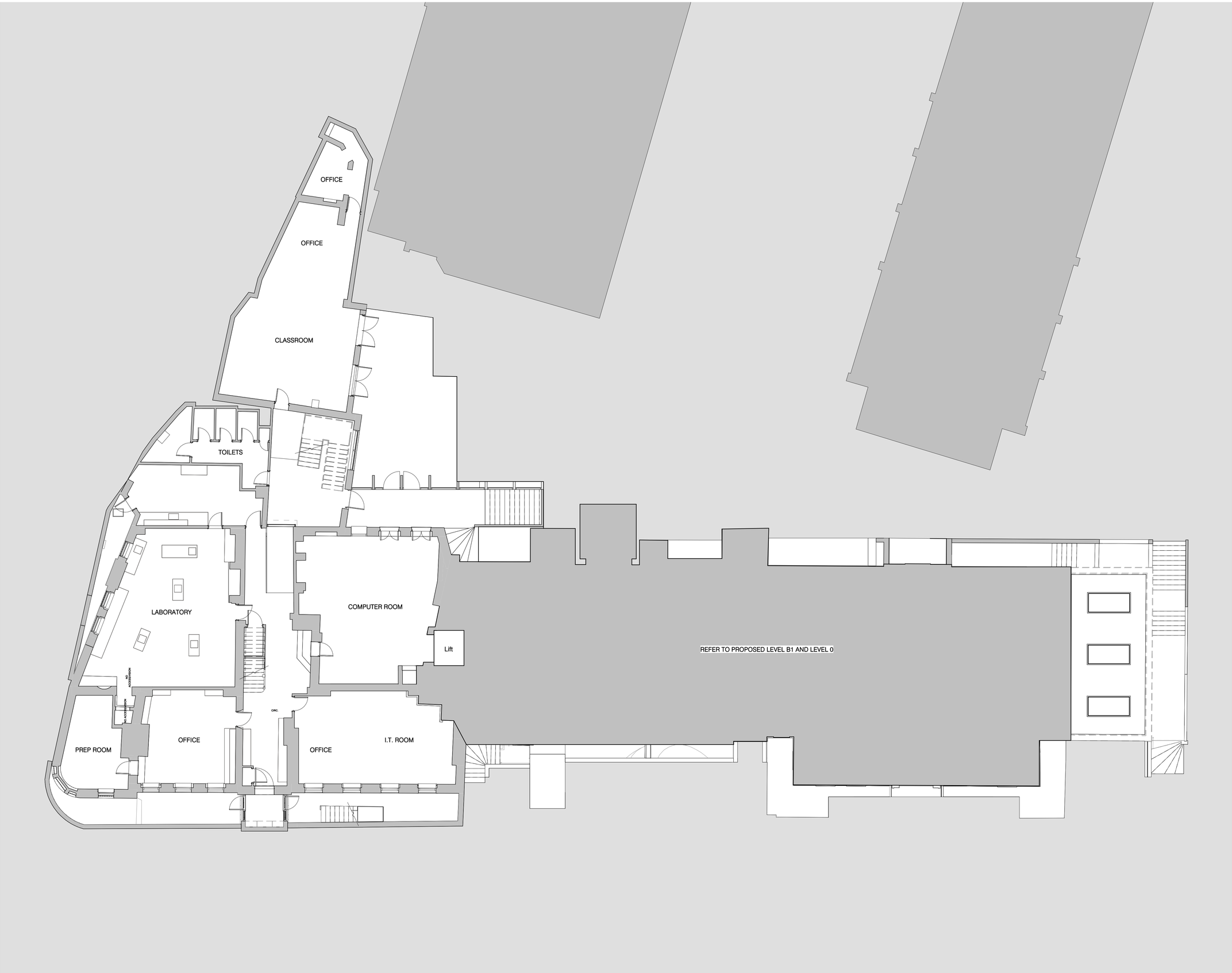

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Client & Project
NVB Architects
Channing School For Girls

Document Title
Proposed Level B0.5 GA Plan

Project Stage	Purpose	Scale
RIBA 2	INFORMATION	1:100 @A1

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CHA-NVB-MSB-B0.5-DR-A-2101	A	S1

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Site Investigation & Basement Impact Assessment Report

Channing School
The Bank
Highgate
London N6

Client	Channing School
Engineer	Heyne Tillett Steel

J11240

January 2012

Geotechnical & Environmental Associates

Document Control

Project title	Channing School, The Bank, Highgate, London, N6 5HF	**Project ref**	J11240
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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 the instructions of Heyne Tillett Steel, on behalf of Channing School, with respect to the demolition of the sports hall and construction of a new building with a partial basement that will accommodate a gymnasium, sixth form dance studio and performing arts centre. The main school building will be extended and the playing fields are to undergo some regrading. The purpose of the investigation has been to research the history of the site with respect to possible contaminative uses, to determine the ground and hydrogeological conditions, to assess the extent of any contamination and to provide information to assist with the design of the basement and suitable foundations for the proposed development. The report also includes a Basement Impact Assessment carried out in accordance with guidelines from London Borough of Camden in support of a planning application.

DESK STUDY FINDINGS

The earliest map studied, dated 1870, shows houses on the southwestern boundary with Highgate High St which are shown to have gardens to the rear containing an orchard and small out-buildings, and a pond was present approximately 30 m north of the site. Between 1884 and 1885 the pond was infilled as houses were built to the north of the site. Evidence of regrading of the site is apparent on maps between 1869 and 1935. The southernmost building on the site and the residential building in the north were demolished between the 1938 and 1951 maps. Five buildings were constructed on the site between 1958 and 1967, including the existing sports hall. Four square buildings in the west of the site were replaced with the existing school building in this area between 1991 and 1992. The site has remained unchanged to the present day since 1992. World War II bomb damage maps gained from the London Metropolitan Archives indicate that the site was not damaged during WWII; however an internet search has indicated that Channing School was badly damaged by a parachute mine.

GROUND CONDITIONS

Below a variable thickness of made ground, the Bagshot Formation was encountered over the Claygate Member of the London Clay Formation, which was inturn underlain by the London Clay proper. The made ground was absent from one location, but elsewhere was found to extend to depths of between 0.40 m (49.60 m TBM) and 5.60 m (36.97 m TBM) and to typically comprise dark brown silty sandy gravelly clay or a clayey sand with fragments of brick and occasionally ash, glass, pottery and clinker. The Bagshot Formation generally comprised light brown, fine sand with occasional silt and fine gravel, and was recorded to have a clay layer near to the top of the stratum. The Claygate Member comprised either orange-brown mottled grey silty very sandy clay or silty very clayey sand which was proved to a depth of 12.7 m (37.30 m TBM). The underlying London Clay comprised firm becoming stiff grey silty fissured clay with occasional selenite crystals which graded into a silty sandy clay below a depth of 16.5 m (33.5 m TBM). Groundwater was struck during the drilling between depths of 2.0 m (38.20 m TBM) and 8.0 m (42.0 m TBM). Monitoring of standpipes installed in four boreholes has indicated water to be at approximate depths of 7.0 m (43.00 m TBM) and 4.0 m (38.55 m TBM) at the highest and lowest levels of the site respectively, and groundwater appears to be flowing toward the east. Contamination analyses have indicated elevated concentrations of lead and a number of polyaromatic hydrocarbons within samples of made ground.

RECOMMENDATIONS

Excavations for the proposed basement structure will require temporary support to maintain stability of the existing and surrounding structures and to prevent any excessive ground movements, including the stability of the existing slopes and retaining walls, and the completed structure will need to take account of the sloping ground and retaining walls. Based on the groundwater observations to date, groundwater is not likely to be encountered within the basement excavation. Formation level for the proposed development is likely to be within the Bagshot Formation, which should provide an eminently suitable bearing stratum for spread foundations excavated from basement level. Alternatively, piled foundations would also provide a suitable solution.

It is likely that some form of remediation will be required due to soil contamination, although further testing may allow this requirement to be minimised.

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 Heyne Tillett Steel, on behalf of Channing School, to carry out a site investigation at Channing School, The Bank, Highgate, London, N6 5HF.

This report also forms part of a Basement Impact Assessment (BIA), which has been carried out in accordance with guidelines from the London Borough of Camden in support of a planning application. The site is located in the London Borough of Haringey, but the boundary with Camden passes immediately adjacent to the southern boundary of the site and it was considered appropriate therefore to follow the BIA procedures to demonstrate to planners and other interested parties that a rigorous assessment has been made of the possible effects of the proposed development.

1.1 Proposed Development

It is proposed to develop the site by demolishing the existing sports hall and constructing a building consisting of three parts; a gymnasium, a sixth form dance studio and a performing arts centre, which will have a partial basement; the playing fields are to undergo some levelling. The Dining Hall in the main school building will be extended to the west by a single storey, which is understood to be subject to a separate planning application.

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

1.2 Purpose of Work

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

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

1.3 Scope of Work

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

- a review of readily available geological and hydrogeological maps;
- a review of historical Ordnance Survey (OS) maps and environmental searches sourced from the Envirocheck database;
- visit the London Metropolitan Archives to obtain World War II (WWII) bomb damage maps; and
- a walkover survey of the site carried out in conjunction with the fieldwork.

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

- a single borehole, advanced to a depth of 20.0 m, by means of a cable percussion drilling rig;
- three opendrive sampler boreholes advanced to a maximum depth of 9.0 m;
- standard penetration tests (SPTs), carried out at regular intervals in the boreholes, to provide additional quantitative data on the strength of the soils;
- three window sampler boreholes advanced to a maximum depth of 5.0 m;
- the installation of groundwater monitoring standpipes in four of the boreholes to depths of between 7.0 m and 13.0 m, and three subsequent monitoring visits over a three week period;
- twelve trial pits, manually excavated in order to investigate the configuration of existing foundations;
- laboratory testing of selected soil samples for geotechnical purposes and for the presence of contamination; and
- provision of a report presenting and interpreting the above data, together with our advice and recommendations with respect to the proposed development.

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

1.3.1 Basement Impact Assessment

The work carried out also includes a Hydrological and Hydrogeological Assessment and Land Stability Assessment (also referred to as Slope Stability Assessment), all of which form part of the BIA procedure specified in the London Borough of Camden (LBC) Planning Guidance

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

CPG4[2] and their Guidance for Subterranean Development[3] prepared by Arup. The aim of this work is to provide information on the groundwater conditions specific to this site and land stability, in particular to assess whether the development will affect the stability of neighbouring properties and whether any identified impacts can be appropriately mitigated.
The BIA elements of the work have been carried out by Martin Cooper, a BEng in Civil Engineering, a chartered engineer (CEng) and member of the Institution of Civil Engineers (MICE), who has over 20 years specialist experience in ground engineering. The assessment has been made in conjunction with Steve Branch, a BSc in Engineering Geology and Geotechnics, MSc in Geotechnical Engineering, a chartered geologist (CGeol) and Fellow of the Geological Society (FGS) with 25 years experience in geotechnical engineering, engineering geology and hydrogeology. Both assessors meet the Geotechnical Specialist criteria of the Site Investigation Steering Group and satisfy the qualification requirements of the Council guidance.

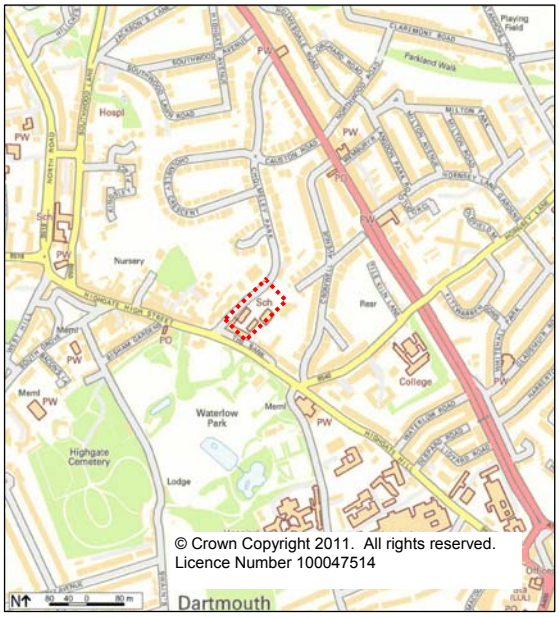
1.4 Limitations

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 Highgate, north London, approximately 830 m to the northwest of Archway London Underground station. The site fronts onto The Bank to the southwest, and is bordered to the northwest by Cholmeley Park, and residential properties to the northeast and southeast. The site may be additionally located by National Grid Reference 528760, 187364, and is shown on the map opposite.



The site covers a roughly rectangular area measuring approximately 175 m by 75 m and is occupied by Channing School.

The site slopes from its maximum elevation in the west down toward the east and north, with a fall across the site of about 9 m to a retaining wall between the school site and the adjacent caretaker's house, which has a retained height of about 3 m. The slope has however been regraded to create level platforms which are used for buildings and playing areas. Within the site the breaks in slope are relatively gradual and well

2 London Borough of Camden Planning Guidance CPG4 *Basements and lightwells*
3 Ove Arup & Partners (2010) *Camden geological, hydrogeological and hydrological study. Guidance for Subterranean Development.* For London Borough of Camden November 2010

vegetated with grass and and trees. There are a number of small retaining walls in the school, but the largest is on the northeastern boundary with the cartaker's house.

Channing School comprises five main buildings on different levels and locations in the site. The main school building fronts onto The Bank and is a two and five-storey building. The sloping nature of the site means that the lower floor becomes a basement to the north of the building. There are two other buildings used as classrooms in the centre of the site, and a sports hall is located in the east of the site which was constructed over a break in slope, such that it has two separate levels. A temporary building is located on the tennis courts in the lowest area of the site, in the north.

The site is mainly covered in hardstanding with the exception to the playing fields in the centre of the site and a grassed picnic area to the southwest of the sports hall. There are numerous trees of differing species and maturity around the site.

The boundaries of the school in the north are mainly formed by retaining walls, with evidence of bowing and general weathering of the bricks noted. The wall forming the northwest of the site is locally fenced off and new brick buttresses have been built to support the wall which is leaning towards the east.

2.2 Site History

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

The earliest map studied, dated 1870, shows approximately six houses fronting onto The Bank on the southwestern boundary of the site. The houses are shown to have gardens to the rear which extended to the northeastern boundary of the site; an orchard and what appear to be small outbuildings were located within the gardens to the north. The surrounding area was typically developed with houses and private gardens and a pond was located approximately 30 m north of the site. Cromwell House is shown to the south of the site and is later shown as a children's hospital on subsequent maps. Between 1984 and 1985 the pond was infilled as houses are shown to have been built to the north of the site along Winchester Place.

At some time between 1869 and 1915 the northwestern boundary was altered and a slope is indicated along the majority of the boundary on the 1915 map. Further changes to site levels occurred between 1920 and 1935, with the 1935 map showing a break in slope which would create the existing playing field level; a building is also shown to have been built in the southwest of the site on this map. The southernmost building on the site and the residential building in the north were demolished between the 1938 and 1951 maps. Six buildings were constructed between 1958 and 1967, including the existing sports hall and the caretaker's house to the north of the site. The existing school building in the west of the site was built between 1991 and 1992. The site has remained unchanged to the present day since 1992.

World War II bomb damage maps obtained from the London Metropolitan Archives indicate that the site was not damaged during WWII; however an internet search has indicated that Channing School was badly damaged by a parachute mine, and as a result a new building was constructed on the site.

The internet search also revealed that the school has been operating on the site since 1885, and slowly bought adjacent residential properties extending the school until around 1931.

2.3 Other Information

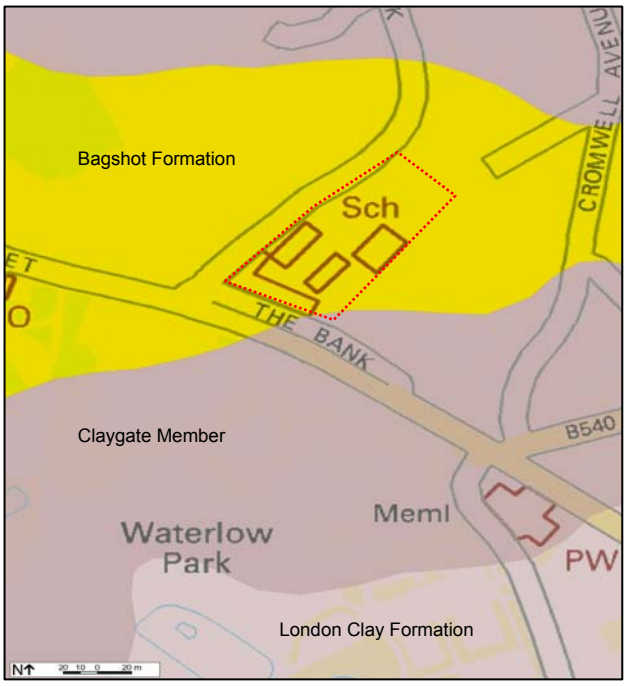
A search of public registers and databases has been made via the Envirocheck database and relevant extracts from the search are appended. Full results of the search can be provided if required.

The search has revealed that there are no landfills, waste management, transfer, treatment or disposal sites within 1000 m of the site. There have also not been any recorded pollution incidents to controlled waters within 250 m of the site.

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

2.4 Geology

The Geological Survey map of the area (sheet 256) indicates that the site should be underlain by the Bagshot Formation, overlying the Claygate Member which is in turn underlain by the London Clay Formation.



The geology in this area is generally horizontally bedded such that the boundary between the geological formations roughly follows the ground surface contour lines. The boundary between the Bagshot Formation and the underlying Claygate Member is located near to the southernmost point of the site, the boundary between the Claygate Member and the London Clay Formation is in the region of 190 m to the south of the site.

2.5 Hydrology and Hydrogeology

The Bagshot Formation and Claygate Member are classified as a Secondary 'A' Aquifers meaning they have permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers as defined by the Environment Agency (EA). The London Clay Formation is classified as unproductive strata with soils that have a low permeability and negligible significance to local water supply, as defined by the EA.

The topographical maps shows that the nearest surface water features are the Waterlow Park ponds, which are located approximately 200 m to the south of the site. The site is not within an area at risk from flooding as defined by the EA.

Existing and historical spring lines are present at the interface of the Claygate Member and the underlying essentially impermeable London Clay. These springs have been the source of a

number of London's "lost" rivers, notably the Fleet, Westbourne and Tyburn. Historically[4], an eastern tributary of the Fleet originated near Kenwood House, Highgate, which drained into man made ponds before crossing what is now Highgate West Hill toward Swain's Lane, which is south of the site, adjacent to Waterlow Park. The Fleet flowed in a southerly direction where it ultimately joined the River Thames near Blackfriars Bridge.

Any water infiltrating the London Clay will generally tend to flow vertically downwards at a very slow rate towards the chalk aquifer. Due to the predominantly cohesive nature of the soils, the groundwater flow rate is anticipated to be very slow. Published data for the permeability of the London Clay indicates the horizontal permeability to generally range between 1×10^{-10} m/s and 1×10^{-8} m/s, with an even lower vertical permeability.

2.6 Preliminary Risk Assessment

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

2.6.1 Source

The historical usage of the site that has been established by the desk study and the site walkover indicates that the site has a small potential for contamination in association with the orchard in the north of the site, however the use of the site as residential properties and later a school do not provide obvious sources of contamination at the site, nor are there any nearby in the immediate vicinity.

Although the site is known to have suffered a bomb strike, the bomb is designed to explode at the surface and should not result in a significant crater, furthermore the affected buildings have been demolished and further development has occurred at the site. Thus, there is considered to be a low risk of UXO at the site.

2.6.2 Receptor

The continued use of the site as a school will not result in extensive exposure to the soil and thus represents a moderate to low sensitivity end-use. Being underlain by a Secondary 'A' Aquifer, groundwater is likely to represent a relatively sensitive receptor. Adjacent sites are a potential receptor for contamination migrating off the site.

2.6.3 Pathway

The redevelopment will not create any new exposure pathways for end users. The presence of the building and the hardstanding will effectively form a barrier between any contaminants within the near-surface soils and end users or infiltration of surface water. Only in soft landscaped areas could there be a potential for contaminant exposure pathways, although such pathways are already in existence. Surface water run-off will create a pathway for contamination to reach groundwater and adjacent sites, although this pathway is already in existence.

Buried services will be exposed to any contaminants within the soil through direct contact and site workers will come into contact with the soils during demolition and construction works. There is thus considered to be a low potential for a contaminant pathway to be present between any potential contaminant source and a target for the particular contaminant.

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

2.6.4 Preliminary Risk Appraisal

On the basis of the above it is considered that there is a low risk of there being a significant contaminant linkage at this site which would result in a requirement for major remediation work. Standard testing will identify if arsenic is elevated in the north of the site. Furthermore as there is no evidence of filled ground within the vicinity of the site there is not considered to be a significant potential for hazardous soil gas to be present on or migrating towards the site: there should thus be no need to consider soil gas exclusion systems.

3.0 SCREENING

The LBC guidance suggests that any development proposal that includes a subterranean basement should be screened to determine whether or not a full BIA is required.

3.1 Screening Assessment

A number of screening tools are included in the Arup document and for the purposes of this report reference has been made to Appendix E which includes a series of questions within a screening flowchart for three categories; groundwater flow; land stability; and surface water flow. Responses to the questions are tabulated below.

3.1.1 Subterranean (groundwater) Screening Assessment

Question	Response for Channing School
1a. Is the site located directly above an aquifer?	Yes, Secondary 'A' Aquifer
1b. Will the proposed basement extend beneath the water table surface?	Probably not, but will need to be confirmed by ground investigation. If a piled retaining wall is adopted it may extend below the basement level.
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No known spring or well within 100 m of the site, the nearest water feature is approximately 200 m south, which is thought to be fed from natural springs.
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	Yes, the proposed performance centre will reduce the percentage of grassed areas.
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	It is assumed that additional surface water will be discharged to existing surface water sewers, however this is not known (outside scope of this report)
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	No

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

Q1 The site is underlain by a Secondary 'A' Aquifer.
Q2 The site may be within 100 m of a spring line
Q4 A new extension will increase paved areas

3.1.2 Stability Screening Assessment

Question	Response for Channing School
1. Does the existing site include slopes, natural or manmade, greater than 7°?	Yes, there are manmade slopes greater than 7°
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	No.
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	Yes, Parts of the natural hillside setting include slopes greater than 7°.
5. Is the London Clay the shallowest strata at the site?	No, the Claygate Member is the shallowest strata
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	Yes, some trees will be felled and it is understood that there are no protected trees.
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	No - although the retaining walls forming the site boundary are old and appear to be suffering from bowing and weathering.
8. Is the site within 100 m of a watercourse or potential spring line?	No.
9. Is the site within an area of previously worked ground?	No
10. Is the site within an aquifer?	Yes, a Secondary 'A' aquifer
11. Is the site within 50 m of Hampstead Heath ponds?	No
12. Is the site within 5 m of a highway or pedestrian right of way?	Yes , the site is adjacent to The Bank, Winchester Place and Cholmeley Park
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No, the site is typically set higher than the neighbouring properties and the proposed basement will decrease differential depths of foundations.
14. Is the site over (or within the exclusion zone of) any tunnels, eg railway lines?	No

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

Q1 Currently there are slopes greater than 7°.
Q4 Parts of the natural hillside setting include slopes greater than 7°.
Q6 Some trees will be felled but and it is understood that there are no protected trees.
Q10 The site is underlain by a Secondary 'A' Aquifer.
Q12 The site is within 5 m of a public highway.

3.1.3 Surface Flow and Flooding Screening Assessment

This element of the BIA is provided for guidance only and should be confirmed by a suitably qualified engineer experienced in carrying out surface water assessments.

Question	Response for Channing School
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No

Question	Response for Channing School
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	Yes, some grassed areas will become developed with a new Performance Centre
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	No, but the increased hardstanding will increase the peak flow to existing surface water drainage.
5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses?	No
6. Is the site in an area known to be at risk from surface water flooding such as South Hampstead, West Hampstead, Gospel Oak and Kings Cross, or is it at risk of flooding because the proposed basement is below the static water level of a nearby surface water feature?	No

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

Q3 Some soft landscaping will be reduced by the construction of an extension

4.0 SCOPING AND SITE INVESTIGATION

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

4.1 Potential Impacts

The following potential impacts have been identified.

Potential Impact	Possible Consequence
The existing site includes slopes, natural or manmade, greater than 7°	Local slope instability within the site
The site within 100 m of a watercourse, well (used/ disused) or potential spring line	The flow from a spring, well or watercourse may increase or decrease if the groundwater flow regime is affected by a proposed basement. If the flow is diverted, it may result in the groundwater flow finding another location to issue from with new springs forming or old springs being reactivated. A secondary impact is on the quality of the water.
The site is within a wider hillside setting in which the general slope is greater than 7°?	Ground instability
Tree/s to be felled as part of the proposed development and/or works proposed within any tree protection zones where trees are to be retained?	The removal of trees may cause the recovery of the soil moisture deficit of clay, which may lead to swelling of the clay. Existing root systems may be adding stability to the existing slope and the removal of trees may induce instability.
The site is within an aquifer	Dewatering can cause ground settlement. The zone of settlement will extend for the dewatering zone, and thus could extend beyond a site boundary and affect neighbouring structures. Conversely, an increase in water levels can have a detrimental effect on stability.
Site within 5 m of a highway or pedestrian right of way	Excavation of a basement may result in structural damage to the road or footway; however work for the proposed basement at this site will take place at a distance of greater than 5 m from adjacent public highways.

Potential Impact	Possible Consequence
Proposed basement development may result in a change in the proportion of hard surface / paved external areas	A change in the proportion of hard surfaced or paved areas of a property will affect the way in which rainfall and surface water are transmitted away from the property. This includes changes to the surface water received by the underlying aquifers, adjacent properties and nearby watercourses. Changes could result in decreased flow, which may affect ecosystems or reduce amenity, or increased flow may additionally increase the risk of flooding.
Site located directly above an aquifer	Potentially the basement may extend into the underlying aquifer and thus affect the groundwater flow regime.

These potential impacts have been investigated through the site investigation, as detailed below.

4.2 Exploratory Work

In order to meet the objectives described in Section 1.2, a single cable percussion borehole was drilled to a depth of 20.00 m using a standard cable percussion rig and three boreholes were advanced using an opendrive sampler (Terrier rig) to depths of between 7.00 m and 9.00 m. Standard penetration tests (SPTs) were carried out at regular intervals in these boreholes. In addition three further boreholes were drilled by hand held window sampling equipment in areas only accessible with portable equipment. Disturbed and undisturbed samples were recovered from the boreholes and sent for laboratory examination, geotechnical testing and a suite of contamination analysis.

Access was available on land to the north of the site, on the adjacent residential property to allow a trial pit and borehole to be excavated to provide structural information and information on the ground conditions from that ground level.

Eleven trial pits were manually excavated adjacent to various existing elevations and boundary walls in order to expose and allow the inspection of the existing foundations. This work has not been completed as the depths of excavation required to reach foundations has been found to be in excess of that initially anticipated; some of the trial pits have been abandoned and omitted from the scope of works and further work is required to complete outstanding trial pits. The additional work will be reported as an addendum to this report.

The borehole and trial pit records and results of the laboratory analyses are appended, together with a site plan indicating the exploratory positions. The Temporary Bench Mark (TBM) levels shown on the borehole and trial pit records have been interpolated from spot heights shown on an undated site survey drawing (ref: 1509_B of unknown date), which was provided by the consulting engineers. It is apparent from knowledge of the surrounding ground levels that the spot heights on the survey drawing have not been related to an Ordnance Survey bench mark, but the drawing does not refer to the location or assumed value of an assumed site datum or TBM.

4.3 Sampling Strategy

The borehole and trial pit locations were positioned on site by GEA to provide optimum coverage of the site with due regard to the proposed development, whilst avoiding the areas of known services.

Groundwater monitoring standpipes were installed to depths of 7.00 m (35.57 m TBM), 7.00 m (40.60 m TBM), 8.50 m (41.50 m TBM) and 13.00 m (37.00 m TBM) in four of the

boreholes, in order to facilitate future monitoring. Each has been monitored on three occasions over a three week period.
Six samples of made ground were subjected to analysis for a range of common industrial contaminants and contamination indicative parameters. For this investigation the analytical suite for the soil included a range of metals, speciation of total petroleum hydrocarbons (TPH), polycyclic aromatic hydrocarbons (PAH), total cyanide and monohydric phenols. The 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. Details of the MCERTs accreditation and test methods are included in the Appendix together with the analytical results.

5.0 GROUND CONDITIONS

The investigation has confirmed the expected ground conditions in that, beneath a generally moderate but locally significant thickness of made ground, the Bagshot Formation was recorded to be underlain by the Claygate Member which was inturn underlain by the London Clay Formation which extended to the full depth of the investigation.

5.1 Made Ground

Borehole No 1 was drilled adjacent to a retaining wall in the north of the site and encountered a significant thickness of made ground which typically comprised dark brown and brown sandy gravelly occasionally cobbly clay or clayey sand with fragments of brick, concrete, ash, glass, pottery and clinker which extends to a depth of 5.6 m (39.97 m OD).

The made ground found in the other boreholes generally comprised dark brown and brown clayey gravelly sand with occasional fragments of brick and ash and extended to depths of between 0.4 m and 2.1 m. Made ground was absent from Borehole No 4.

No visual or olfactory evidence of contamination was observed within these soils, although fragments of ash, clinker, glass, pottery, were noted within the made ground, which can commonly contain elevated concentrations of polyaromatic hydrocarbons (PAH). Samples of the made ground have been analysed for a range of contaminants and the results are summarised in section 5.6.

5.2 Bagshot Formation

This stratum generally comprised light brown, locally orange-brown and reddish brown, fine to coarse sand which was occasionally silty and gravelly. In Borehole Nos 3, 4 and 7 only, which were located within the higher parts of the site, encountered a layer of firm light brown silty sandy clay to depths of between 1.50 m (46.50 m TBM) and 2.90 m (47.10 m TBM); this material may represent a downwash deposit. Below the clay light brown occasionally clayey and silty fine to medium sand extended to depths of between 6.50 m (43.50 m TBM) and 6.80 m (40.80 m TBM).

Laboratory testing has indicated that the upper clay layer encountered on the higher ground is of medium volume change potential.

No visual or obvious signs of contamination were noted in these soils.

5.3 Claygate Member

The Claygate Member was found to comprise a variable sequence of orange-brown to brown and mottled grey silty very sandy clay and a very clayey silty sand which was proved to a depth of 12.7 m (37.30 m TBM) and 4.5 m (35.70 m TBM).

5.4 London Clay Formation

The London Clay Formation comprised firm becoming stiff grey silty fissured clay with occasional selenite crystals which graded into a silty sandy clay below a depth of 16.5 m (33.5 m TBM) and extended to the maximum depth investigated of 20.00 m (30.00 m TBM)

No visual or obvious signs of contamination were noted in these soils.

5.5 Groundwater

Groundwater was encountered during drilling within the made ground, Bagshot Formation and Claygate Member at depths of between 2.0 m (38.00 m TBM) and 8.0 m (42.00 m TBM).

The results of monitoring of the standpipes installed at the site are presented in the table below.

Borehole No	Standpipe Depth m (Level m TBM)	Depth to groundwater in m (Level (m TBM))		
		29/11/11	7/12/11	14/12/11
1	7.0 (35.57)	4.05 (38.52)	4.02 (38.55)	4.03 (38.54)
2	7.0 (40.60)	5.11 (42.49)	5.07 (42.53)	5.07 (42.53)
3	8.5 (41.50)	7.12 (42.88)	7.15 (42.85)	7.19 (42.81)
4	13.0 (37.0)	6.65 (43.35)	6.65 (43.35)	6.67 (43.33)

The results of the groundwater monitoring indicate groundwater flowing towards the east, thus following the general topography as expected.

5.6 Soil Contamination

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

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US_{95}
Arsenic	18	10	None	16.4
Cadmium	0.82	0.12	None	0.6
Chromium	20	15	None	19.0
Copper	77	22	None	62.7
Mercury	1.0	0.43	None	1.1
Nickel	17	7.3	None	16.4
Lead	**1300**	180	None	**836.9**
Selenium	0.69	<0.20	Two	0.6

Determinant	Maximum concentration recorded (mg/kg)	Minimum concentration recorded (mg/kg)	Number of samples below detection limit	Normalised upper bound US_{95}
Zinc	490	83	None	369.8
Total Cyanide	0.5	<0.5	Five	0.5
Total Phenols	<0.3	<0.3	Six	0.3
Sulphide	20	2.9	None	13.2
TPH	150	<10	Four	88.5
Total PAH	**90**	<2	One	**59.3**
Benzo(a)pyrene	**8.6**	<0.1	One	**5.5**
Naphthalene	0.91	<0.1	One	0.7
Total organic carbon %	4.4	0.74	None	4.2
Note: Figure in bold indicates concentration in excess of risk-based soil guideline values, as discussed below				

5.6.1 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 contaminants of concern are those that have values in excess of a generic human health risk based guideline values which are either that of the CLEA[5] Soil Guideline Value where available, or is a Generic Guideline Value calculated using the CLEA UK Version 1.06 software assuming a residential end use.

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

- that groundwater 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 home-grown produce, consumption of soil adhering to home-grown 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 assessment of this site; however they are also considered to be conservative for the end use of the site as a school with children aged between 11 and 18 years of age. The tables of generic screening values derived by GEA and an explanation of how each value has been derived are included in the Appendix.

Where contaminant concentrations are measured at concentrations below the generic screening value it is considered that they pose an acceptable level of risk and thus further consideration of these contaminant concentrations is not required. However, where

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

concentrations are measured in excess of these generic screening values there is considered to be a potential that they could pose an unacceptable risk and thus further action will be required which could include;

- additional testing to zone the extent of the contaminated material and thus reduce the uncertainty with regard to its potential risk;
- site specific risk assessment to refine the assessment criteria and allow an assessment to be made as to whether the concentration present would pose an unacceptable risk at this site; or
- soil remediation or risk management to mitigate the risk posed by the contaminant to a degree that it poses an acceptable risk.

When comparing the results from the contamination testing to those in the Soil Guideline Values and Generic Guideline Values, the results of the contamination testing have indicated elevated concentrations of lead, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indendo(1,2,3-cd)pyrene and total polyaromatic hydrocarbons (PAH) within four samples of made ground tested. This assessment is based upon the potential for risk to human health, which at this site is considered to be the critical risk receptor.

Contaminant of Concern	Maximum concentration recorded (mg/kg)	Location(s) of elevated concentration(s)	Normalised upper bound US95	Generic Risk-Based Screening Value
Lead	1300	BH1-0.1m, BH6-0.2m	836.9	450
benzo(a)pyrene	8.6	BH1-0.1m, BH3 – 0.2m BH5-0.2	5.5	1.0
Total PAH	90	BH1-0.1m, BH3 – 0.2m BH5-0.2, BH6-0.2m	59.3	6.7

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

5.7 Existing Foundations

Trial pits completed to date show the boundary retaining wall to be founding upon natural soils between depths of 0.85 m and greater than 1.62 m.

The Sports Hall foundation has only been proved in one location, where the wall was found to be supported by a concrete foundation that steps out from the wall by 0.73 m and was bearing in natural sand at a depth of 1.65 m.

Trial Pit No 2 proved a concrete foundation for the main school building at a depth of 0.6 m bearing on natural sand.

Further work is scheduled to complete the trial pitting and this information will be provided in an addendum report, along with the complete trial pit records.

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 other aspects of the development.

6.0 INTRODUCTION

Consideration is being given to the demolition of the sports hall and construction of a three part building comprising a gymnasium, sixth form dance studio and performing arts centre which will have a partial basement. The main school building will be extended to the east at ground floor level only and the playing fields are to undergo some levelling. It is understood that the basement is to be single storey and will be approximately 3.85 m deep, extending to a level of 46.15 m TBM.

Loads have not been provided, but the currently proposed foundation scheme involves spread foundations and a sheet piled wall on the eastern elevation of the basement to maintain stability. The pre-planning structural drawings, reference 0573/050 Rev P2 dated 27.7.2011 from Heyne Tillett Steel have been reviewed to aid recommendations. The depth of the sheet piles are not known but it is assumed they would be approximately 8 m deep (42.00 m TBM), and are to be installed by non-percussive techniques.

7.0 GROUND MODEL

The desk study has revealed that the site has been used as private residences and more recently a school and on the basis of the fieldwork, the ground conditions at this site can be characterised as follows.

- Beneath a generally moderate, but locally significant thickness of made ground, the Bagshot Formation was recorded to be underlain by the Claygate Member which was in turn underlain by the London Clay Formation which extended to the full depth of the investigation;
- made ground was found to be absent in one location, but was found to extend to a maximum depth of 5.60 m (36.97 m TBM) and to typically comprise dark brown silty sandy gravelly clay or a clayey sand with fragments of brick and occasionally ash, glass, pottery and clinker;
- the Bagshot Formation comprised light brown, locally orange-brown and reddish brown occasionally fine to coarse sand, which was occasionally silty and fine gravelly and extended to depths of between 6.50 m (43.50 m TBM) and 6.80 m (40.80 m TBM);
- a layer of firm light brown silty sandy clay was recorded at a shallow depth within the Bagshot Formation on the higher ground;
- the Claygate Member comprised a variable sequence of orange-brown mottled grey silty very sandy clay and very clayey silty sand which was proved to depths of 12.7 m (37.30 m TBM) and 4.5 m (35.70 m TBM);
- the London Clay Formation comprised firm becoming stiff grey silty fissured clay with

occasional selenite crystals which graded into a silty sandy clay below a depth of 16.50 m (33.5 m TBM) and extended to the maximum depth investigated of 20.00 m (30.00 m TBM);

- groundwater was struck during drilling between depths of 2.0 m (38.20 m TBM) and 8.0 m (42.0 m TBM) within the made ground, Bagshot Formation and Claygate Member;
- monitoring of standpipes installed in four boreholes have indicated water to be at approximate depths of 7.0 m (43.00 m TBM) and 4.0 m (38.55 m TBM) at the highest and lowest levels of the site respectively;
- monitoring of the standpipes indicated groundwater flow toward the east; and
- contamination analyses have indicated elevated concentrations of lead, benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, dibenzo(a,h)anthracene, indendo(1,2,3-cd)pyrene and total PAH in four samples of made ground.

8.0 ADVICE AND RECOMMENDATIONS

Excavations for the proposed basement structure will require temporary support to maintain stability of the existing and surrounding structures and to prevent any excessive ground movements, including the stability of the existing slopes and retaining walls, and the completed structures will need to take account of the sloping ground and retaining walls. Based on the groundwater observations to date, groundwater is not likely to be encountered within the basement excavation.

Formation level for the proposed development is likely to be within the Bagshot Formation, which should provide an eminently suitable bearing stratum for spread foundations excavated from basement level. Alternatively, piled foundations would also provide a suitable solution.

It is likely that some form of remediation will be required due to soil contamination, however further testing could limit the amount of work carried out, which may be the most cost effective solution.

8.1 Basement Excavation

It is understood that the new basement will be excavated to a depth of approximately 3.85 m, to a level of 46.15 m TBM. Therefore formation level is likely to be within the medium dense to dense Bagshot Formation. The current proposals include the use of a sheet piled wall on the eastern elevation of the building to allow the construction of spread foundations at basement level.

Groundwater monitoring has measured water at a shallowest depth of 6.65 m, at a level of 43.35 m TBM in the area where the proposed basement will be built; therefore groundwater should not be encountered in the basement excavation. However it is essential that the standpipes are monitored to establish equilibrium levels and determine the extent of any seasonal fluctuations.

If sufficient space is available it may be possible to form at least parts of the excavation in open cut. In situ retaining walls can then be constructed within the excavation and the area behind the walls backfilled on completion. Suitable angles for the battered sides of the excavation are expected to be approximately 30° for the made ground and Bagshot Formation.

It would be prudent to excavate a number of trial pits to obtain a better idea of the stability of the Bagshot Formation if this approach is to be considered.

Care should be taken to protect the sides of any unsupported cut slopes during periods of rainfall and any run-off from construction operations until the retaining walls have been installed. Movement of plant at the top of any open cut should be prevented and daily inspections of the cut faces should be carried out to check stability.

The design of basement support in the temporary and permanent conditions needs to take account of the need to maintain the stability of the excavation, the existing slope, the surrounding structures including the retaining walls, as indicated by the screening and scoping.

If open cut is not appropriate, a contiguous bored pile wall could be installed prior to excavating the basement, and could be designed to support the existing structural loads. Sheet piling could also be used, but consideration will need to be given to the effects of noise and vibrations unless silent techniques are used. If water jetting is to be adopted to assist in installation of sheet piling the specialist piling contractor should provide assurance with respect to the risk of water jetting causing movement of immediately adjacent buildings and slopes. The investigation has indicated that groundwater should not be encountered within the depth of excavation and any localised inflows should be controllable by means of grouting between the piles and / or sump pumping.

The ground movements associated with the basement excavation will depend on the method of excavation and support and the overall stiffness of the basement structure in the temporary condition. Thus, a suitable amount of propping will be required to provide the necessary rigidity. In this respect the timing of the provision of support to the wall will have an important effect on movements. The stability of the existing foundations, if retained and surrounding structures and tress will need to be ensured at all times and the retaining walls will need to be designed to accommodate any loads from nearby foundations and retaining walls.

8.1.1 Slope Stability

The screening assessment has identified the presence of a man made slope with an angle in excess of 7° in the site.

At present slopes are generally well vegetated with grass or trees and generally shows no sign of any significant recent movement. It is understood that the re profiling of the site will not create any new significant slopes, merely moving the slopes backward into higher ground to create larger usable areas and that they will be designed and engineered during the site works.

Retaining walls form some parts of the site boundary, investigation is ongoing to confirm the founding depth and details. However, the proposed structure should incorporate suitable measures to ensure no additional load is passed onto the retaining.

Once the details of the basement excavation and slope reprofiling have been finalised an initial check should be made on overall stability and a slope stability analysis will be required if the work is considered to have any detrimental impact.

8.1.2 Basement Heave

The excavation of the basement will result in an approximate unloading of 80 kN/m^2, which will result in an elastic heave and long term swelling of the Claygate Member and London Clay. The effects of the longer term swelling movement within the Claygate Member and

London Clay will be mitigated by the continued presence of approximately 8.7 m thickness of sand, coupled with the load applied by the proposed foundations. It would however be prudent to conduct an analysis of these movements once the basement design has been finalised.

8.1.3 Basement Retaining Walls

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

Stratum	Bulk Density (kg/m^3)	Effective Cohesion (c' – kN/m^2)	Effective Friction Angle (Φ – degrees)
Made ground	1700	Zero	27
Bagshot Formation	1800	Zero	35

The design groundwater level should be determined on the basis of continued monitoring of the standpipes and the advice in BS8102:2009[6] should be followed with respect to waterproofing.

The retaining walls will need to be designed to take account of the overall stability of the slope and this will need to be considered in more detail once the layout has been finalised.

8.2 Spread Foundations

The excavation to form the basement will result in a formation level in the Bagshot Formation at approximately 46.15 m TBM and 43.75 m TBM on different levels. It should be possible to adopt moderate width pad or strip foundations in the medium dense granular soils of the Bagshot Formation at this level, designed to apply a net allowable bearing pressure of 200 kN/m^2 below the level of the proposed basement floor. This value incorporates an adequate factor of safety against bearing capacity failure and should ensure that settlement remains within normal tolerable limits.

The proposed extension to the main school building could also be founded upon within the Bagshot Formation and it should be possible to adopt moderate width pad or strip foundations in the dense granular soils of the Bagshot Formation at this level, designed to apply a net allowable bearing pressure of 200 kN/m^2. It would be prudent to incorporate a joint between the old and proposed extension.

In view of the presence of a layer of clay above the sand of the Bagshot Formation and the variability of the Claygate Formation it is recommended that additional targeted shallow investigation is considered once layout and levels are finalised.

8.3 Piled Foundations

For the ground conditions at this site some form of bored pile is likely to be the most appropriate type. A conventional rotary augered pile may be appropriate, with temporary casing installed through the Bagshot Formation and Claygate Member to maintain stability and prevent groundwater inflows. However, in view of the risk of groundwater inflows within the London Clay it is considered that the use of bored piles installed using continuous flight auger (cfa) techniques would be more appropriate.

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

The following table of ultimate coefficients may be used for the preliminary design of bored piles, which have been based on the SPT & Cohesion / level graph in the appendix.

Ultimate Skin Friction		**kN/m^2**
Made Ground and Bagshot Formation	All soil above 46.15 m TBM	Ignore (basement)
Bagshot Formation	46.15 m TBM to 43.2 m TBM	35
Claygate Member ($\alpha = 0.4$)	43.2 m TBM to 37.3 m TBM	Increasing linearly from 15 to 30
London Clay ($\alpha = 0.4$)	37.3 m TBM to 30.0 m TBM	Increasing linearly from 30 to 50
Ultimate End Bearing		**kN/m^2**
London Clay (Nc = 9)	40.0 m TBM to 30.0 m TBM	Increasing linearly from 540 to 1080

In the absence of pile tests, guidance from the London District Surveyors Association[7] (LDSA) suggests that a factor of safety of 2.6 should be applied to the above coefficients in the computation of safe theoretical working loads. On the basis of the above coefficients and a factor of safety of 2.6, it has been estimated that 450 mm diameter piles with lengths of 15 m and 20 m, founding at levels of 35.0 m TBM and 30.0 m TBM respectively, should provide safe working loads of 230 kN and 360 kN 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 a suitable piling scheme for this site.

8.4 Shallow Excavations

On the basis of the trial pit findings, it is considered unlikely that it will be feasible to form relatively shallow excavations that extend through the made ground and terminate within the Bagshot Formation without the requirement for lateral support. Where personnel are required to enter excavations, a risk assessment should be carried out and temporary lateral support or battering of the excavation sides will be required in order to comply with normal safety requirements.

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

8.5 Basement Floor Slabs

Following the removal of the made ground, it should be possible to adopt a lightly to moderately loaded ground bearing floor slab bearing on the Bagshot Formation.

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

Consideration may need to be given to designing the slab to accommodate heave movements and this should be considered in more detail once the proposed loads and levels are known. Consideration should also be given to the possible presence of clay at formation level, which should therefore be inspected if the slabs are within the zone of influence of trees.

8.6 Site Specific Risk Assessment

The chemical analyses have highlighted the presence of elevated concentrations of lead and a range of PAHs within four of the six samples of soil tested, at values that are in excess of the adopted generic screening values. This assessment has been conducted against a residential end use with plant uptake; which is considered to be conservative for this site occupied by a school. However, these concentrations could thus pose a potentially unacceptable risk to human health through direct contact, accidental ingestion or inhalation of soil or soil derived dust.

The exact source of the contamination is unknown, although is likely to be attributable to extraneous fragments of material being present within the samples tested. Analysis of the constituent PAHs in the sample from Borehole No 1 at 0.10 m indicate it to be of pyrogenic origin, as a result from partial combustion of hydrocarbons, and may be degraded oil or bitumen. Similar analysis on the sample from Borehole No 3 at 0.2 m indicate the elevated concentrations indicative of partial combustion of hydrocarbons. It is likely that these concentrations are from fragments of ash or clinker noted in some of the made ground at the site. Therefore, the contamination is not considered likely to be in a soluble form as the soil will have been subject to infiltration of rainwater for a significant amount of time, and hence none would remain if that were the case. The measured PAHs are also considered to be non-volatile or of a low volatility, and therefore do not present a significant vapour risk or a significant risk of leaching and migration within any groundwater.

The proposed gymnasium will cover the positions where the elevated concentrations were recorded in Borehole Nos 3 and 6. Direct contact with the soil will therefore be prevented and dusting of the soil is highly unlikely to occur in this location. It is therefore considered that the critical pathways for exposure to these contaminants will not be realised following the completion of the development and thus remedial action in this area would not be required in this respect.

Elevated concentrations within Borehole Nos 1 and 5 will however need further consideration and it would be prudent to conduct further chemical testing which could be carried out separately or incorporated with additional site investigation around the caretaker's house once access is available.

8.6.1 End Users and Landscaped Areas

In areas of soft landscaping, such as the playing fields, end users would potentially be exposed to the lead and PAH contamination in the made ground and in such areas precautions may therefore be required. Clearly it is not reasonable to remove the soil from all of the areas and in view of the short exposure durations it is considered likely that the generic risk assessment adopted is conservative. Additional risk assessment should therefore be carried out in due course following additional testing.

8.6.2 Site Workers

Site workers should be made aware of the contamination 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[8] and CIRIA[9] and the requirements of the Local

8 HSE (1992) HS(G)66 *Protection of workers and the general public during the development of contaminated land*

Authority Environmental Health Officer.

8.6.3 Services

Consideration may need to be given to the protection of buried plastic services laid within the made ground. Details of the proposed protection measures for buried plastic services will in any case need to be approved by the EHO and the relevant service authority prior to the adoption of any scheme. It is possible that barrier pipe will be required or additional testing will need to be carried out.

8.7 Waste Disposal

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

Based upon on the technical guidance provided by the Environment Agency[10] it is considered likely that the made ground from this site, as represented by the six chemical analyses carried out, would be generally classified as a Non-hazardous waste, whilst the natural soils may be classified as an Inert waste. However, it is recommended that a review should be carried out of the excess spoil that is likely to be generated and that should significant quantities of ash and clinker be encountered within this spoil that further testing be carried out to classify it as being a hazardous waste or a non-hazardous waste. WAC leaching tests should then be carried out on any material to be disposed of to landfill that is likely to be classified as being hazardous. Such WAC leaching tests may not be necessary upon samples of natural soils which are to be disposed of as an inert waste as the site may be considered as having had an uncontaminated history.

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

The above opinion with regard to the classification of the excavated soils is provided for guidance only and should be confirmed by the receiving landfill once the soils to be discarded have been identified.

The local waste regulation department of the Environment Agency (EA) should be contacted to obtain details of tips that are licensed to accept the soil represented by the test results. The tips will be able to provide costs for disposing of this material but may require further testing.

HMSO

9 CIRIA (1996) *A guide for safe working on contaminated sites* Report 132, Construction Industry Research and Information Association

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

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

9.0 BASEMENT IMPACT ASSESSMENT

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

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

Potential Impact	Site Investigation Conclusions
The site is underlain by an aquifer	The investigation has confirmed that the site is underlain by Secondary 'A' Aquifers: the Bagshot Formation and Claygate Member. On the basis of the findings of the investigation the proposed basement will not be located below the measured groundwater level; however, if sheet piles or any other form or piled wall are adopted they may be below the water table, and positioned roughly perpendicular to groundwater flow. However, groundwater flow should not be adversely as there is ample space outside the basement area for groundwater to flow around the piles, and possibly below them if they are shallow. Water should not therefore build up, nor will any dewatering be required.
Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	The desk study indicated that the site is not within 100 m of a water course or known well. It may however be within 100 m of a potential spring line. However the investigation has not indicated that the water levels are such that they will be affected by the proposed basement.
The development will reduce grassed areas and increase paved areas	It is understood that additional surface water will be discharged to existing sewers, which if necessary should be increased to cope with the extra capacity. Some grassed areas will still be in existence therefore flow to aquifers will remain.
Slopes greater than 7°	There are some manmade slopes at the site, some of which are vegetated and all appear to be in a stable state. The re-levelling of the site will create new slopes, however they will be suitably engineered to ensure that stability is maintained
Felling of trees	It is understood that the proposed trees that will be felled are mainly in the area of the proposed performance centre, which is mainly on flat land and does not thus present a significant negative impact on slope stability. Desiccation of the shallow clay has not been found in the investigation and on that basis there is not considered to be a risk of clay heave.
Location of public highway	The basement will be located within the site, at approximately 25 m from the closest highway; therefore this is not considered to represent a risk.

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

Site is underlain by an aquifer

The site is underlain by a Secondary 'A' aquifer which is in turn underlain by unproductive strata. If groundwater in the upper aquifer were forced to find an alternative flow route past an underground obstruction, that could cause the groundwater level within the zone encompassed by the new flow route to increase locally. The new basement will be underlain by the Bagshot Formation which will permit flow beneath the basement, as it does not toe into the London Clay.

The investigation has indicated that the groundwater level is below the proposed development, such that dewatering should not be necessary, and associated settlement will not occur. However, the proposed construction technique of utilising a sheet piled wall may provide a barrier to groundwater if they are to extend to a level of 42.00 m TBM. It is considered that the use of a sheet piled wall will not provide a significant barrier to groundwater flow as water will be able to pass around it, as there are no nearby basements and may also be able to pass underneath the piles as sand has been recorded to a level of 41.00 m TBM. Any increase in groundwater levels to the west of the sheet piled wall are likely to be minimal and should not cause associated instability.

Significant areas of grassland will remain at the site, so some percolation into the underlying aquifer will continue. The development should therefore not significantly affect the groundwater flow regime by lowering groundwater levels.

Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?

The basement will not interrupt any flow of groundwater as the groundwater level is lower than the proposed basement, furthermore the amount of groundwater within the aquifer should not rise as some soft landscaping areas will be removed. The development will decrease the amount of percolation at the site, however this is not considered to be significant as large areas of soft landscaping will remain, in the form of the playing fields. Therefore there is not considered to be any scope for detrimental impacts to groundwater.

The development will reduce grassed areas and increase percentage of hard standing

It is understood that extra surface water will be discharged to existing sewers, which if necessary should be increased to cope with the extra capacity, which should ensure that flooding is not caused by the development. Some grassed areas will still be in existence therefore flow to aquifers will remain, meaning there is a limited impact on local ecosystems.

Slopes within and adjacent to the site greater than 7°

At present the site is well vegetated and the existing slopes generally show no sign of any recent movement. It is understood that the re profiling of the site will not create any new significant slopes and will be designed and engineered during the site works.

The adjacent land does not have a known history for land instability, and it is considered that the proposals will not induce any significant forces to induce greater land instabilities off site.

Retaining walls form some parts of the site boundary and further investigation is proposed to confirm the founding depth and details. However, the investigation and proposed structure will incorporate suitable design to ensure no additional load is passed onto the retaining walls.

Location of public highway

The basement excavation will be approximately 25 m from the nearest public highway, such that the construction of the basement will not have a detrimental effect on the stability of adjacent highways.

Felling of trees

It is understood that trees proposed to be removed are in areas of mainly flat land, therefore removal of these trees will not have a detrimental impact on slope stability.

Felling of the trees should not have a significant negative impact on the soils, as they are currently underlain by a substantial thickness of sand, the Bagshot Formation.

10.0 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 may be required.

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

Elevated concentrations of contaminants have been recorded at the site and additional sampling and testing is recommended to enable any precautions required to be determined.

Trial pits should be excavated to examine the foundation details of the existing retaining wall.

The proposals for levelling of the playing fields will create new slopes, and consideration may need to be given to a slope stability analysis if the proposals significantly alter the current situation at the site.

Continued monitoring of the standpipes installed in the boreholes is essential to allow equilibrium groundwater levels to be established and the magnitude of any seasonal variations in level to be determined.

APPENDIX

Borehole Records

Borehole Cross-Sections

Geotechnical Test Results

SPT / Depth Graph

Chemical Analyses (Soil)

Generic Risk Based Screening Values

Envirocheck Extracts

Historical Maps

Site Plan

Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH1

Excavation Method	Dimensions	Ground Level (mTBM)	Client	Job Number
Opendrive Terrier Rig	150 mm to 1.00m	42.57	Channing School	J11240
	Location	**Dates** 10/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					(0.20)	Made ground (dark brown clayey silty sand with occasional gravel of brick)		
0.10	D			42.37	0.20			
0.50	D				(1.00)	Made ground (brown sandy clay with gravel of flint and brick)		
1.00-1.45	SPT N=4	DRY	0,1/1,1,1,1	41.37	1.20			
					(0.50)	Made ground (dark brown silty sandy clay with ash and brick fragments)		
1.50	D			40.87	1.70			
1.75	D			40.77	(0.10)	Made ground (brown and white sandy gravel of glass, pottery, concrete and old roots)		
2.00	D				1.80			
					(3.80)	Made ground (brown sandy gravelly occasionally cobbly clay with brick, ash and clinker)		
			Water strike(1) at 5.00m.					∇1
				36.97	5.60	Brown mottled grey very clayey silty SAND		
6.00	D				(1.40)			
				35.57	7.00			
						Complete at 7.00m		

Remarks
Standpipe installed to 7.0 m
Groundwater measured at a depth of 4.05 m (38.52 m TBM) on 29/11/11
Groundwater measured at a depth of 4.02 m (38.55 m TBM) on 7/12/11
Groundwater measured at a depth of 4.03 m (38.54 m TBM) on 14/12/11

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH1

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GEA Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH2
Excavation Method: Opendrive Terrier Rig	**Dimensions:** 150mm to 1.00m	**Ground Level (mTBM):** 47.60	**Client:** Channing School	**Job Number:** J11240
	Location:	**Dates:** 10/11/2011	**Engineer:** Heyne Tillett Steel	**Sheet:** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
						Made ground (brown clayey gravelly sand with occasional ash and cobbles of brick)		
0.50	D							
1.00-1.45	CPT N=2	DRY	0,0/1,0,1,0		(2.10)			
				45.50	2.10	Loose becoming medium dense light brown fine to medium SAND with little clay		
2.50	B							
					(4.70)			
4.50	B							
5.00-5.45	CPT N=8	5.00	1,1/2,2,2,2					
6.00-6.45	CPT N=11	5.00	Water strike(1) at 6.00m. 2,2/2,3,3,3					∇1
				40.80	6.80			
6.90	D			40.70	(0.10)	Firm light brown very sandy CLAY		
				40.60	6.90	Light brown fine to medium clayey SAND		
					(0.10)			
					7.00	Complete at 7.00m		

Remarks
Standpipe installed to 7.0 m
Groundwater measured at a depth of 5.11 m (42.49 m TBM) on 29/11/11
Groundwater measured at a depth of 5.07 m (42.53 m TBM) on 7/12/11
Groundwater measured at a depth of 5.07 m (42.53 m TBM) on 14/12/11

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH2

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Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH3

Excavation Method	Dimensions	Ground Level (mTBM)	Client	Job Number
Opendrive Terrier Rig	150mm to 1.00m	50.00	Channing School	J11240
	Location	**Dates** 10/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Made ground (dark brown clayey gravelly sand with occasional brick fragments)		
0.20	D			49.60	0.40			
0.50	B				(0.60)	Medium dense orange-brown and light brown fine to coarse SAND		
1.00-1.45	CPT N=27	DRY	2,3/5,5,8,9	49.00	1.00	Medium dense reddish brown clayey silty fine to coarse SAND		
1.50	B				(1.00)			
2.00-2.45	CPT N=11	DRY	2,2/2,3,3,3	48.00	2.00	Firm light brown silty sandy CLAY		
2.50	D				(0.90)			
3.00-3.45	CPT N=39	DRY	3,5/8,10,10,11	47.10	2.90	Dense becoming medium dense light brown silty fine to medium SAND		
4.00-4.45	CPT 55/295	DRY	5,10/13,13,15,14					
4.00	B				(3.60)			
5.00-5.45	CPT N=34	DRY	5,7/7,9,9,9					
6.00-6.45	CPT N=26	DRY	3,5/5,7,7,7					
				43.50	6.50	Brown clayey very silty SAND		
7.00-7.45	CPT N=27	DRY	1,3/5,7,7,8					
			Water strike(1) at 7.50m.					∇1
					(2.50)			
8.50	B							
				41.00	9.00			
						Complete at 9.00m		

Remarks
Standpipe installed to 8.5 m
Groundwater measured at a depth of 7.12 m (42.88 m TBM) on 29/11/11
Groundwater measured at a depth of 7.15 m (42.85 m TBM) on 7/12/11
Groundwater measured at a depth of 7.19 m (42.81 m TBM) on 14/12/11

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH3

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Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Borehole Number: BH4

Boring Method	Casing Diameter	Ground Level (mTBM)	Client	Job Number
Cable Percussion	150mm to 12.00m	50.00	Channing School	J11240
	Location	**Dates** 15/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					49.93	(0.07) 0.07	Block paving		
							Loose brown and reddish brown silty fine to coarse SAND		
0.40	D1								
0.90	D2					(1.73)			
1.20-1.65 1.20	SPT N=8 S1	1.20	DRY	2,2/2,2,2,2					
1.80	D3				48.20	1.80	Soft becoming firm brown silty very sandy CLAY		
2.00-2.45 2.00	SPT N=13 S2	2.00	DRY	1,2/2,3,3,5		(0.70)			
					47.50	2.50	Dense to medium dense light brown fine SAND		
2.80	D4								
3.00-3.45 3.00	SPT N=33 S3	3.00	DRY	3,6/7,8,9,9					
4.00-4.45 4.00	SPT N=34 S4	4.00	DRY	5,6/8,8,9,9					
						(4.30)			
5.00-5.45 5.00	SPT N=35 S5	5.00	DRY	5,6/8,8,9,10					
6.00-6.45 6.00	SPT N=16 S6	6.00	DRY	3,3/4,4,4,4					
					43.20	6.80	Firm orange-brown and grey very silty sandy CLAY, locally sandy		
7.20	D5								
7.50-7.95	U1								
8.00	D6			Water strike(1) at 8.00m.					▽1
9.00-9.45 9.00	SPT N=8 S7	9.00	8.80	2,2/2,2,2,2					
						(5.90)			

Remarks
Starter pit excavated to 1.2 m, 1hr 15 mins
Water added between 3.0 m and 6.8 m to assist drilling
Groundwater standpipe installed to a depth of 13.0 m
Three hours spent tidying up drilling position
Groundwater measured at a depth of 6.65 m (43.35 m TBM) on 29/11/11
Groundwater measured at a depth of 6.65 m (43.35 m TBM) on 7/12/11
Groundwater measured at a depth of 6.67 m (43.33 m TBM) on 14/12/11

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH4

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GEA Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Borehole Number: BH4
Boring Method: Cable Percussion	Casing Diameter: 150mm to 12.00m	Ground Level (mTBM): 50.00	Client: Channing School	Job Number: J11240
	Location:	Dates: 15/11/2011	Engineer: Heyne Tillett Steel	Sheet: 2/2

Depth (m)	Sample / Tests	Casing Depth (m)	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
10.50-10.95	U2								
11.00	D7					(5.90)			
12.00-12.45 12.00	SPT N=12 S8	12.00	DRY	2,3/3,3,3,3					
					37.30	12.70	Stiff brownish grey silty fissured CLAY with occasional selenite crystals		
12.80	D8								
13.50-13.95	U3								
14.00	D9					(3.80)			
15.00-15.45 15.00	SPT N=18 S9	12.00	14.70	3,3/4,4,5,5					
16.50-16.95	U4				33.50	16.50	Stiff brownish grey silty sandy CLAY with partings of silty sand		
17.00	D10								
18.00-18.45	U5					(3.50)			
18.50	D11								
19.50-19.95 19.50	SPT N=24 S10	12.00	18.90	4,4/5,6,6,7					
					30.00	20.00			

Remarks

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH4

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Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH5

Excavation Method	Dimensions	Ground Level (mTBM)	Client	Job Number
Drive-in Window Sampler		40.20	Channing School	J11240
	Location	**Dates** 16/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Made ground (dark brown mottled reddish brown clayey gravelly sand with occasional flint, ash and brick		
0.20	D			39.80	0.40	Made ground (brown clayey gravelly sand with occasional fragments of brick)		
1.00	D				(1.10)			
				38.70	1.50	Made ground (grey silty sandy gravelly clay with fragments of flint and brick)		
					(0.40)			
				38.30	1.90	Soft brown and very dark brown silty sandy gravelly CLAY		▽1
			Water strike(1) at 2.00m.		(0.60)			
				37.70	2.50	Soft brown mottled light grey silty sandy gravelly CLAY		
2.60	D				(2.00)			
				35.70	4.50	Soft brown and dark brown silty CLAY		
					(0.50)			
				35.20	5.00	Complete at 5.00m		

Remarks

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH5

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Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH6

Excavation Method	Dimensions	Ground Level (mTBM)	Client	Job Number
Drive-in Window Sampler		49.85	Channing School	J11240
	Location	**Dates** 16/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					(0.40)	Made ground (dark brown clayey silty gravelly organic sand)		
0.20	D			49.45	0.40			
0.50	D					Light brown gravelly fine to coarse SAND		
					(1.40)			
				48.05	1.80			
2.00	D					Orange-brown and reddish brown gravelly coarse SAND		
					(1.00)			
				47.05	2.80			
						Terminated at 2.80m		

Remarks
Groundwater not encountered
Borehole terminated at 2.8 m due to denity of soil

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH6

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GEA Geotechnical & Environmental Associates	Tyttenhanger House, Coursers Road, St Albans, AL4 0PG	Site: Channing School, The Bank, Highgate, London, N6 5HF	Number: BH7

Excavation Method	Dimensions	Ground Level (mTBM)	Client	Job Number
Drive-in Window Sampler		48.00	Channing School	J11240
	Location	**Dates** 16/11/2011	**Engineer** Heyne Tillett Steel	**Sheet** 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mTBM)	Depth (m) (Thickness)	Description	Legend	Water
					(0.30)	Made ground (dark brown clayey gravelly sand with occasional brick fragment)		
0.20	D			47.70	0.30			
0.40	D				(0.20)	Made ground (orangeish brown sand and gravel with occasional brick fragment)		
				47.50	0.50			
					(0.30)			
				47.20	0.80	Brown and reddish brown slightly clayey fine to coarse SAND		
1.00	D				(0.70)	Firm light brown mottled grey silty sandy CLAY		
				46.50	1.50	Light brown fine to coarse SAND		
2.00	D				(2.30)			
				44.20	3.80			
						Complete at 3.80m		

Remarks
Groundwater not encountered

Scale (approx)	Logged By
1:50	ME

Figure No. J11240.BH7

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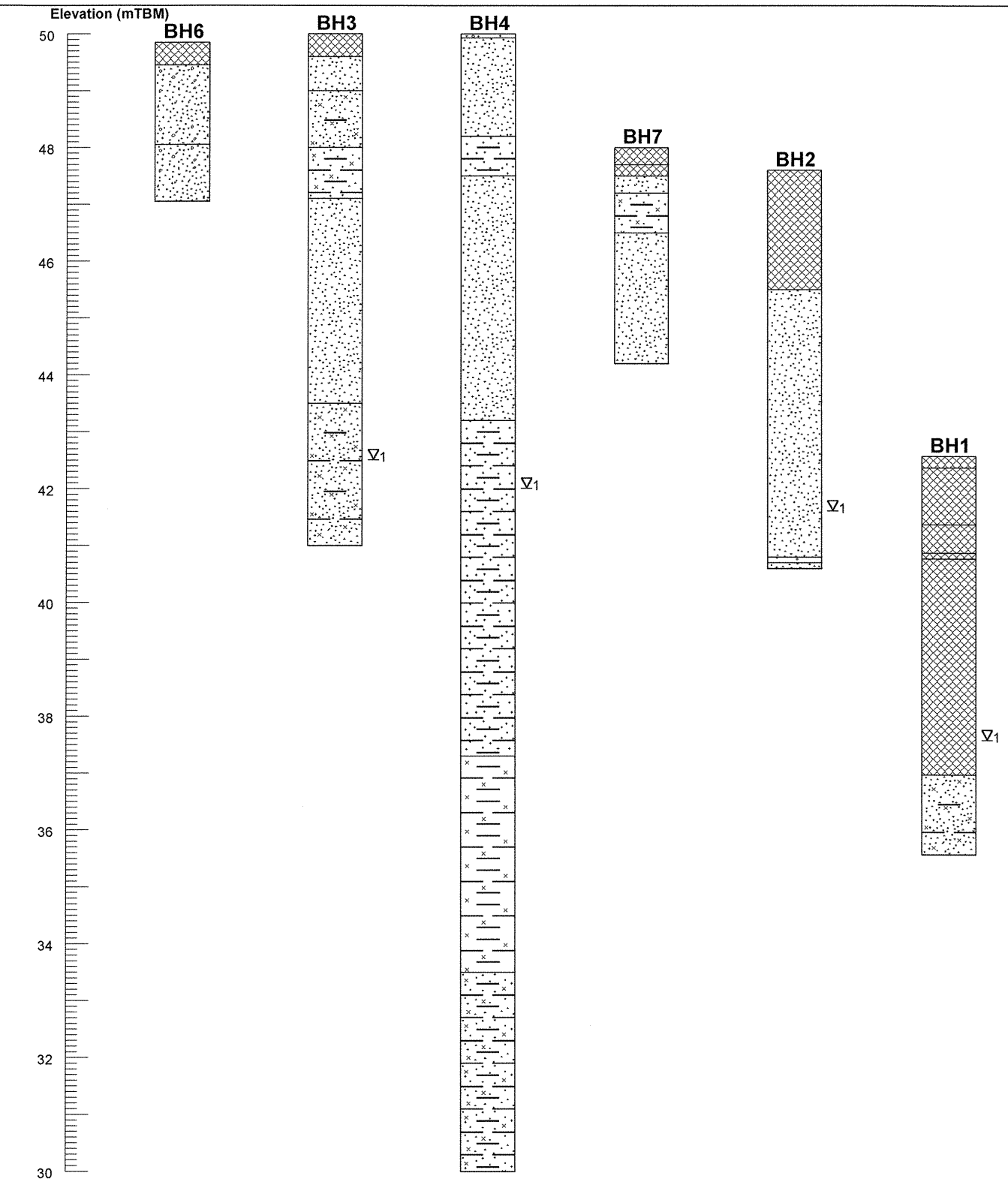

Key

- ∇ Groundwater Strike
- ▼ Strike Rise Level
- MADE GROUND
- Gravelly SAND
- CONCRETE
- Silty CLAY
- Sandy CLAY
- Silty sandy CLAY
- SAND
- Clayey SAND
- Clayey silty SAND

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
Channing School, The Bank, Highgate, London, N6 5HF	21/12/2011		1/1	J11240
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
Channing School			1:100[V]	J11240.1

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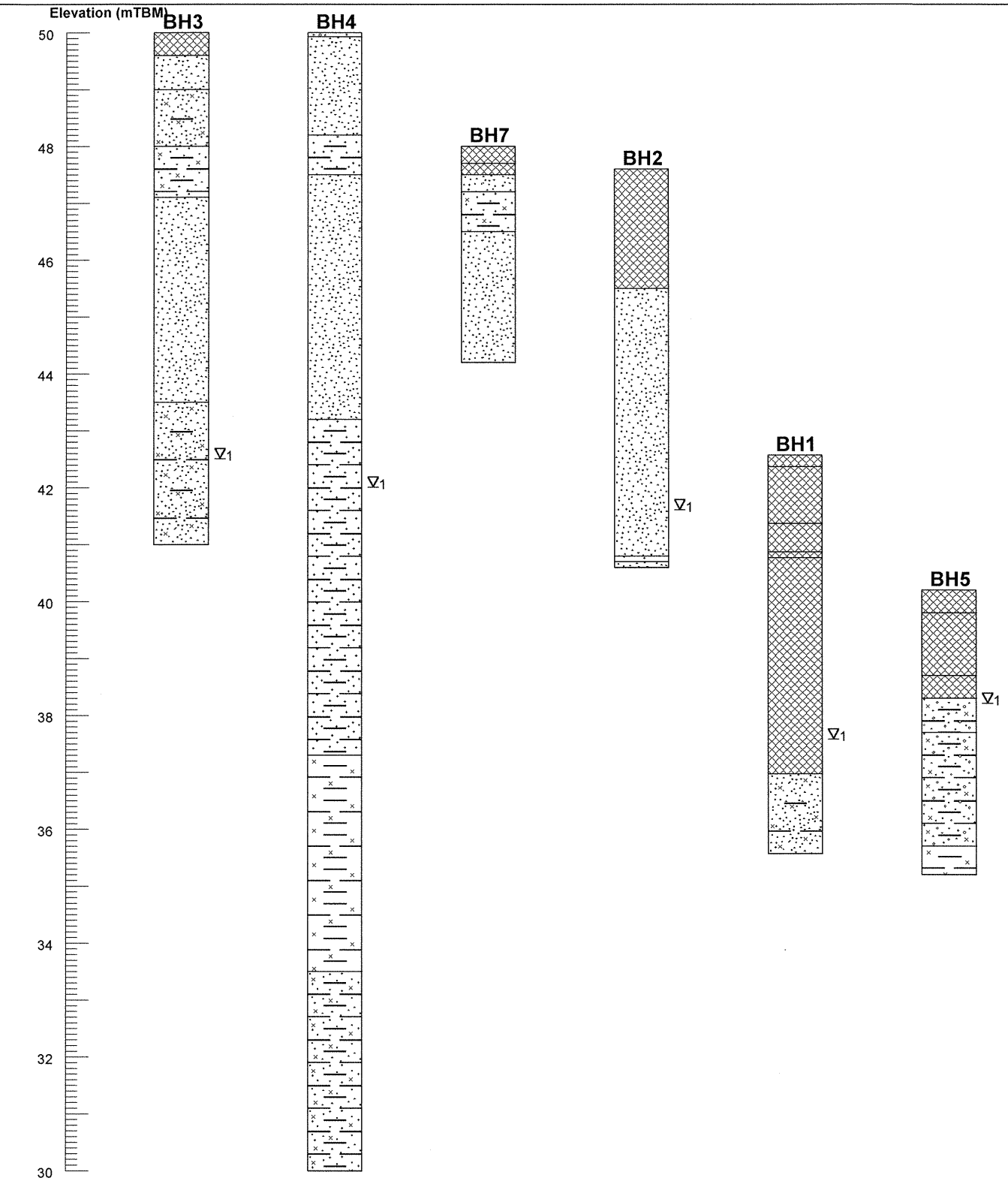

Key

- ∇ Groundwater Strike
- ▼ Strike Rise Level
- MADE GROUND
- Silty sandy CLAY
- CONCRETE
- Silty CLAY
- Sandy CLAY
- Silty sandy gravelly CLAY
- SAND
- Clayey SAND
- Clayey silty SAND

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Nominal Section

Site	Date Drawn	Date Checked	Sheet	Job Number
Channing School, The Bank, Highgate, London, N6 5HF	21/12/2011		1/1	J11240
Client	**Drawn By**	**Checked By**	**Scale**	**Figure No.**
Channing School			1:100[V]	J11240.1

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PROJECT NAME	CHANNING SCHOOL, LONDON	Date	12/12/2011
	Job Number: J11240	Approved	Simon Burke
PROJECT NO:	GEO / 17594	Page	1 of 2

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
1	6.00	-	D	Brown silty sandy CLAY														Particle Size Distribution Test
2	2.50	-	B	Orange and brown clayey fine SAND														Particle Size Distribution Test
2	4.50	-	B	Light brown and brown silty clayey fine SAND											7.3	0.049		Particle Size Distribution Test
3	1.50	-	B	Red brown slightly clayey SAND with rare gravel														Particle Size Distribution Test
3	2.50	-	D	Light grey-brown and orange fine sandy silty CLAY	25	54	23	31	100						5.5	0.031		
5	2.60	-	D	Brown, orange and grey slightly fine sandy silty CLAY with rare fine to medium flint gravel	22	39	19	20	99									
6	2.00	-	B	Red-brown clayey SAND with rare fine to medium gravel														Particle Size Distribution Test
7	1.00	-	D	Brown, orange and grey silty CLAY with rare rootlets	21	56	20	36	100									
4	4.00	3	D	Light brown silty clayey fine SAND														Particle Size Distribution Test
4	7.20	5	D	Dark orange brown and grey silty CLAY with rare fine sand	35	52	23	29	100						7.1	0.12		
4	7.50	1	U	Firm yellow clayey SILT	29					1.95	1.52	150	110	55				
4	10.50	2	U	Soft orange silty CLAY	29	39	24	15	100	1.99	1.54	210	46	23				

SUMMARY OF GEOTECHNICAL TESTING

GEOLABS®

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PROJECT NAME	CHANNING SCHOOL, LONDON	Date	12/12/2011
	Job Number: J11240	Approved	Simon Burke
PROJECT NO:	GEO / 17594	Page	2 of 2

Sample details					Classification Tests					Density Tests		Undrained Triaxial Compression Tests			Chemical Tests			
Borehole No.	Depth (m)	No.	Type	Description	MC (%)	LL (%)	PL (%)	PI	<425 mic (%)	Bulk (Mg/m³)	Dry (Mg/m³)	Cell Pressure (kPa)	Deviator Stress (kPa)	Shear Stress (kPa)	pH	2:1 W/S SO4 (g/l)	Ground Water SO4 (g/l)	Other tests and comments
4	13.50	3	U	Stiff dark grey silty CLAY	25					2.02	1.61	270	275	137				
4	16.50	4	U	Stiff dark grey silty CLAY	27	47	22	25	100	2.05	1.62	330	214	107				
4	18.00	5	U	Stiff dark grey silty CLAY	25					2.00	1.60	360	226	113	6.7	0.78		

SUMMARY OF GEOTECHNICAL TESTING

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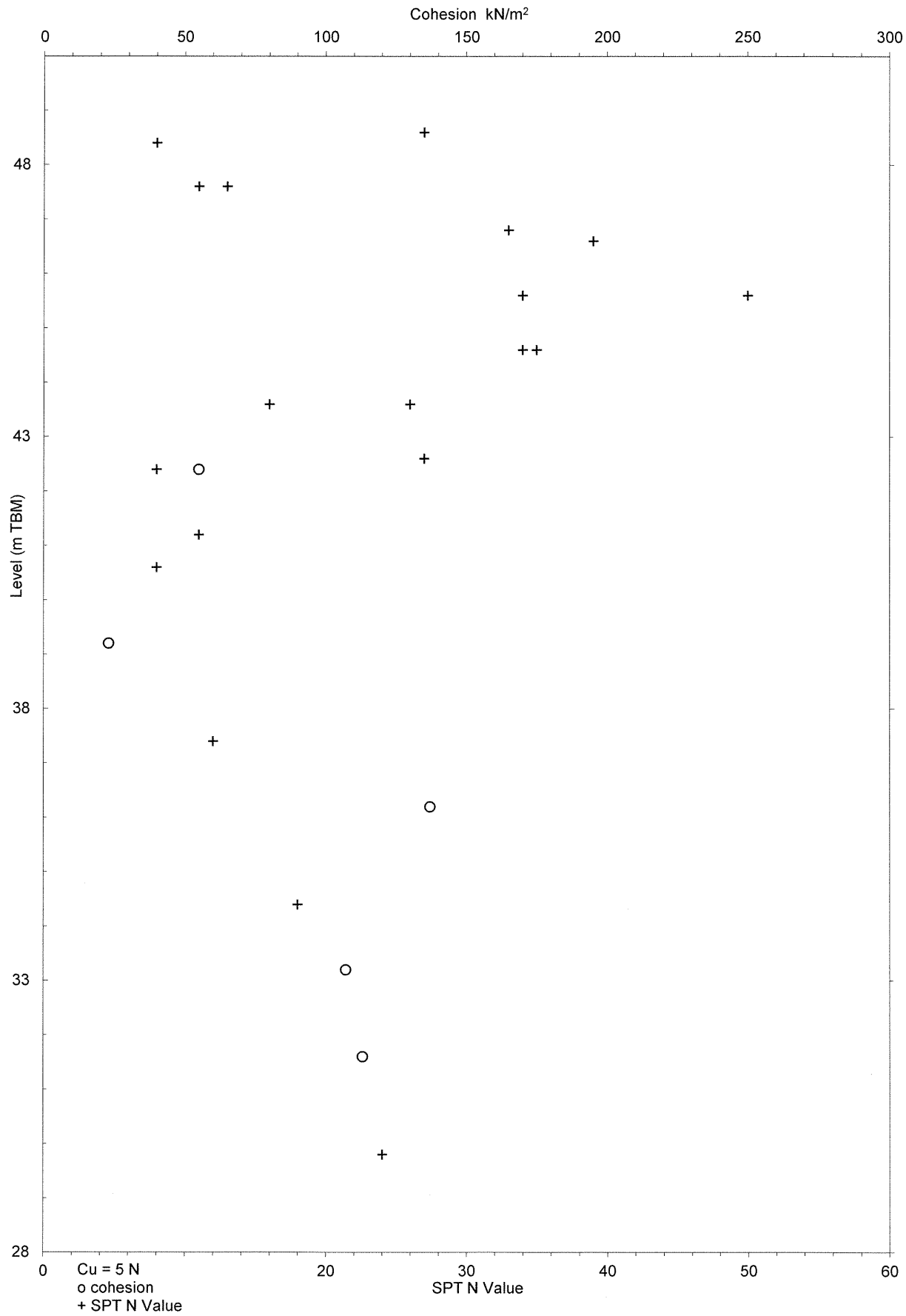
Geotechnical & Environmental Associates	Tyttenhanger House Coursers Road St Albans Herts AL4 0PG	**SPT & Cohesion / Level Graph**

Site	Channing School, The Bank, Highgate, London, N6 5HF	**Job Number** J11240
Client	Channing School	**Sheet** 1 / 1
Engineer	Heyne Tillett Steel	



GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Matthew Elcock

LABORATORY TEST REPORT

Results of analysis of 6 samples received 23 November 2011

Canning School, London J11240

Chemtest
The right chemistry to deliver results

Report Date
01 December 2011

Login Batch No					**160630**						
Chemtest LIMS ID					AG72844	AG72849	AG72850	AG72851	AG72853	AG72855
Sample ID					BH1	BH2	BH3	BH5	BH6	BH7
Sample No										
Sampling Date					10/11/2011	10/11/2011	10/11/2011	16/11/2011	16/11/2011	16/11/2011
Depth					0.1m	0.5m	0.2m	0.2m	0.2m	0.2m
Matrix					*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
SOP↓	Determinand↓	CAS No↓	Units↓	*						
2300	Cyanide (total)	57125	mg kg-1	M	<0.50	<0.50	<0.50	0.50	<0.50	<0.50
2325	Sulfide	18496258	mg kg-1	M	20	11	4.6	4.0	4.0	2.9
2625	Total Organic Carbon		%	M	4.4	0.74	1.8	3.9	4.1	2.8
2220	Chloride (extractable)	16887006	g l-1	M	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
2430	Sulfate (total) as SO4		mg kg-1		1600	700	700	1100	1300	1000
2450	Arsenic	7440382	mg kg-1	M	17	13	12	18	13	10
	Cadmium	7440439	mg kg-1	M	0.82	0.12	0.17	0.48	0.47	0.27
	Chromium	7440473	mg kg-1	M	17	16	15	20	18	19
	Copper	7440508	mg kg-1	M	61	22	23	42	45	77
	Mercury	7439976	mg kg-1	M	0.82	0.95	1.00	0.65	1.4	0.43
	Nickel	7440020	mg kg-1	M	17	8.6	7.3	16	17	11
	Lead	7439921	mg kg-1	M	490	360	290	410	1300	180
	Selenium	7782492	mg kg-1	M	0.66	<0.20	0.43	<0.20	0.69	0.48
	Zinc	7440666	mg kg-1	M	490	92	83	200	350	230
2670	TPH >C5-C6		mg kg-1	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C6-C7		mg kg-1	U	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C7-C8		mg kg-1	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C8-C10		mg kg-1	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C10-C12		mg kg-1	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C12-C16		mg kg-1	M	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1	< 0.1
	TPH >C16-C21		mg kg-1	M	37	< 0.1	< 0.1	15	< 0.1	< 0.1
	TPH >C21-C35		mg kg-1	M	110	< 0.1	< 0.1	46	< 0.1	< 0.1
	Total Petroleum Hydrocarbons		mg kg-1	U	150	< 10	< 10	61	< 10	< 10
2700	Naphthalene	91203	mg kg-1	M	0.91	< 0.1	0.27	0.3	0.6	0.4
	Acenaphthylene	208968	mg kg-1	M	1.1	< 0.1	0.12	0.17	0.15	< 0.1
	Acenaphthene	83329	mg kg-1	M	0.55	< 0.1	0.15	0.37	0.32	0.21
	Fluorene	86737	mg kg-1	M	0.33	< 0.1	0.1	0.11	< 0.1	< 0.1

All tests undertaken between 21/11/2011 and 28/11/2011

* Accreditation status

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

GEA
Tyttenhanger House
Coursers Road
St Albans Herts
AL4 0PG

FAO Matthew Elcock

LABORATORY TEST REPORT

Results of analysis of 6 samples received 23 November 2011

Canning School, London J11240

Chemtest
The right chemistry to deliver results

Report Date
01 December 2011

					160630					
					AG72844	AG72849	AG72850	AG72851	AG72853	AG72855
					BH1	BH2	BH3	BH5	BH6	BH7
					10/11/2011	10/11/2011	10/11/2011	16/11/2011	16/11/2011	16/11/2011
					0.1m	0.5m	0.2m	0.2m	0.2m	0.2m
					SOIL	*SOIL*	*SOIL*	*SOIL*	*SOIL*	*SOIL*
2700	Phenanthrene	85018	mg kg-¹	M	5	< 0.1	1.6	3.9	0.74	0.49
	Anthracene	120127	mg kg-¹	M	1.6	< 0.1	0.37	0.97	0.23	0.14
	Fluoranthene	206440	mg kg-¹	M	14	< 0.1	2.5	11	1.7	0.95
	Pyrene	129000	mg kg-¹	M	12	< 0.1	1.8	9	1.5	0.72
	Benzo[a]anthracene	56553	mg kg-¹	M	7	< 0.1	2.2	5.3	0.22	1.3
	Chrysene	218019	mg kg-¹	M	7.3	< 0.1	1.3	5.9	0.91	0.47
	Benzo[b]fluoranthene	205992	mg kg-¹	M	11	< 0.1	1.1	4.5	0.91	0.54
	Benzo[k]fluoranthene	207089	mg kg-¹	M	4.8	< 0.1	0.71	3.7	0.69	0.24
	Benzo[a]pyrene	50328	mg kg-¹	M	8.6	< 0.1	1.4	4.8	0.96	0.55
	Dibenzo[a,h]anthracene	53703	mg kg-¹	M	1.1	< 0.1	0.84	0.46	0.25	< 0.1
	Indeno[1,2,3-cd]pyrene	193395	mg kg-¹	M	6.8	< 0.1	1.2	2.8	0.51	< 0.1
	Benzo[g,h,i]perylene	191242	mg kg-¹	M	7.7	< 0.1	2.6	2.6	0.76	< 0.1
	Total (of 16) PAHs		mg kg-¹	M	90	< 2	18	56	10	6
2920	Phenols (total)		mg kg-¹	N	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
2010	pH			M	7.8	7.8	7.2	7.5	7.5	7.3
2030	Moisture		%	n/a	17.9	9.89	10.7	20.2	17.7	20.8
	Stones content (>50mm)		%	n/a	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
2040	Soil colour			n/a	brown	brown	brown	brown	brown	brown
	Soil texture			n/a	sand	sand	sand	sand	sand	sand
	Other material			n/a	stones	stones	stones	stones	stones	stones

All tests undertaken between 21/11/2011 and 28/11/2011

* Accreditation status

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

GEA Geotechnical & Environmental Associates

Tyttenhanger House
Coursers Road
St Albans
AL4 0PG

Generic Risk-Based Soil Guideline Values

Site	Channing School, The Bank, Highgate, London, N6 5HF	**Job Number** J11240
Client	Channing School	**Sheet** 1 / 1
Engineer	Heyne Tillett Steel	

Proposed End Use Residential with plant uptake

Soil pH 8

Soil Organic Matter content % 6.0

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

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

Notes

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

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

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

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

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

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

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

Site	Channing School, The Bank, Highgate, London, N6 5HF	**Job Number** J11240
Client	Channing School	**Sheet** 1 / 1
Engineer	Heyne Tillett Steel	

PAH SOURCE

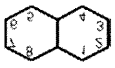
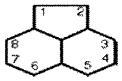
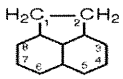
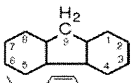
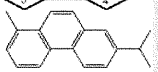
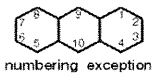
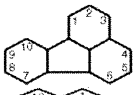
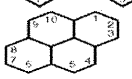
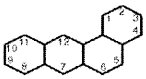
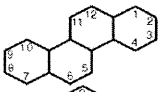
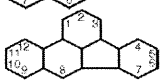
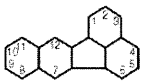
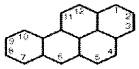
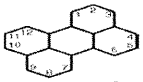
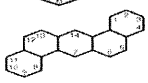
Indicative PAH origin indicator V 1.03 MRP 08/03/2010

Enter concentration data in purple cells below, if any species is below detection limit enter the concentration as the detection limit

Borehole / TP No. BH1
Depth (m) 0.1

Sample description

Made Ground (grass over dark brown clayey silty sand with occasional gravel of brick)

PAH Species		Concentration mg/kg	
naphthalene		0.91	1.0%
acenaphthylene		1.10	1.2%
acenaphthene		0.55	0.6%
fluorene		0.33	0.4%
phenanthrene		5.00	5.6%
anthracene	 numbering exception	1.60	1.8%
fluoranthene		14.00	15.6%
pyrene		12.00	13.4%
benzo(a)anthracene		7.00	7.8%
chrysene		7.30	8.1%
benzo(b)fluoranthene		11.00	12.3%
benzo(k)fluoranthene		4.80	5.3%
benzo(a)pyrene		8.60	9.6%
indeno(1,2,3-cd)pyrene		6.80	7.6%
dibenzo(a,h)anthracene		1.10	1.2%
benzo(ghi)perylene		7.70	8.6%
Total PAH		**89.79**	

Flouranthene:pyrene and Phenanthrene:anthracene ratios suggest this material to be;

Typical made ground with ash etc containing part burnt coal / coal tar / pre-war tarmac

and to be of a **pyrogenic** origin

i.e. it originates from the partial combustion of hydrocarbons

Specific proportions of individual PAHs are indicative of this material being;

-- **Degraded Oil / Bitumen an unknown material**

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

Site	Channing School, The Bank, Highgate, London, N6 5HF	**Job Number** J11240
Client	Channing School	**Sheet** 1 / 1
Engineer	Heyne Tillett Steel	

PAH SOURCE

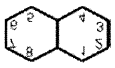
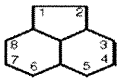
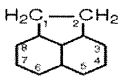
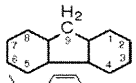
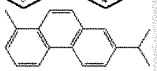
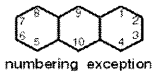
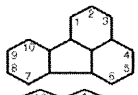
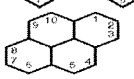
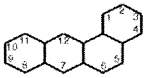
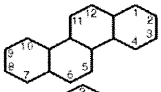
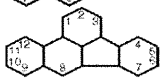
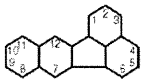
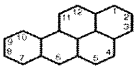
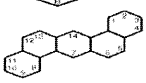
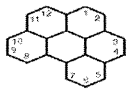
Indicative PAH origin indicator V 1.03 MRP 08/03/2010

Enter concentration data in purple cells below, if any species is below detection limit enter the concentration as the detection limit

Borehole / TP No. BH3
Depth (m) 0.2

Sample description

Made Ground (dark brown clayey gravelly sand with occasional fragments of brick)

PAH Species		Concentration mg/kg	
naphthalene		0.27	1.5%
acenaphthylene		0.12	0.7%
acenaphthene		0.15	0.8%
fluorene		0.10	0.5%
phenanthrene		1.60	8.8%
anthracene	 numbering exception	0.37	2.0%
fluoranthene		2.45	13.5%
pyrene		1.80	9.9%
benzo(a)anthracene		2.20	12.1%
chrysene		1.30	7.1%
benzo(b)fluoranthene		1.10	6.0%
benzo(k)fluoranthene		0.71	3.9%
benzo(a)pyrene		1.40	7.7%
indeno(1,2,3-cd)pyrene		1.20	6.6%
dibenzo(a,h)anthracene		0.84	4.6%
benzo(ghi)perylene		2.60	14.3%
Total PAH		**18.21**	

Flouranthene:pyrene and Phenanthrene:anthracene ratios suggest this material to be;

Less common PAH from specific source

and to be of a **pyrogenic** origin

i.e. it originates from the partial combustion of hydrocarbons

Specific proportions of individual PAHs are indicative of this material being;

--

Envirocheck® Report:

Datasheet

Order Details:

Order Number:
36635444_1_1

Customer Reference:
J11240

National Grid Reference:
528770, 187380

Slice:
A

Site Area (Ha):
0.94

Search Buffer (m):
1000

Site Details:

Channing School
Highgate Hill
LONDON
N6 5HF

Client Details:

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

Contents

Report Section	Page Number
Summary	-
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Introduction

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

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

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Radon Potential dataset Copyright Notice

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Report Version v47.0

Geotechnical & Environmental Associates

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Agency & Hydrological					
Contaminated Land Register Entries and Notices					
Discharge Consents	pg 1			1	1
Enforcement and Prohibition Notices					
Integrated Pollution Controls					
Integrated Pollution Prevention And Control					
Local Authority Integrated Pollution Prevention And Control					
Local Authority Pollution Prevention and Controls	pg 1		1	2	4
Local Authority Pollution Prevention and Control Enforcements					
Nearest Surface Water Feature	pg 2		Yes		
Pollution Incidents to Controlled Waters	pg 2				2
Prosecutions Relating to Authorised Processes					
Prosecutions Relating to Controlled Waters					
Registered Radioactive Substances	pg 2				15
River Quality					
River Quality Biology Sampling Points					
River Quality Chemistry Sampling Points					
Substantiated Pollution Incident Register					
Water Abstractions					
Water Industry Act Referrals	pg 5				1
Groundwater Vulnerability	pg 5	Yes	n/a	n/a	n/a
Bedrock Aquifer Designations	pg 5	Yes	n/a	n/a	n/a
Superficial Aquifer Designations			n/a	n/a	n/a
Source Protection Zones					
Extreme Flooding from Rivers or Sea without Defences				n/a	n/a
Flooding from Rivers or Sea without Defences				n/a	n/a
Areas Benefiting from Flood Defences				n/a	n/a
Flood Water Storage Areas				n/a	n/a
Flood Defences				n/a	n/a
Waste					
BGS Recorded Landfill Sites					
Historical Landfill Sites					
Integrated Pollution Control Registered Waste Sites					
Licensed Waste Management Facilities (Landfill Boundaries)					
Licensed Waste Management Facilities (Locations)					
Local Authority Recorded Landfill Sites					
Registered Landfill Sites					
Registered Waste Transfer Sites					
Registered Waste Treatment or Disposal Sites					

Summary

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Hazardous Substances					
Control of Major Accident Hazards Sites (COMAH)					
Explosive Sites					
Notification of Installations Handling Hazardous Substances (NIHHS)					
Planning Hazardous Substance Consents					
Planning Hazardous Substance Enforcements					
Geological					
BGS Recorded Mineral Sites					
BGS 1:625,000 Solid Geology	pg 7	Yes	n/a	n/a	n/a
Brine Compensation Area			n/a	n/a	n/a
Coal Mining Affected Areas			n/a	n/a	n/a
Mining Instability			n/a	n/a	n/a
Man-Made Mining Cavities					
Natural Cavities					
Non Coal Mining Areas of Great Britain				n/a	n/a
Potential for Collapsible Ground Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Compressible Ground Stability Hazards				n/a	n/a
Potential for Ground Dissolution Stability Hazards				n/a	n/a
Potential for Landslide Ground Stability Hazards	pg 7	Yes	Yes	n/a	n/a
Potential for Running Sand Ground Stability Hazards	pg 7	Yes		n/a	n/a
Potential for Shrinking or Swelling Clay Ground Stability Hazards	pg 7	Yes		n/a	n/a
Radon Potential - Radon Affected Areas			n/a	n/a	n/a
Radon Potential - Radon Protection Measures			n/a	n/a	n/a
Industrial Land Use					
Contemporary Trade Directory Entries	pg 8		13	n/a	n/a
Fuel Station Entries	pg 9			1	1

Data Type	Page Number	On Site	0 to 250m	251 to 500m	501 to 1000m (*up to 2000m)
Sensitive Land Use					
Areas of Adopted Green Belt					
Areas of Unadopted Green Belt					
Areas of Outstanding Natural Beauty					
Environmentally Sensitive Areas					
Forest Parks					
Local Nature Reserves	pg 10			1	1
Marine Nature Reserves					
National Nature Reserves					
National Parks					
Nitrate Sensitive Areas					
Nitrate Vulnerable Zones					
Ramsar Sites					
Sites of Special Scientific Interest					
Special Areas of Conservation					
Special Protection Areas					

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
1	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: Reservoir/Borehole Site Location: Highgate Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0148 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A12SE (W)	390	1	528300 187300
2	**Discharge Consents** Operator: Thames Water Utilities Ltd Property Type: Reservoir/Borehole Site Location: Maiden Lane Authority: Environment Agency, Thames Region Catchment Area: Not Supplied Reference: Temp.0179 Permit Version: 1 Effective Date: 15th September 1989 Issued Date: 15th September 1989 Revocation Date: 5th October 2000 Discharge Type: Trade Effluent Discharge Environment: Freshwater Stream/River Receiving Water: River Thames **Status: Authorisation revokedRevoked** Positional Accuracy: Located by supplier to within 100m	A8SE (S)	817	1	528900 186500
3	**Local Authority Pollution Prevention and Controls** Name: First Choice Location: 5 Highgate High Street, London, N6 5jr Authority: London Borough of Camden, Pollution Projects Team Permit Reference: PPC/DC3 Dated: 12th January 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Located by supplier to within 10m	A13SW (W)	113	2	528575 187336
4	**Local Authority Pollution Prevention and Controls** Name: Archway Dry Cleaners Location: 194 Archway Road, London, N6 5bb Authority: London Borough of Haringey, Planning and Environmental Health Permit Reference: DC05 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A13NE (NE)	255	3	528968 187662
5	**Local Authority Pollution Prevention and Controls** Name: John Nichol Service Station Location: 31 North Road, LONDON, N6 4BF Authority: London Borough of Haringey, Planning and Environmental Health Permit Reference: PV-11 Dated: 17th April 2001 Process Type: Local Authority Air Pollution Control Description: PG1/14 Petrol filling station **Status: Authorised** Positional Accuracy: Manually positioned to the address or location	A12NE (NW)	478	3	528296 187611
6	**Local Authority Pollution Prevention and Controls** Name: Prestige Dry Cleaners Location: 289 Archway Road, London, N6 5aa Authority: London Borough of Haringey, Planning and Environmental Health Permit Reference: DC39 Dated: Not Supplied Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A18NW (N)	678	3	528581 188078

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
7	**Local Authority Pollution Prevention and Controls** Name: Bogards Location: 87 Hazelville Road, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC07/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A14NE (E)	858	4	529696 187560
8	**Local Authority Pollution Prevention and Controls** Name: Quicksilver Dry Cleaners Location: 63 Junction Road, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC33/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9SW (SE)	893	4	529352 186636
9	**Local Authority Pollution Prevention and Controls** Name: Golden Dry Cleaners Location: 649 Holloway Road, London Authority: London Borough of Islington, Environmental Health Department Permit Reference: PPC/DC25/07 Dated: 5th July 2007 Process Type: Local Authority Pollution Prevention and Control Description: PG6/46 Dry cleaning **Status: Permitted** Positional Accuracy: Manually positioned to the address or location	A9NE (SE)	971	4	529543 186728
	Nearest Surface Water Feature	A13SW (SW)	178	-	528581 187196
10	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: Beddington Stw Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 14th April 1989 Incident Reference: SE890125 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 3 - Minor Incident Positional Accuracy: Located by supplier to within 100m	A8NE (S)	506	1	528800 186800
11	**Pollution Incidents to Controlled Waters** Property Type: Not Given Location: FINCHLEY Authority: Environment Agency, Thames Region Pollutant: Oils - Unknown Note: Confirmed As A Pollution Incident Incident Date: 28th October 1993 Incident Reference: NE930729 Catchment Area: Not Given Receiving Water: Not Given Cause of Incident: Not Given Incident Severity: Category 2 - Significant Incident Positional Accuracy: Located by supplier to within 100m	A12SW (W)	890	1	527800 187280
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: BZ9014 Dated: 16th May 2007 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	517	1	529141 186954

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: Bw7139 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	517	1	529141 186954
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: Bk8648 Dated: 29th June 2001 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	517	1	529141 186954
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: Bk8630 Dated: 29th June 2001 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	517	1	529141 186954
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, LONDON, Greater London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: AQ7909 Dated: 18th October 1995 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Substantial variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	517	1	529136 186949
12	**Registered Radioactive Substances** Name: Bloomsbury And Islington Health Authority Location: Whittington Hospital, St. Marys Wing, Highgate Hill, LONDON, Greater London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: AF3872 Dated: 31st July 1992 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Unknown	A9NW (SE)	517	1	529141 186954
12	**Registered Radioactive Substances** Name: Whittington Hospital NHS Trust Location: St. Marys Wing, Highgate Hill, LONDON, Greater London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: AW7673 Dated: 17th June 1997 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Initial variation to an authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	518	1	529146 186959

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
12	**Registered Radioactive Substances** Name: Whittington Hospital Nhs Trust Location: St. Marys Wing, Highgate Hill, LONDON, Greater London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: AD3049 Dated: 31st March 1991 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	521	1	529146 186954
12	**Registered Radioactive Substances** Name: Whittington Hospital NHS Trust Location: St. Marys Wing, Highgate Hill, LONDON, Greater London, N19 5NF Authority: Environment Agency, Thames Region Permit Reference: AQ7925 Dated: 19th October 1995 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of multiple open sources which are also the subject of authorisations **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	524	1	529146 186949
13	**Registered Radioactive Substances** Name: University College London Location: Archway Wing, Archway Road, London, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: CB0021 Dated: 20th February 2007 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	624	1	529293 186970
13	**Registered Radioactive Substances** Name: University College London Location: University College London School Of Medicine,Archway Wing, Whittington Hospital,Archway Road, LONDON, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: Bz9740 Dated: 1st February 2006 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Manually positioned to the address or location	A9NW (SE)	624	1	529292 186969
13	**Registered Radioactive Substances** Name: University College London Location: Archway Wing, Archway Road, London, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: Bw7473 Dated: 1st December 2003 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Minor variation to authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	624	1	529293 186970
13	**Registered Radioactive Substances** Name: University College London Location: University College London; School Of Med, Archway Wing, Whittington Hospital Archway Road, LONDON, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: BF4504 Dated: 5th May 1999 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Substantial variation to a registration under the Act of an open source which is also the subject of an authorisation **Status: Application has been authorised and any conditions apply to the operatorAuthorised** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	624	1	529293 186970

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
13	**Registered Radioactive Substances** Name: University College London Location: University College London School Of Medicine, Archway Wing, Whittington Hospital, LONDON, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: AS3170 Dated: 19th October 1995 Process Type: Registration under S7 RSA for the keeping and use of Radioactive materials (was RSA60 S1) Description: Registration under the Act of an open source which is also the subject of an authorisation **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	624	1	529293 186970
13	**Registered Radioactive Substances** Name: University College London Location: University College London ;school Of Med, Whittington Hospital, Archway Road, LONDON, N19 3UA Authority: Environment Agency, Thames Region Permit Reference: BB6793 Dated: 5th February 1999 Process Type: Authorisation under S13 RSA for the disposal of Radioactive waste (was RSA60 S7) Description: Authorisation under RSA **Status: Authorisation superseded by a substantial or non substantial variationSuperseded** Positional Accuracy: Automatically positioned to the address	A9NW (SE)	627	1	529293 186965
14	**Water Industry Act Referrals** Name: J Bull Location: 265 Archway Road, LONDON, N6 5BS Authority: Environment Agency, Thames Region Permit Reference: AR7670 Dated: 26th May 1995 Process Type: Permissions or amendments to discharge under the Water Industry Act 1991 Description: Processes which result in the discharge of Special Category effluents under The Trade Effluents (Prescribed Processes and Substances) Regulations **Status: Application received by the EA but is not yet authorisedNot Yet Authorised** Positional Accuracy: Automatically positioned to the address	A18SW (N)	585	1	528690 188016
	Groundwater Vulnerability Soil Classification: Soils of High Leaching Potential (U) - Soil information for restored mineral workings and urban areas is based on fewer observations than elsewhere. A worst case vulnerability classification (H) assumed, until proved otherwise Map Sheet: Sheet 39 West London Scale: 1:100,000	A13SE (N)	0	1	528773 187375
	Drift Deposits None				
	Bedrock Aquifer Designations Aquifer Desination: Secondary Aquifer - A	A13SE (N)	0	5	528773 187375
	Superficial Aquifer Designations No Data Available				
	Extreme Flooding from Rivers or Sea without Defences None				
	Flooding from Rivers or Sea without Defences None				
	Areas Benefiting from Flood Defences None				
	Flood Water Storage Areas None				
	Flood Defences None				

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	Local Authority Landfill Coverage Name: London Borough of Haringey - Has supplied landfill data		0	7	528773 187375
	Local Authority Landfill Coverage Name: London Borough of Camden - Has no landfill data to supply		12	8	528729 187305
	Local Authority Landfill Coverage Name: London Borough of Islington - Has no landfill data to supply		119	4	528840 187216

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
	BGS 1:625,000 Solid Geology Description: London Clay	A13NE (NE)	0	5	528790 187392
	BGS 1:625,000 Solid Geology Description: Barton, Bracklesham and Bagshot Beds	A13SE (N)	0	5	528773 187375
	Coal Mining Affected Areas In an area which may not be affected by coal mining				
	Non Coal Mining Areas of Great Britain No Hazard				
	Potential for Collapsible Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Potential for Compressible Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Potential for Ground Dissolution Stability Hazards No Hazard				
	Potential for Landslide Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (SE)	149	5	528916 187261
	Potential for Landslide Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13NE (E)	231	5	529079 187376
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SW (SW)	232	5	528579 187134
	Potential for Landslide Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13NW (NW)	244	5	528564 187564
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Very Low Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	5	528773 187322
	Potential for Running Sand Ground Stability Hazards Hazard Potential: Low Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Potential for Running Sand Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	168	5	528802 187142
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: Moderate Source: British Geological Survey, National Geoscience Information Service	A13SE (S)	0	5	528773 187322
	Potential for Shrinking or Swelling Clay Ground Stability Hazards Hazard Potential: No Hazard Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Radon Potential - Radon Affected Areas Affected Area: The property is in a lower probability radon area, as less than 1% of homes are above the action level Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375
	Radon Potential - Radon Protection Measures Protection Measure: No radon protective measures are necessary in the construction of new dwellings or extensions Source: British Geological Survey, National Geoscience Information Service	A13SE (N)	0	5	528773 187375

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
15	**Contemporary Trade Directory Entries** Name: Petroleum Development Consultants Location: 4-8, Highgate High Street, London, N6 5JL Classification: Oil & Gas Exploration Supplies & Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	73	-	528617 187358
15	**Contemporary Trade Directory Entries** Name: First Choice Dry Cleaining Location: 5, Highgate High Street, London, N6 5JR Classification: Dry Cleaners **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	114	-	528574 187337
16	**Contemporary Trade Directory Entries** Name: U C S Dampproofing & Timber Preservation Services Location: 53, Cromwell Avenue, London, N6 5HP Classification: Damp & Dry Rot Control **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (E)	84	-	528934 187427
17	**Contemporary Trade Directory Entries** Name: Highgate Motors Location: 9, Broadbent Close, London, N6 5JW Classification: Garage Services **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NW (W)	124	-	528587 187410
17	**Contemporary Trade Directory Entries** Name: Sally Poppy Location: 4, Broadbent Close, London, N6 5JW Classification: Lingerie Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	137	-	528569 187406
17	**Contemporary Trade Directory Entries** Name: Vagabond Bags Ltd Location: 7, Broadbent Close, London, N6 5JW Classification: Bags, Belts & Accessories - Manufacturers & Suppliers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NW (W)	151	-	528551 187402
18	**Contemporary Trade Directory Entries** Name: Cleaners Highgate Location: 37, Highgate High Street, London, N6 5JT Classification: Cleaning Services - Domestic **Status: Active** Positional Accuracy: Automatically positioned to the address	A13SW (W)	210	-	528478 187352
19	**Contemporary Trade Directory Entries** Name: A1 Discount Motor Services Location: 177, Archway Road, London, N6 5BL Classification: Garage Services **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	229	-	528919 187658
20	**Contemporary Trade Directory Entries** Name: Amano Ltd Location: 164, Archway Road, London, N6 5BB Classification: Knitwear Manufacturers & Wholesalers **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	229	-	529015 187582
20	**Contemporary Trade Directory Entries** Name: Pax Guns Ltd Location: 166, Archway Road, London, N6 5BB Classification: Gunsmiths **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	230	-	529012 187588
21	**Contemporary Trade Directory Entries** Name: Highgate Launderette Location: 176, Archway Road, London, N6 5BB Classification: Laundries & Launderettes **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	236	-	528997 187615
21	**Contemporary Trade Directory Entries** Name: Changing Curtains Location: 186, Archway Road, London, N6 5BB Classification: Blinds, Awnings & Canopies **Status: Inactive** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	246	-	528980 187642

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
21	**Contemporary Trade Directory Entries** Name: The Stained Glass Works Location: 188, Archway Road, London, N6 5BB Classification: Stained Glass Designers & Producers **Status: Active** Positional Accuracy: Automatically positioned to the address	A13NE (NE)	249	-	528978 187648
22	**Fuel Station Entries** Name: John Nichol Cars Location: 31-33 North Road, Highgate, London, Greater London, N6 4BE Brand: Total Premises Type: Petrol Station **Status: Open** Positional Accuracy: Manually positioned to the address or location	A12NE (NW)	473	-	528305 187616
23	**Fuel Station Entries** Name: Sunnyside Service Station Location: 87 Sunnyside Road, Crouch End, LONDON, N19 3SL Brand: Obsolete Premises Type: Not Applicable **Status: Obsolete** Positional Accuracy: Automatically positioned to the address	A19SE (E)	910	-	529704 187730

Map ID	Details	Quadrant Reference (Compass Direction)	Estimated Distance From Site	Contact	NGR
24	**Local Nature Reserves** Name: Parkland Walk Multiple Area: Y Area (m2): 143120.34 Source: Natural England Designation Date: 1st January 1990	A18SE (NE)	452	6	529077 187825
25	**Local Nature Reserves** Name: Queen'S Wood Multiple Area: N Area (m2): 210696.8 Source: Natural England Designation Date: 1st January 1990	A18NE (N)	836	6	528881 188282

Agency & Hydrological	Version	Update Cycle
Contaminated Land Register Entries and Notices		
London Borough of Hackney - Environmental Health Department	August 2011	Annual Rolling Update
London Borough of Enfield - Environmental Services	December 2010	Annual Rolling Update
London Borough of Islington - Public Protection	July 2011	Annual Rolling Update
London Borough of Brent - Environmental Health Department	June 2011	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	March 2011	Annual Rolling Update
Westminster City Council - Environmental Health Department	March 2011	Annual Rolling Update
London Borough of Barnet - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Camden - Pollution Projects Team	May 2011	Annual Rolling Update
London Borough of Waltham Forest - Environmental Health Department	October 2011	Annual Rolling Update
Discharge Consents		
Environment Agency - Thames Region	July 2011	Quarterly
Enforcement and Prohibition Notices		
Environment Agency - Thames Region	September 2011	Quarterly
Integrated Pollution Controls		
Environment Agency - Thames Region	October 2008	Not Applicable
Integrated Pollution Prevention And Control		
Environment Agency - Thames Region	July 2011	Quarterly
Local Authority Integrated Pollution Prevention And Control		
London Borough of Waltham Forest - Environmental Health Department	April 2011	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	December 2010	Annual Rolling Update
London Borough of Islington - Environmental Health Department	July 2011	Annual Rolling Update
Westminster City Council - Environmental Health Department	July 2011	Annual Rolling Update
London Borough of Hackney - Environmental Health Department	June 2011	Annual Rolling Update
London Borough of Barnet - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Brent - Environmental Health Department	September 2011	Annual Rolling Update
London Borough of Camden - Pollution Projects Team	September 2011	Annual Rolling Update
Local Authority Pollution Prevention and Controls		
London Borough of Waltham Forest - Environmental Health Department	April 2011	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	December 2010	Annual Rolling Update
London Borough of Islington - Environmental Health Department	July 2011	Annual Rolling Update
Westminster City Council - Environmental Health Department	July 2011	Annual Rolling Update
London Borough of Hackney - Environmental Health Department	June 2011	Annual Rolling Update
London Borough of Barnet - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Brent - Environmental Health Department	September 2011	Annual Rolling Update
London Borough of Camden - Pollution Projects Team	September 2011	Annual Rolling Update
Local Authority Pollution Prevention and Control Enforcements		
London Borough of Waltham Forest - Environmental Health Department	April 2011	Annual Rolling Update
London Borough of Haringey - Planning and Environmental Health	December 2010	Annual Rolling Update
London Borough of Islington - Environmental Health Department	July 2011	Annual Rolling Update
Westminster City Council - Environmental Health Department	July 2011	Annual Rolling Update
London Borough of Hackney - Environmental Health Department	June 2011	Annual Rolling Update
London Borough of Barnet - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Enfield - Environmental Health Department	May 2011	Annual Rolling Update
London Borough of Brent - Environmental Health Department	September 2011	Annual Rolling Update
London Borough of Camden - Pollution Projects Team	September 2011	Annual Rolling Update
Nearest Surface Water Feature		
Ordnance Survey	June 2011	Quarterly
Pollution Incidents to Controlled Waters		
Environment Agency - Thames Region	September 1999	Not Applicable
Prosecutions Relating to Authorised Processes		
Environment Agency - Thames Region	September 2011	Monthly

Agency & Hydrological	Version	Update Cycle
Prosecutions Relating to Controlled Waters Environment Agency - Thames Region	July 2011	Monthly
Registered Radioactive Substances Environment Agency - Thames Region	July 2011	Quarterly
River Quality Environment Agency - Head Office	November 2001	Not Applicable
River Quality Biology Sampling Points Environment Agency - Head Office	January 2011	Annually
River Quality Chemistry Sampling Points Environment Agency - Head Office	January 2011	Annually
Substantiated Pollution Incident Register Environment Agency - Thames Region - North East Area	July 2011	Quarterly
Water Abstractions Environment Agency - Thames Region	July 2011	Quarterly
Water Industry Act Referrals Environment Agency - Thames Region	July 2011	Quarterly
Groundwater Vulnerability Environment Agency - Head Office	January 2011	Not Applicable
Drift Deposits Environment Agency - Head Office	January 1999	Not Applicable
Bedrock Aquifer Designations British Geological Survey - National Geoscience Information Service	September 2011	Annually
Superficial Aquifer Designations British Geological Survey - National Geoscience Information Service	September 2011	Annually
Source Protection Zones Environment Agency - Head Office	July 2011	Quarterly
Extreme Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2011	Quarterly
Flooding from Rivers or Sea without Defences Environment Agency - Head Office	August 2011	Quarterly
Areas Benefiting from Flood Defences Environment Agency - Head Office	August 2011	Quarterly
Flood Water Storage Areas Environment Agency - Head Office	August 2011	Quarterly
Flood Defences Environment Agency - Head Office	August 2011	Quarterly

Data Currency

Waste	Version	Update Cycle
BGS Recorded Landfill Sites		
British Geological Survey - National Geoscience Information Service	June 1996	Not Applicable
Historical Landfill Sites		
Environment Agency - Thames Region - North East Area	October 2011	Quarterly
Integrated Pollution Control Registered Waste Sites		
Environment Agency - Thames Region	October 2008	Not Applicable
Licensed Waste Management Facilities (Landfill Boundaries)		
Environment Agency - Thames Region - North East Area	July 2011	Quarterly
Licensed Waste Management Facilities (Locations)		
Environment Agency - Thames Region - North East Area	April 2011	Quarterly
Local Authority Landfill Coverage		
London Borough of Barnet	May 2000	Not Applicable
London Borough of Brent - Environmental Health Department	May 2000	Not Applicable
London Borough of Camden	May 2000	Not Applicable
London Borough of Enfield - Environmental Health Department	May 2000	Not Applicable
London Borough of Hackney	May 2000	Not Applicable
London Borough of Haringey - Planning Department	May 2000	Not Applicable
London Borough of Islington - Environmental Health Department	May 2000	Not Applicable
London Borough of Waltham Forest - Environmental Health Department	May 2000	Not Applicable
Westminster City Council - Environmental Health Department	May 2000	Not Applicable
Local Authority Recorded Landfill Sites		
London Borough of Enfield - Environmental Health Department	February 2003	Not Applicable
London Borough of Barnet	May 2000	Not Applicable
London Borough of Brent - Environmental Health Department	May 2000	Not Applicable
London Borough of Camden	May 2000	Not Applicable
London Borough of Hackney	May 2000	Not Applicable
London Borough of Haringey - Planning Department	May 2000	Not Applicable
London Borough of Islington - Environmental Health Department	May 2000	Not Applicable
London Borough of Waltham Forest - Environmental Health Department	May 2000	Not Applicable
Westminster City Council - Environmental Health Department	May 2000	Not Applicable
Registered Landfill Sites		
Environment Agency - Thames Region - North East Area	March 2003	Not Applicable
Registered Waste Transfer Sites		
Environment Agency - Thames Region - North East Area	March 2003	Not Applicable
Registered Waste Treatment or Disposal Sites		
Environment Agency - Thames Region - North East Area	March 2003	Not Applicable

Hazardous Substances	Version	Update Cycle
Control of Major Accident Hazards Sites (COMAH)		
Health and Safety Executive	July 2011	Bi-Annually
Explosive Sites		
Health and Safety Executive	January 2011	Bi-Annually
Notification of Installations Handling Hazardous Substances (NIHHS)		
Health and Safety Executive	November 2000	Not Applicable
Planning Hazardous Substance Enforcements		
London Borough of Haringey	April 2011	Annual Rolling Update
London Borough of Hackney	February 2011	Annual Rolling Update
London Borough of Waltham Forest - Environmental Services	February 2011	Annual Rolling Update
Westminster City Council	February 2011	Annual Rolling Update
London Borough of Islington	July 2011	Annual Rolling Update
London Borough of Enfield - Planning Department	June 2011	Annual Rolling Update
London Borough of Barnet	March 2011	Annual Rolling Update
London Borough of Camden	March 2011	Annual Rolling Update
London Borough of Brent	October 2011	Annual Rolling Update
Planning Hazardous Substance Consents		
London Borough of Haringey	April 2011	Annual Rolling Update
London Borough of Hackney	February 2011	Annual Rolling Update
London Borough of Waltham Forest - Environmental Services	February 2011	Annual Rolling Update
Westminster City Council	February 2011	Annual Rolling Update
London Borough of Islington	July 2011	Annual Rolling Update
London Borough of Enfield - Planning Department	June 2011	Annual Rolling Update
London Borough of Barnet	March 2011	Annual Rolling Update
London Borough of Camden	March 2011	Annual Rolling Update
London Borough of Brent	October 2011	Annual Rolling Update

Data Currency

Geological	Version	Update Cycle
BGS Recorded Mineral Sites British Geological Survey - National Geoscience Information Service	October 2011	Bi-Annually
BGS 1:625,000 Solid Geology British Geological Survey - National Geoscience Information Service	August 1996	Not Applicable
Brine Compensation Area Cheshire Brine Subsidence Compensation Board	November 2002	Not Applicable
Coal Mining Affected Areas The Coal Authority - Mining Report Service	August 2011	As notified
Mining Instability Ove Arup & Partners	October 2000	Not Applicable
Non Coal Mining Areas of Great Britain British Geological Survey - National Geoscience Information Service	February 2011	Not Applicable
Potential for Collapsible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Compressible Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Ground Dissolution Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Landslide Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Running Sand Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Potential for Shrinking or Swelling Clay Ground Stability Hazards British Geological Survey - National Geoscience Information Service	February 2011	Annually
Radon Potential - Radon Affected Areas British Geological Survey - National Geoscience Information Service	July 2011	As notified
Radon Potential - Radon Protection Measures British Geological Survey - National Geoscience Information Service	July 2011	As notified
Industrial Land Use	**Version**	**Update Cycle**
Contemporary Trade Directory Entries Thomson Directories	May 2011	Quarterly
Fuel Station Entries Catalist Ltd - Experian	August 2011	Quarterly

Sensitive Land Use	Version	Update Cycle
Areas of Adopted Green Belt		
London Borough of Barnet	May 2011	As notified
London Borough of Enfield	May 2011	As notified
London Borough of Haringey	May 2011	As notified
London Borough of Waltham Forest	May 2011	As notified
Areas of Unadopted Green Belt		
London Borough of Barnet	May 2011	As notified
London Borough of Enfield	May 2011	As notified
London Borough of Haringey	May 2011	As notified
London Borough of Waltham Forest	May 2011	As notified
Areas of Outstanding Natural Beauty		
Natural England	September 2011	Bi-Annually
Environmentally Sensitive Areas		
Natural England	September 2011	Annually
Forest Parks		
Forestry Commission	April 1997	Not Applicable
Local Nature Reserves		
Natural England	September 2011	Bi-Annually
Marine Nature Reserves		
Natural England	September 2011	Bi-Annually
National Nature Reserves		
Natural England	September 2011	Bi-Annually
National Parks		
Natural England	September 2011	Bi-Annually
Nitrate Sensitive Areas		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	March 2003	Not Applicable
Nitrate Vulnerable Zones		
Department for Environment, Food and Rural Affairs (DEFRA - formerly FRCA)	February 2011	Annually
Ramsar Sites		
Natural England	September 2011	Bi-Annually
Sites of Special Scientific Interest		
Natural England	September 2011	Bi-Annually
Special Areas of Conservation		
Natural England	September 2011	Bi-Annually
Special Protection Areas		
Natural England	September 2011	Bi-Annually

Data Suppliers

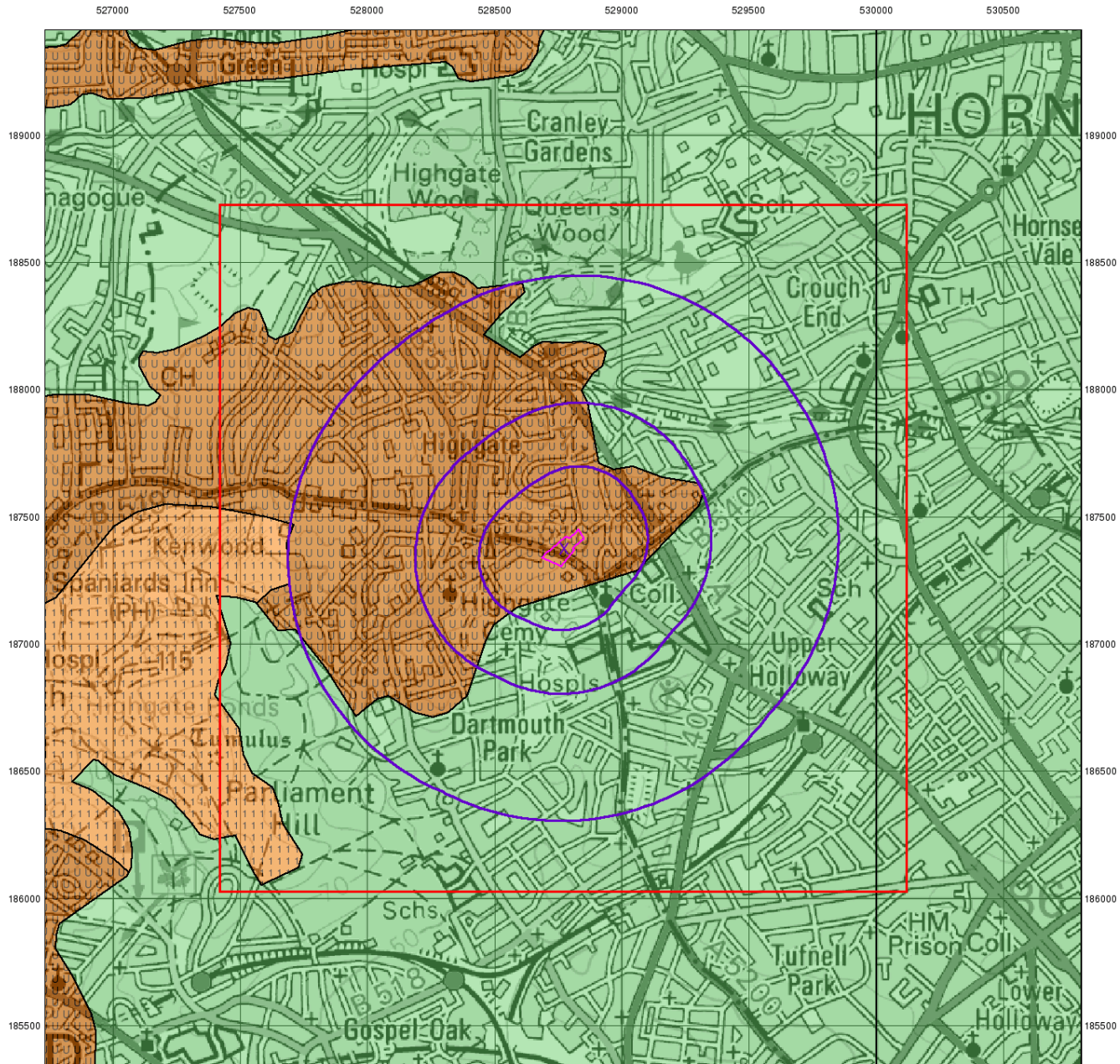
A selection of organisations who provide data within this report

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

Useful Contacts

Contact	Name and Address	Contact Details
1	**Environment Agency - National Customer Contact Centre (NCCC)** PO Box 544, Templeborough, Rotherham, S60 1BY	Telephone: 08708 506 506 Email: enquiries@environment-agency.gov.uk
2	**London Borough of Camden - Pollution Projects Team** Seventh Floor, Town Hall Extension, Argyle Street, London, WC1H 8EQ	Telephone: 020 7278 4444 Fax: 020 7860 5713 Website: www.camden.gov.uk
3	**London Borough of Haringey - Planning and Environmental Health** 639 High Road, Tottenham, London, N17 8BD	Telephone: 0208 489 5183 Fax: 0208 489 5117 Website: www.haringey.gov.uk
4	**London Borough of Islington - Environmental Health Department** 159 Upper Street, Islington, London, N1 1RE	Telephone: 020 7527 2000 Fax: 020 7477 3057 Website: www.islington.gov.uk
5	**British Geological Survey - Enquiry Service** British Geological Survey, Kingsley Dunham Centre, Keyworth, Nottingham, Nottinghamshire, NG12 5GG	Telephone: 0115 936 3143 Fax: 0115 936 3276 Email: enquiries@bgs.ac.uk Website: www.bgs.ac.uk
6	**Natural England** Northminster House, Northminster Road, Peterborough, Cambridgeshire, PE1 1UA	Telephone: 0845 600 3078 Fax: 01733 455103 Email: enquiries@naturalengland.org.uk Website: www.naturalengland.org.uk
7	**London Borough of Haringey - Planning Department** Civic Centre, 639 High Road, Tottenham, London, N17 8BD	Website: www.haringey.gov.uk
8	**London Borough of Camden** Town Hall, Judd Street, London, WC1H 9JE	Telephone: 020 7974 4444 Fax: 020 7974 6866 Email: info@camden.gov.uk Website: www.camden.gov.uk
-	**Health Protection Agency - Radon Survey, Centre for Radiation, Chemical and Environmental Hazards** Chilton, Didcot, Oxfordshire, OX11 0RQ	Telephone: 01235 822622 Fax: 01235 833891 Email: radon@hpa.org.uk Website: www.hpa.org.uk
-	**Landmark Information Group Limited** The Smith Centre, Henley On Thames, Oxfordshire, RG9 6AB	Telephone: 0844 844 9952 Fax: 0844 844 9951 Email: customerservices@landmarkinfo.co.uk Website: www.landmarkinfo.co.uk

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



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GEA Geotechnical & Environmental Associates

Groundwater Vulnerability

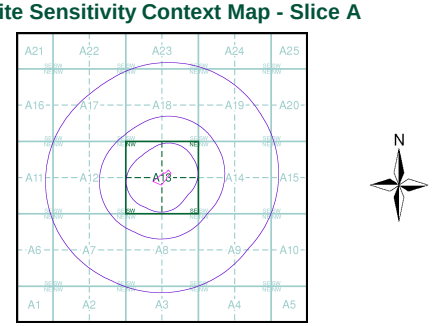
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



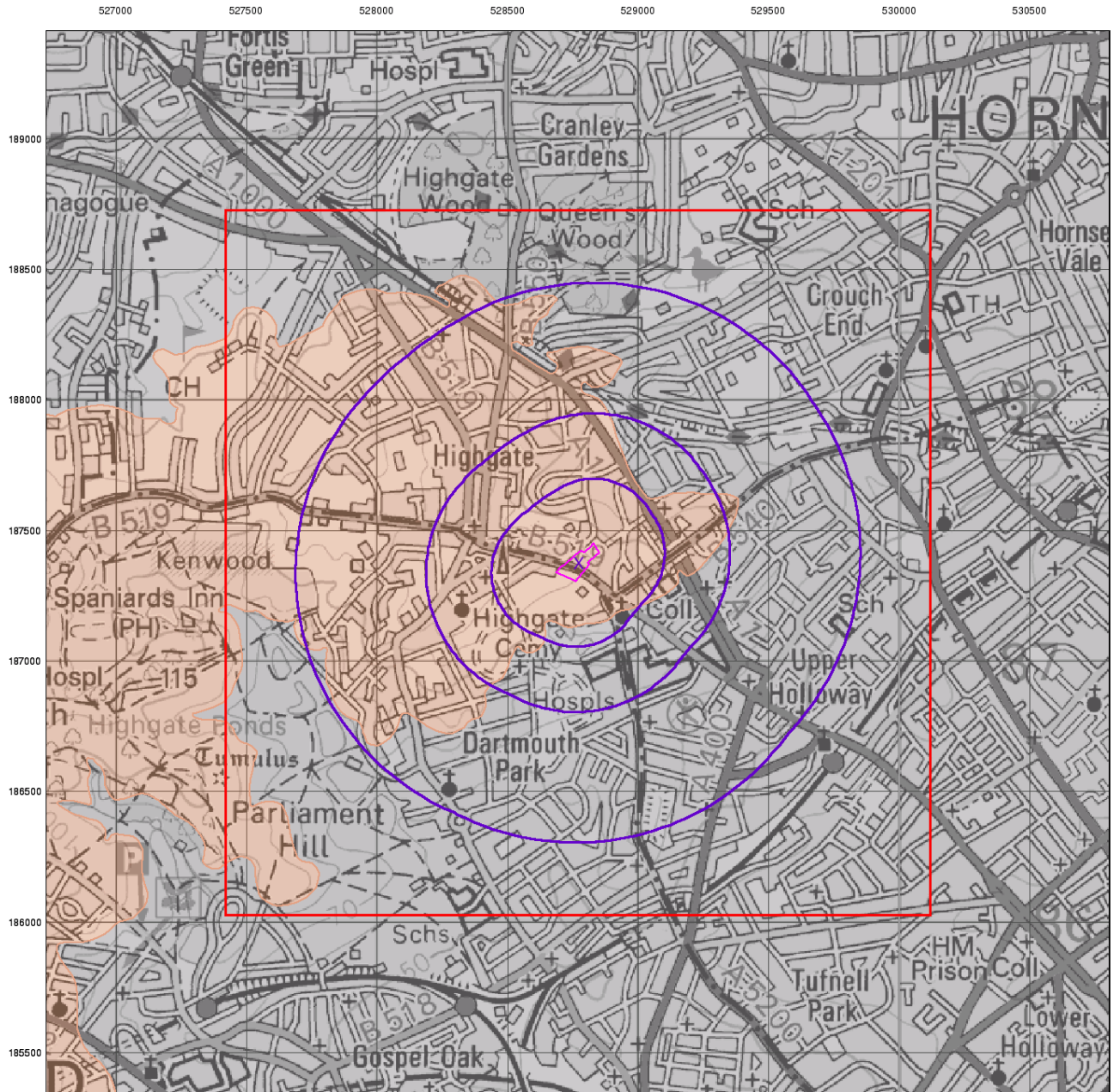
Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

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



GEA Geotechnical & Environmental Associates

Bedrock Aquifer Designation

General

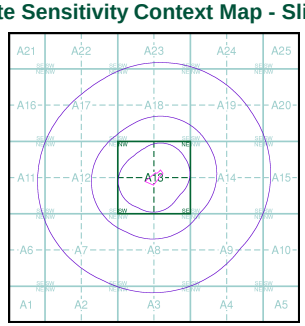
Specified Site
Specified Buffer(s)
Bearing Reference Point
Slice
Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



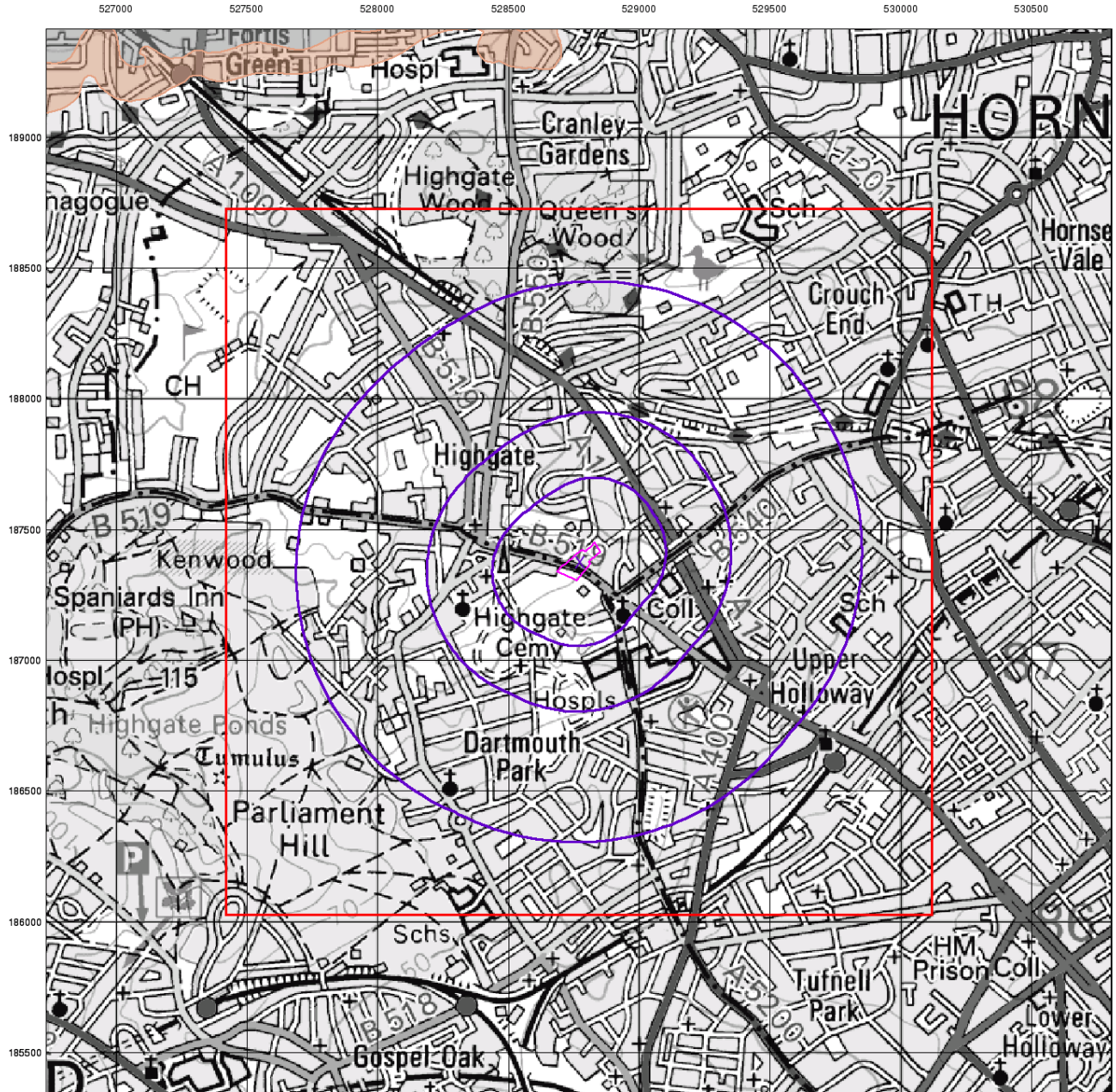
Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

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



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GEA Geotechnical & Environmental Associates

Superficial Aquifer Designation

General

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

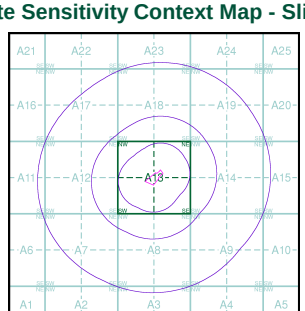
Slice | Map ID

Agency and Hydrological

Geological Classes

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

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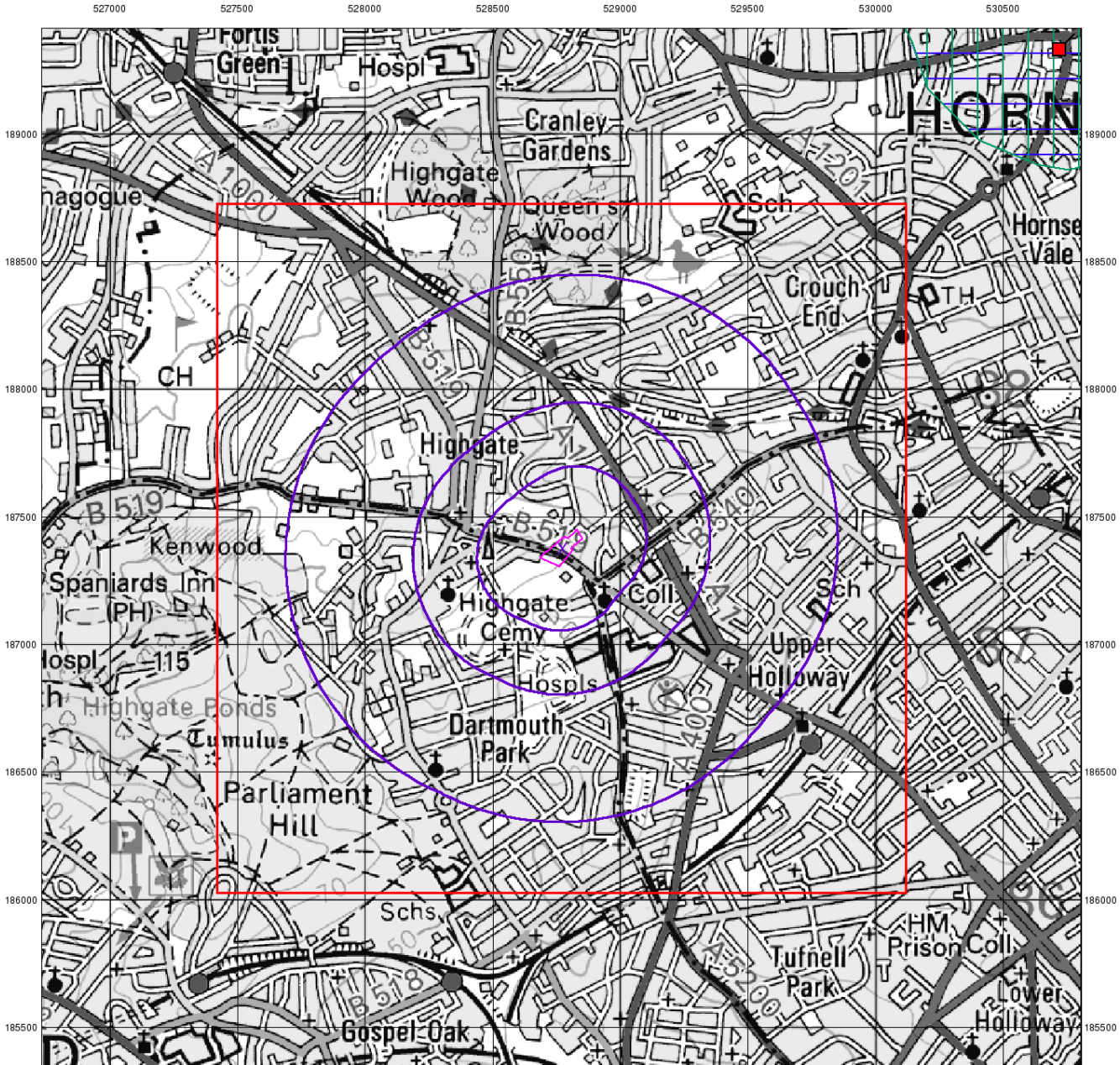


GEA Geotechnical & Environmental Associates

Source Protection Zones

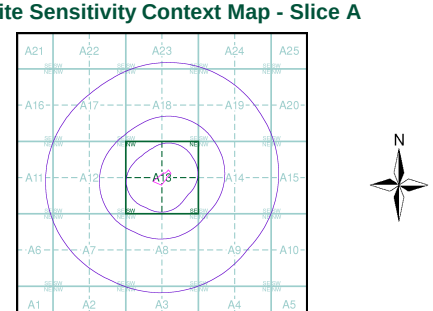
General

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

Agency and Hydrological

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

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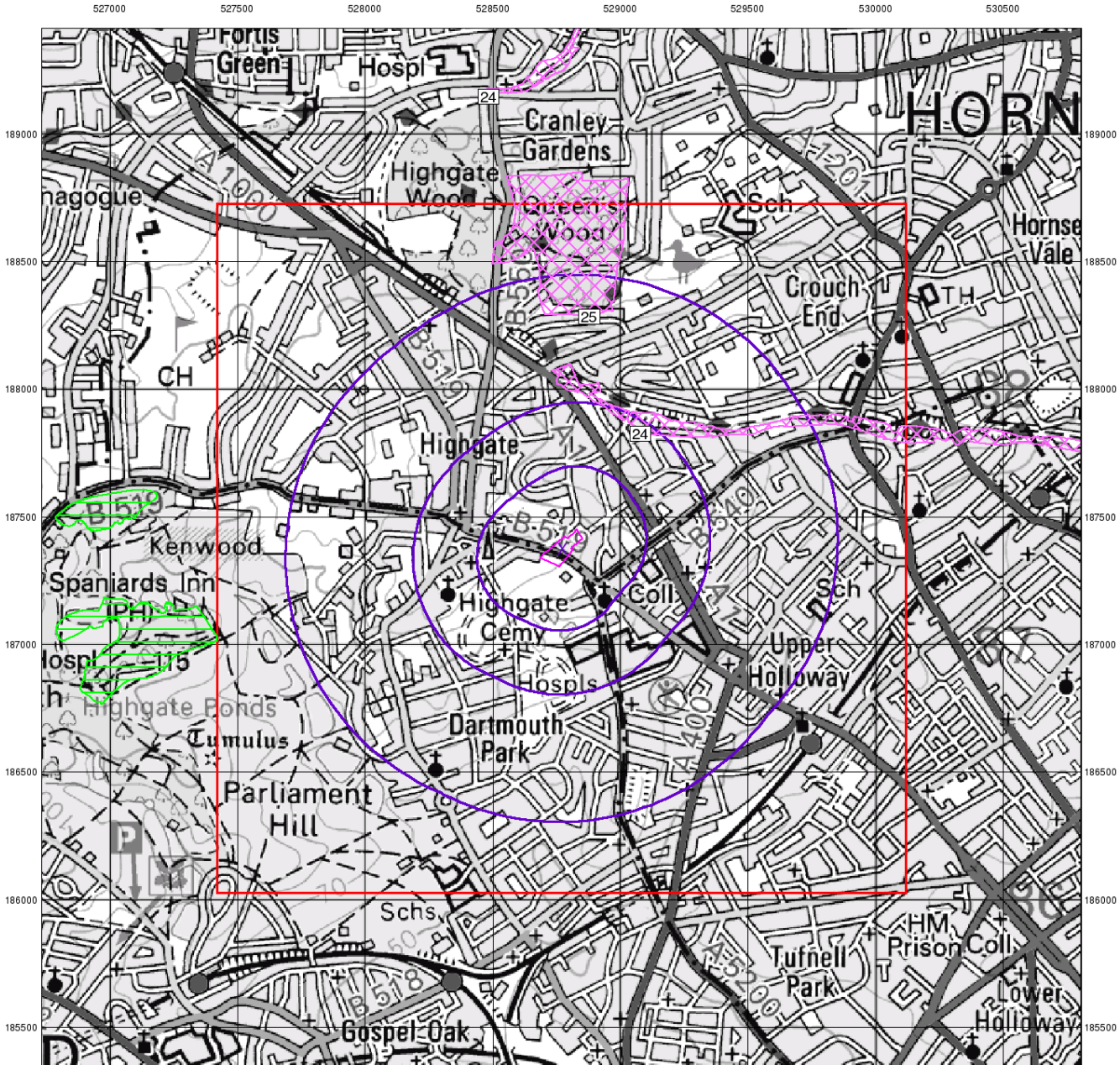

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GEA Geotechnical & Environmental Associates

Sensitive Land Uses

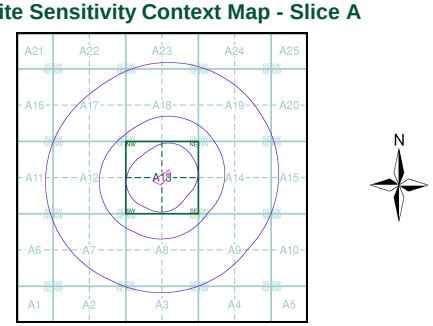
General

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

Sensitive Land Uses

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

Site Sensitivity Context Map - Slice A



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

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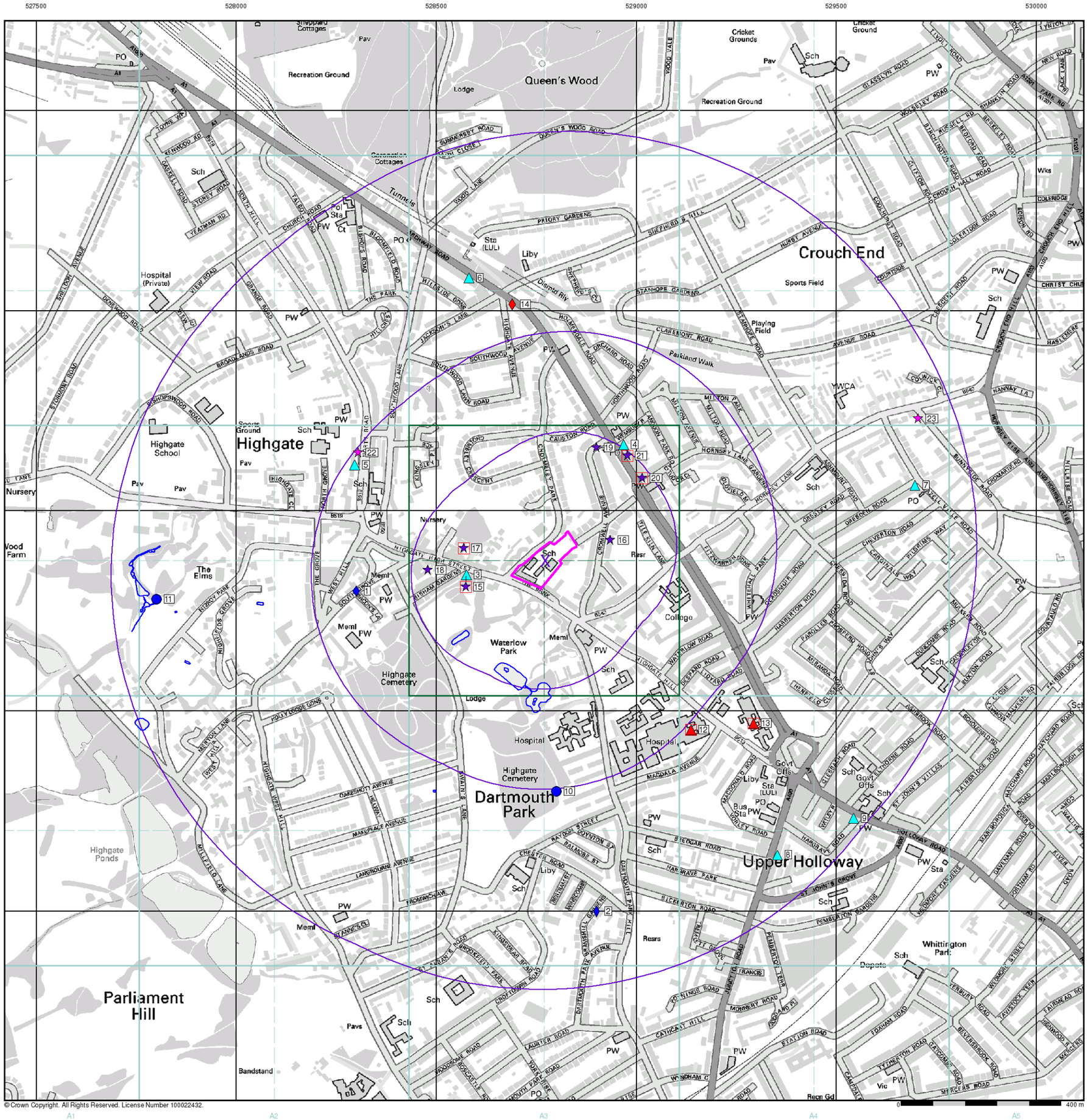

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GEA Geotechnical & Environmental Associates

General

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

Agency and Hydrological

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

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

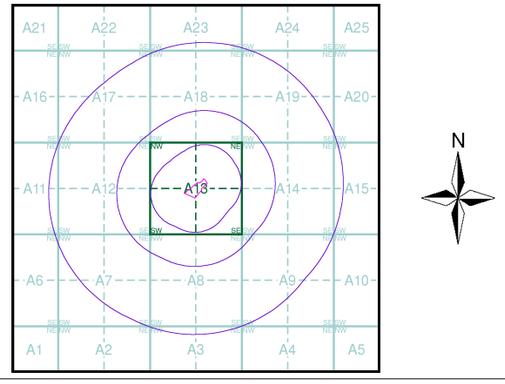
Waste

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

Hazardous Substances

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

Site Sensitivity Map - Slice A



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

Landmark Information Group

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0 400 m

GEA Geotechnical & Environmental Associates

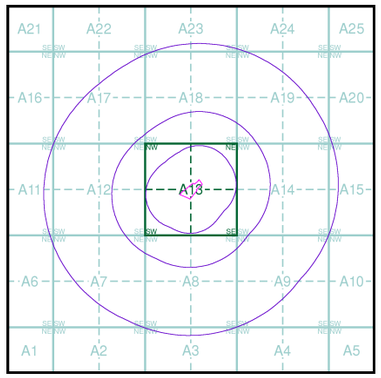
General

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

Agency and Hydrological (Flood)

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

Flood Map - Slice A



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

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General

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

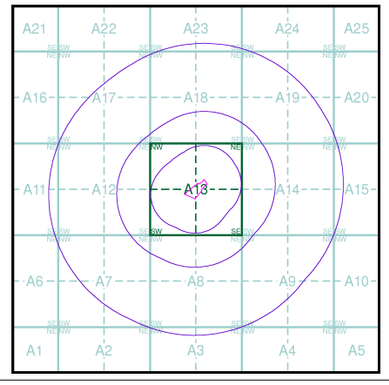
Agency and Hydrological (Boreholes)

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

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

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

Borehole Map - Slice A



N

Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	1000

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

Landmark Information Group

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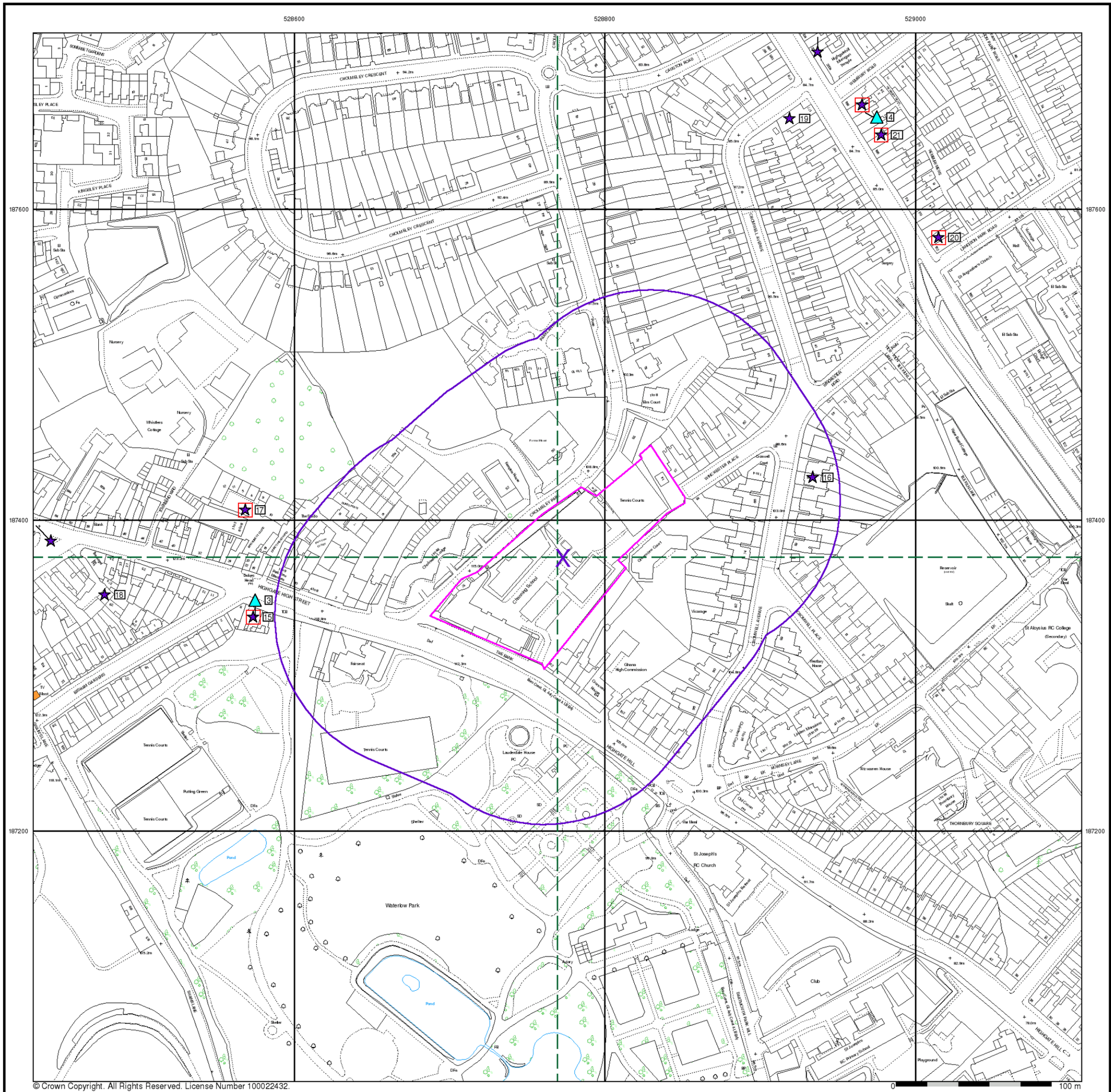

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0 100 m

GEA Geotechnical & Environmental Associates

General

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

Agency and Hydrological

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

Geological

- BGS Recorded Mineral Site

Industrial Land Use

- Contemporary Trade Directory Entry
- Fuel Station Entry

Waste

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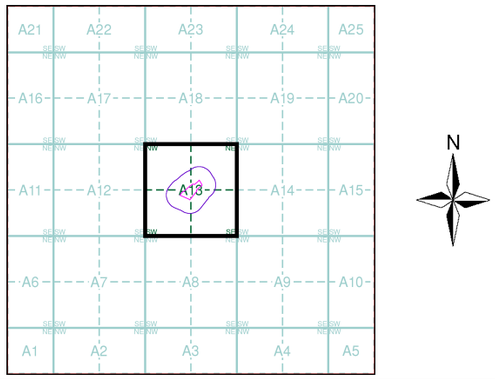
- Registered Landfill Site (Location)
- Registered Landfill Site (Point Buffered to 100m)
- Registered Landfill Site (Point Buffered to 250m)
- Registered Waste Transfer Site (Location)
- Registered Waste Transfer Site
- Registered Waste Treatment or Disposal Site (Location)
- Registered Waste Treatment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

Hazardous Substances

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

Site Sensitivity Map - Segment A13



Order Details

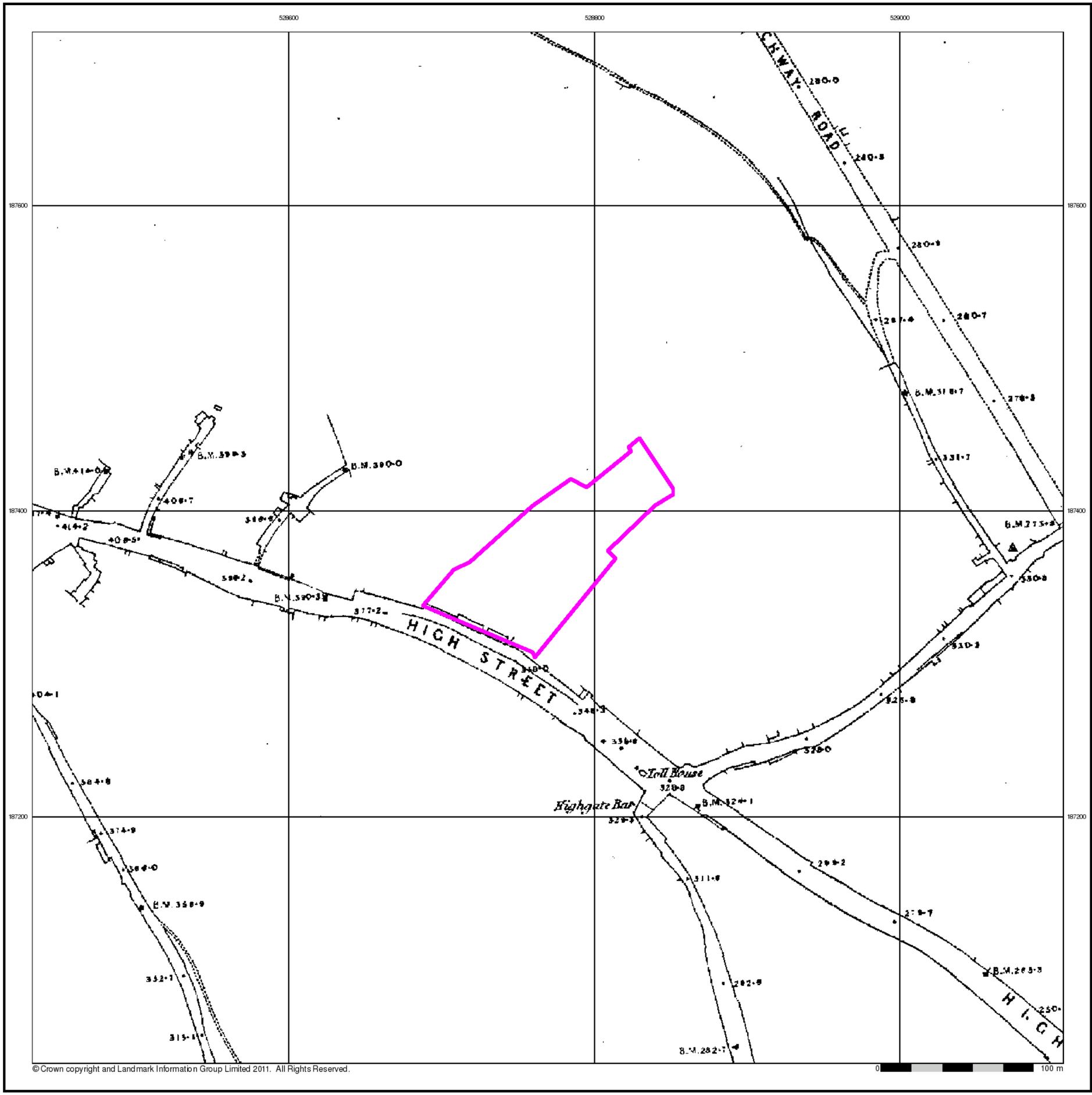
Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Plot Buffer (m):	100

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

Landmark Information Group

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



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Geotechnical & Environmental Associates

London

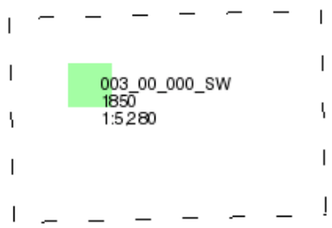
Published 1850

Source map scale - 1:5,280

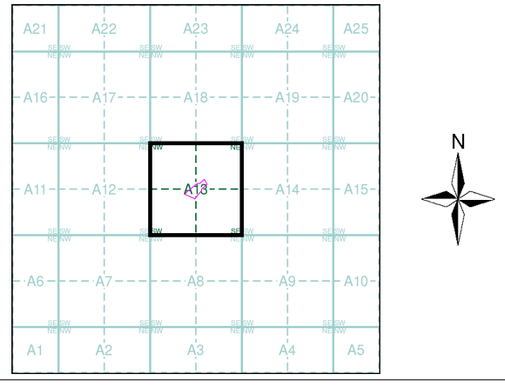
The historical town plans shown derive from Ordnance Survey mapping from the early to mid 1850s. The 1:2640 scale was introduced in the early 1850s, to survey districts covered by the Local Boards of Health and for a map of the Osborne Estate of Queen Victoria. The general style is similar to that of the early 1:2500s published shortly afterwards.
1:5280 scale was surveyed shortly afterwards in the mid 1850s as general purpose mapping with a standard of content similar to the more contemporary 1:10.560 mapping. The scale was also used for a reduction of the 1:1056 'skeleton survey' of London that was undertaken between 1848 and 1850.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	0

Site Details

Channing School, Highgate Hill, LONDON, N6 5HF

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Tel: 0844 844 9952
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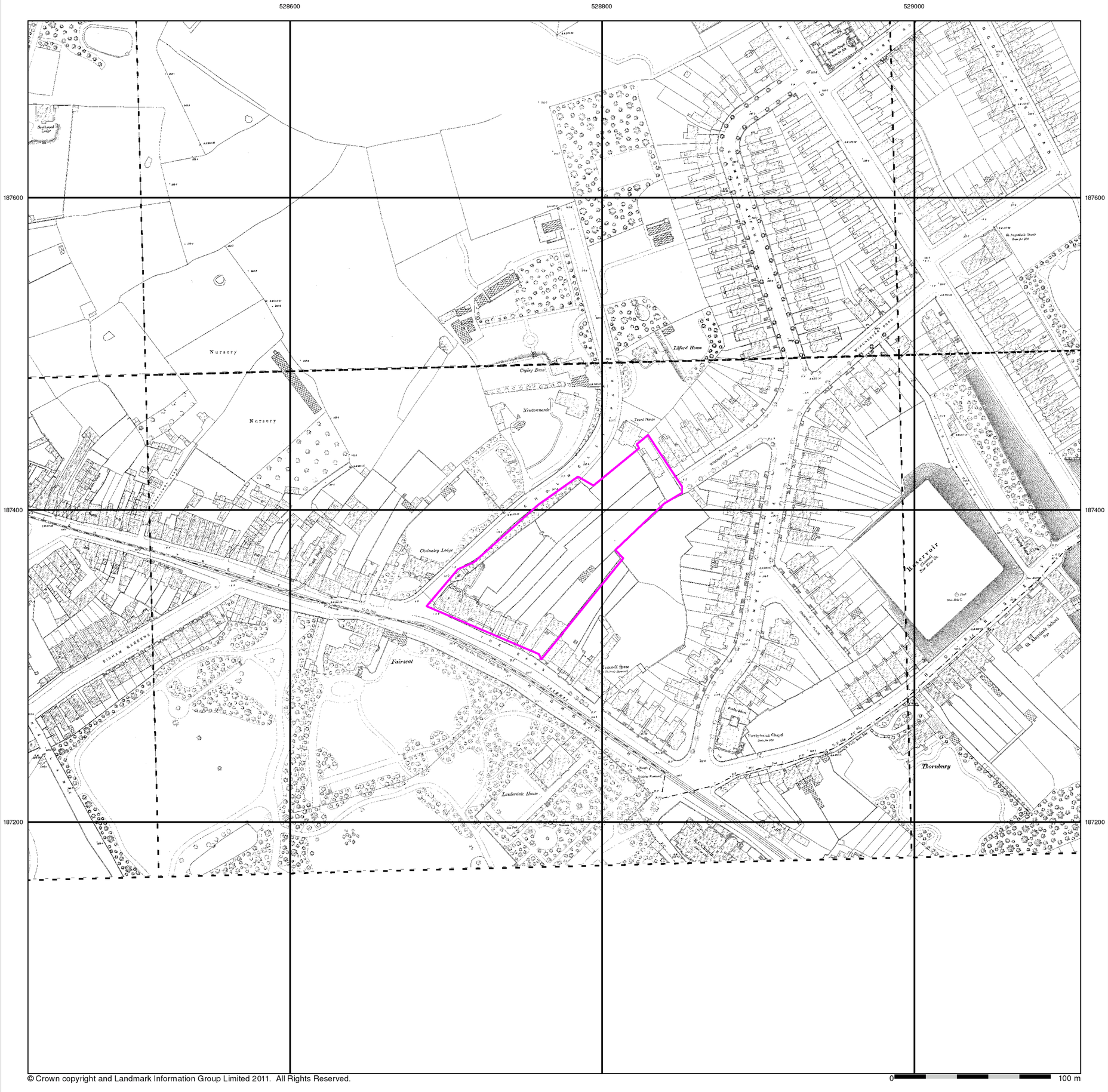

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Geotechnical & Environmental Associates

Middlesex

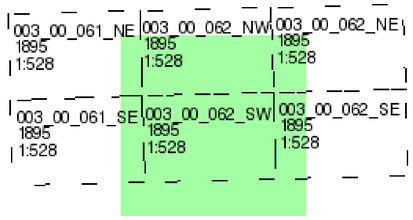
Published 1895

Source map scale - 1:528

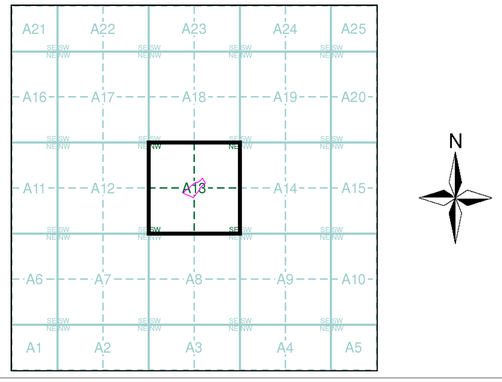
The 1:528 scale Ordnance Survey mapping was adopted in 1850 as an alternative to the 1:1056 scale, that had been deemed to be inadequate for sanitary planning, which had come very much to the fore following the passing of the Public Health Act of 1948. Around 29 towns in England and Wales were surveyed at this scale, the bulk of which were undertaken between 1850 and 1855. These were predominantly towns that were outside the areas being surveyed at 1:10,560 or 1:2500 scale. As well as showing the details characteristic of the later 1:500 plans, they show features of sanitary interest such as privies, taps, cow houses, cess pits, brew and bake houses and cart sheds and stables.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



Order Details

Order Number:	36635444_1_1
Customer Ref:	J11240
National Grid Reference:	528770, 187380
Slice:	A
Site Area (Ha):	0.94
Search Buffer (m):	0

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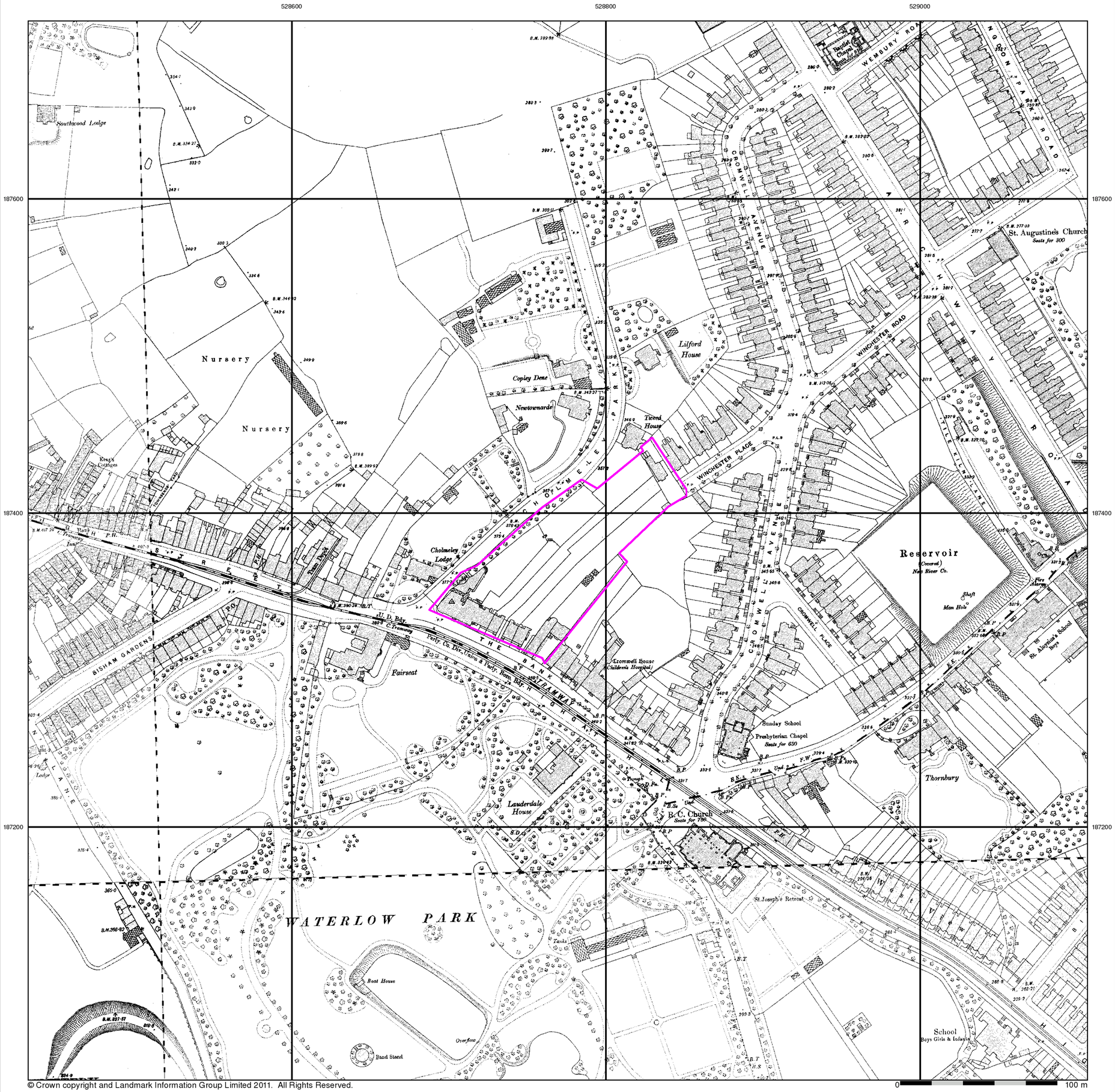

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GEA Geotechnical & Environmental Associates

London

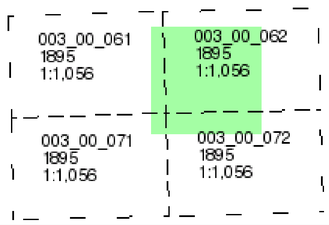
Published 1895

Source map scale - 1:1,056

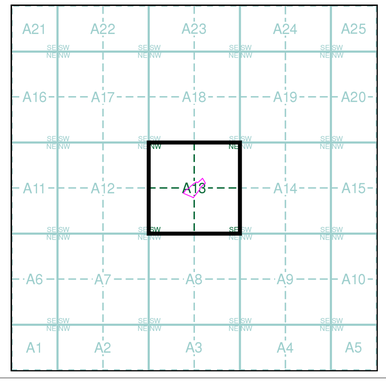
The 1:1056 scale of Ordnance Survey mapping was adopted from Ireland in 1848 and was used to survey towns with a population of over 4000, plus county towns of lesser population, in those counties mapped at the six-inch scale in 1841-55. The scale was the largest scale at which London was mapped by the Ordnance Survey and a 'skeleton' survey of the capital, showing little more than streets, street names, frontages and altitudes, was undertaken between 1848 and 1850. The majority of the 1:1056 surveys were later replaced by 1:500 surveys; although almost all the remainder were revised at this scale, sometimes more than once before 1895. The type of detail shown on the 1:1056 scale is broadly similar to that on 1:500; the apparent omission of minor details such as sewer access points and street lights may be as much a reflection of the generally earlier date of these plans, as of the specification of the map.

Please note: Due to the partial coverage of Historical Town Plans, it is possible that not all segments within an order will contain mapping. Only the segments that have Town Plan coverage will be generated.

Map Name(s) and Date(s)



Historical Town Plan - Segment A13



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